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Kazalo

Drage bralke in bralci!

Letošnja prva dvojna številka IB-revije prinaša štiri članke, ki so jih napisali predavatelji februarskega mednarodnega posvetovanja o enotni davčni stopnji v organizaciji Centra za kakovost javnih financ. Razprave o enotni davčni stopnji so v Sloveniji zelo živahne in aktualne. Zato je bilo posvetovanje pomemben prispevek k tej temi in z veseljem vam dajemo v branje razmišljanje šestih slovenskih strokovnjakov. Ker pa so bili udeleženci predvsem tujci, so omenjeni članki nastali v angleškem jeziku in objavljamo jih neprevedene.

Vsebinsko posegajo na različna področja. **Tomaž Čater** podaja kritično oceno primernosti različnih šol konkurenčnih prednosti podjetij in ugotavlja, da obstaja njihovo močno prepletanje na temelju virov, sposobnosti in znanja, da pa je smiselno govoriti le o dveh šolah, tj. o "notranji" na temelju virov, sposobnosti in znanja ter o "zunanji" na temelju industrijske organizacije. Kljub na prvi pogled očitni tekmovalnosti je treba v odnosu med njima videti komplementarnost, saj vsakršno njuno izolirano obravnavanje zamegli sliko o dejanskem nastanku konkurenčne prednosti.

Miroslav Verbič razčlenjuje pristop izraženih preferenc za ekonomsko vrednotenje naravne in kulturne dediščine, ki obsega metode kontingenčnega vrednotenja in diskretne izbire ter omogoča vrednotenje kar največjega in najbolj raznovrstnega nabora okoljskih in prostorskih dobrin. Zasnova hipotetičnega trga, na katerem temelji ta pristop, je hkrati vir njegovih največjih prednosti in največjih slabosti.

Milan Vodopivec pa obravnava gibanje ter določilnice strukture in distribucije plač v Sloveniji v devetdesetih letih, pri čemer ga zanima predvsem individualni donos izobraževanja (vpliv izobrazbe na plačo) in spremembe v razmerju plače žensk oziroma moških.

Jože P. Damijan, Andreja Jaklič in Matija Rojec pa analizirajo, koliko inovacijsko dejavnost podjetja spodbuja lastna dejavnost R&R, koliko vplivajo nanjo zunanji dejavniki in kateri so najpomembnejši kanali prelivanja znanja od zunaj. In ugotavljajo naslednje: a) lastni izdatki R&R v podjetjih in zunanje prelivanje znanja, kakršni so domače in mednarodne javne subvencije R&R, tuje lastništvo in intrapanožno prelivanje inovacij, krepijo inovacijsko sposobnost podjetij; b) inovacije kot rezultat dejavnosti R&R bistveno prispevajo k rasti skupne faktorske produktivnosti podjetij in c) tuje lastništvo ima dvojni vpliv na to rast - krepi inovacijsko sposobnost podjetja, nato pa z boljšimi organizacijskimi tehnikami dodatno prispeva k povečanju njegove skupne faktorske produktivnosti.

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*Tomaž Čater**

Prepletanje osnov in oblik konkurenčne prednosti podjetja: Kritična ocena primernosti dosedanjih šol

Povzetek

Osnove konkurenčne prednosti v strokovni literaturi obravnavajo vsaj štiri šole, in sicer šola na temelju industrijske organizacije, šola na temelju virov, šola na temelju sposobnosti ter šola na temelju znanja. Tudi oblik konkurenčne prednosti je veliko, kljub temu pa jih je moč v grobem razdeliti na prednost v obliki nižjih cen in prednost v eni od oblik diferenciacije. V empiričnem delu prispevka z metodo razvrščanja v skupine in s faktorsko analizo na vzorcu 225 slovenskih podjetij preverjamo, kako se osnove in oblike konkurenčne prednosti medsebojno prepletajo ter kaj to pomeni za dosedanjo teorijo o nastanku konkurenčne prednosti. Sklenemo lahko, da je osnove konkurenčne prednosti smiselno razdeliti predvsem glede na to, od kod izvirajo, iz podjetja ali iz okolja. Glede na močno prepletanje šol na temelju virov, sposobnosti in znanja je bolj kot o štirih ločenih šolah smiselno govoriti le o dveh šolah, tj. o "notranji" šoli na temelju virov, sposobnosti in znanja ter o "zunanji" šoli na temelju industrijske organizacije. Kljub na prvi pogled očitni tekmovalnosti med obema šolama je treba v odnosu med njima videti tudi komplementarnost, saj vsakršno izolirano obravnavanje obeh skupin osnov zamegli sliko o dejanskem nastanku konkurenčne prednosti.

Summary

Scientific literature discusses at least four schools about the sources of competitive advantage of a firm, namely the industrial organisation school, the resource-based school, the capability-based school, and the knowledge-based school. Competitive advantage can take many different forms which can all be roughly classified in only two groups, i.e. the price advantage and the differentiation advantage. In the empirical research (based on a sample of 225 Slovenian firms) we use the clustering and factor analysis methods to examine how the sources and forms of competitive advantage interweave and what this means for the existing theory on competitive advantage. A conclusion can be made that all sources of competitive advantage should be classified into the external or the internal category. Because of the strong interweaving of the resource-based, capability-based and knowledge-based schools we believe it is reasonable to discuss only two (instead of four) schools, i.e. the "internal" school based on resources, capabilities and knowledge, and the "external" school based on industrial organisation. The relation between them should not be understood as being solely competitive but also complementary, which means that the mystery of creating a competitive advantage cannot be explained by any of these schools alone.

1. Uvod

Če želi podjetje doseči konkurenčno prednost, morajo za to najprej obstajati neke osnove. Ko podjetje takšne osnove ima in jih zna pretopiti v vsaj eno od oblik konkurenčne prednosti, si lahko zelo verjetno obeta, da bo uspešno. Predmet tega prispevka je analiza prepletanja osnov in oblik konkurenčne prednosti. Povedano še drugače, naš namen je raziskati, kako se številne potencialne osnove in oblike konkurenčne prednosti medsebojno prepletajo, ter na tej osnovi podati sodbo o (ne)primernosti štirih temeljnih šol o osnovah konkurenčne prednosti oziroma o dosedanji teoriji o oblikah konkurenčne prednosti. Da bi dosegli tako opredeljeni namen raziskave, v teoretičnem delu prispevka najprej predstavljamo štiri v strokovni literaturi daleč najbolj razširjene šole o osnovah konkurenčne prednosti, potem pa sledi še kratka predstavitev glavnih oblik

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konkurenčne prednosti. Drugi del prispevka se nanaša na empirično raziskavo o zgoraj opisani problematiki, ki smo jo izvedli na vzorcu 225 slovenskih podjetij. Najprej predstavljamo metodološko ozadje raziskave, nato pa še njene temeljne rezultate. V zadnjem delu prispevka sledi še diskusija in sklep, predvsem v smislu teoretične refleksije zbranih empiričnih ugotovitev.

2. Osnove in oblike konkurenčne prednosti podjetja

2.1. Šole o osnovah konkurenčne prednosti podjetja

Osnove konkurenčne prednosti v strokovni literaturi obravnavajo vsaj štiri šole, in sicer šola na temelju industrijske organizacije, šola na temelju virov, šola na temelju sposobnosti ter šola na temelju znanja. Za šolo na temelju industrijske organizacije je značilno, da v vlogo osnov konkurenčne prednosti podjetja postavlja predvsem neke zunanje osnove. Te zunanje osnove so predvsem dejavniki, ki se navezujejo na značilnosti panoge, predvsem pogajalska moč kupcev in dobaviteljev, nevarnost substitucije obstoječih proizvodov oziroma storitev, nevarnost vstopa novih konkurentov v panogo in stopnja konkurence med obstoječimi konkurenti v panogi (Porter 1979), delno pa so lahko zunanje osnove, predvsem za podjetja, ki tekmujejo pretežno s tujimi konkurenti, tudi značilnosti narodnega gospodarstva, predvsem pogoji glede domačih proizvodnih dejavnikov, pogoji glede domačega povpraševanja, značilnosti sorodnih in podpornih panog ter rivalstvo med domačimi podjetji (Porter 1990). V okviru šole na temelju industrijske organizacije lahko govorimo o vsaj dveh različicah te šole. Prva, t. im. šola na temelju klasične industrijske organizacije, je za strateški menedžment precej neuporabna, saj imajo podjetja po njenih naukih zelo majhen vpliv na svojo uspešnost (ta je namreč v pretežnem delu določena od zunaj, tj. predvsem iz panoge, v kateri se nahaja podjetje) (Lado, Boyd, Wright 1992; Gadhoum 1998). Druga različica te šole, t. im. šola na temelju novejše industrijske organizacije, tako radikalno gledanje na dejavnike uspešnosti podjetja bistveno omili, saj pravi, da uspeh podjetja ni skoraj v celoti določen od zunaj, temveč ima nanj, s tem, ko na značilnosti okolja odgovarja s svojimi strategijami, precejšen vpliv tudi samo podjetje (Porter 1981; Gadhoum 1998).

Popolno nasprotje šoli na temelju industrijske organizacije so šole na temelju virov, sposobnosti in znanja. Bistvo šole na temelju virov je, da si lahko podjetje konkurenčno prednost ustvari na podlagi nekih relevantnih virov, ki so usklajeni z okoljem (Vasconcellos, Hambrick 1989) in ki izpolnjujejo nekatere dokaj stroge pogoje. Viri morajo za podjetje predstavljati neko vrednost, biti morajo heterogeni, redki (če že ne enkratni) in trajnejše narave, ne smejo biti popolnoma mobilni in zlahka zamenljivi, ne sme se jih dati zlahka posnemati, v zvezi z njimi pa morajo obstajati tudi nekatere vnaprejšnje ovire konkurenci (Čater 2001a). Vire kot možne osnove konkurenčne prednosti strokovna literatura največkrat deli na fizične, finančne, človeške in organizacijske (Barney 1997), pogosto pa tudi na oprijemljive in neoprijemljive (Michalisin, Smith, Kline 1997). Čeprav so pomembni vsi viri podjetja, se v zadnjem času tehtnica vse bolj nagiba k človeškim in organizacijskim virom z vidika prve klasifikacije oziroma k neoprijemljivim virom z vidika druge klasifikacije (Zupan 1996; Whitehill 1997).

Šola na temelju sposobnosti, kot pove že njeno ime, v jedro konkurenčne prednosti postavlja sposobnosti podjetja. Podjetja morajo, če si želijo na podlagi sposobnosti zgraditi prednost pred konkurenti, najprej ustvariti posebnosti v svojih poslovnih procesih ter nato te procese preoblikovati v svoje ključne strateške sposobnosti. Te morajo stalno poglabljati z naložbami v podporno infrastrukturo, nosilec razvijanja sposobnosti pa mora biti nujno glavni menedžer (Stalk, Evans, Shulman 1992). Posamezne vrste sposobnosti, ki jih je moč največkrat zaslediti v strokovni literaturi, so predvsem menedžerske sposobnosti, sposobnosti na strani vložkov v poslovni proces, sposobnosti, vezane na poslovni proces, ter sposobnosti na strani izložkov iz poslovnega procesa (Lado, Boyd, Wright 1992). Da bi bilo konkurenčno prednost tekmecem čim težje posnemati, morajo biti vse te sposobnosti nujno čim bolj kompleksne (Bartmess, Cerny 1993) in prepredene skozi celotno podjetje (Ulrich 1987). Biti morajo torej nujno nadfunkcijske in temeljiti na čim večjem sodelovanju med ljudmi, ne pa zgolj na nekaterih posameznikih (King, Fowler, Zeithaml 2001). Kot o posebni vrsti sposobnosti se v strokovni literaturi govori o t. im. "osrednjih" sposobnostih. S konkurenčnostjo so osrednje sposobnosti povezane tako, da na njihovi osnovi nastajajo močni osrednji proizvodi podjetja, ti pa so nato osnova za konkurenčnost končnih proizvodov (Prahalad, Hamel 1990).

Zadnja od štirih obravnavanih šol uči, da je lahko danes, v času hitrih sprememb, edina prava osnova konkurenčne prednosti podjetja njegovo znanje, zato s tem v zvezi govorimo o šoli na temelju znanja. S podjetniškega vidika je pomembno predvsem komercialno znanje, torej znanje, katerega cilj ni ugotavljanje, kaj je prav, temveč

kaj deluje bolje v konkurenčnem smislu (Demarest 1997). Znanje oziroma njegov intelektualni kapital lahko razvrstimo po več kriterijih, pri čemer sta z vidika doseganja konkurenčne prednosti pomembni predvsem razvrstitvi znanja na človeški kapital (znanje, vezano za posameznike) in strukturni kapital (znanje, vezano na podjetje kot celoto) (Edvinsson 1997) oziroma na eksplicitno in tiho znanje (Nonaka, Takeuchi 1995). Glede ustvarjanja konkurenčnih prednosti sta za podjetje pomembna predvsem strukturni kapital (človeški kapital je namreč bolj tvegan, saj lahko posamezniki podjetje v vsakem trenutku zapustijo) in tiho znanje (eksplicitno znanje namreč konkurenti lažje kopirajo) (McAulay, Russell, Sims 1997; Leonard, Sensiper 1998). Vse večji pomen znanja v podjetjih seveda sproža potrebo po sistematičnem pristopu k menedžmentu znanja. Tega kaže razumeti kot tisti del celotnega procesa menedžmenta, ki skrbi za sistematično analizo, planiranje, pridobivanje, ustvarjanje, razvijanje, shranjevanje in izkoriščanje (uporabo) znanja v podjetju ter skuša čim večji del človeškega kapitala podjetja spremeniti v njegov strukturni kapital, s čimer želi omogočiti, da podjetje svoje cilje dosega na smotrn način (Čater 2001b). Glede na takšno razumevanje menedžmenta znanja je seveda jasno, da mora biti zanj odgovoren glavni menedžer v podjetju, ne pa funkcijski menedžerji, na primer vodja kadrovske službe (Pučko 1998).

2.2. Oblike konkurenčne prednosti podjetja

Ko govorimo o oblikah konkurenčne prednosti, se je treba vprašati, kaj je tisto, česar kupca pritegne, da kupuje "pri nas" in ne pri konkurentih. V grobem lahko na to vprašanje odgovorimo, da podjetje kupce pridobi in zadrži le, (1) če jim ponuja nekaj, kar pri konkurentih (še) ne morejo dobiti oziroma ne morejo dobiti na nek zaželen način, ali (2) če jim ponuja nekaj, kar pri konkurentih sicer lahko dobijo, a le po višji ceni. V prvem primeru govorimo o konkurenčni prednosti v obliki diferenciacije, v drugem pa o konkurenčni prednosti v obliki nižjih cen. Takšno gledanje na konkurenčno prednost podjetja je t. im. pozicijsko gledanje, saj gre za to, da si podjetje v očeh kupcev ustvari nek privlačnejši položaj na trgu v primerjavi s konkurenti, tj. da kupcem v primerjavi s konkurenco ponuja za določen znesek denarja neko večjo vrednost ali pa vsaj enako vrednost za manjši znesek denarja (Woodruff 1997).

V tem prispevku torej kot osnovni obliki konkurenčne prednosti podjetja obravnavamo nižje cene in diferenciacijo. Predvsem glede slednje pa se takoj postavi vprašanje, na kaj vse se lahko ta diferenciacija nanaša. Vsekakor lahko govorimo o več oblikah oziroma vrstah diferenciacije, in sicer o diferenciranem proizvodu in/ali storitvi, o celoviti ponudbi, o hitrem zadovoljevanju potreb kupcev, o prilagodljivem zadovoljevanju posebnih potreb kupcev ter o ugledu oziroma podobi podjetja (Kotha, Vadlamani 1995; Sashi, Stern 1995; Helms, Ettkin 2000).

Strokovna literatura na vprašanje, ali je možno hkrati zasledovati več poslovnih strategij, ne ponuja jasnega odgovora, dilema pa je precej manjša pri vprašanju, ali ima lahko neko podjetje hkrati konkurenčno prednost tako v obliki nižje cene kot tudi v obliki diferenciacije. Če podjetje izkoristi neke ugodne okoliščine, je seveda povsem možno, da kupcem ponuja diferenciran proizvod, ki je hkrati tudi cenejši od konkurenčnih (Flynn, Schroeder, Sakakibara 1995; Flynn, Flynn 1996). Logika tovrstne hkratne prednosti še posebej velja v primeru, ko sta tako cena (stroški) proizvoda oziroma storitve kot tudi diferenciacijski potencial podjetja odvisna primarno le od majhnega števila dejavnikov, ki jih lahko podjetje vse zagotavlja (izkorišča) hkrati. Če se na primer neko podjetje nahaja na neki izredno privlačni lokaciji blizu kupcev, je lahko rezultat te lokacije tako nižja cena (kot posledica nižjih stroškov transporta, oglaševanja itd.) kot tudi diferenciacija glede na konkurente (kot posledica večje prilagodljivosti, hitrejših dobav kupcem itd.). V zvezi s hkratnostjo doseganja konkurenčne prednosti v ceni (stroških) in diferenciaciji velja opozoriti še na nekatere avtorje (glej na primer Karnani 1984), ki trdijo, da je moč manjšo prednost v diferenciaciji nadomestiti z večjo prednostjo v ceni in obratno, skratka, da je med obema oblikama konkurenčne prednosti mogoče nadomeščanje (trade-off).

3. Metodološko ozadje empirične raziskave

3.1. Raziskovalne hipoteze

V prispevku se, kot že rečeno, osredodočamo na analizo medsebojne prepletenosti posameznih osnov in oblik konkurenčne prednosti podjetja. V ta namen razvijamo in testiramo naslednji raziskovalni hipotezi:

- H1: Podjetja gradijo svojo konkurenčno prednost hkrati na več različnih osnovah (tj. osnovah, ki jih obravnavajo različne šole), kar pomeni, da se šole glede osnov konkurenčne prednosti, ki jih obravnavajo, z vsebinskega vidika prepletajo.
- H2: Podjetja dosegajo konkurenčno prednost hkrati v več različnih oblikah, kar pomeni, da

so nekatere oblike konkurenčne prednosti z vsebinskega vidika medsebojno povezane oziroma da se prepletajo.

3.2. Vzorec podjetij, zbiranje podatkov in opis spremenljivk

Kot osnovno populacijo pri empiričnem preverjanju hipotez smo vzeli slovenska podjetja, pri čemer smo kot vzorčni okvir uporabili bazo podatkov o slovenskih podjetjih Gospodarskega vestnika za leto 2002 (Gospodarski vestnik 2002). Pri izbiri enot v vzorec smo se zatekli k stratificiranemu vzorčenju[1].

Kar zadeva način zbiranja podatkov, smo po začetnem testnem anketiranju v desetih podjetjih za sodelovanje skupaj zaprosili 508 podjetij. Odgovorjenih in vrnjenih je bilo 252 vprašalnikov, dodatno pa smo jih zaradi številnih manjkajočih odgovorov sami izločili še 27, kar pomeni, da je bilo ustreznih 225 vprašalnikov oziroma da je bila končna stopnja odgovora glede na celoten vzorec 44,3 %. Anketiranje je v celoti potekalo po pošti. Ob tem seveda ni nepomembno tudi, kdo so bili izpolnjevalci anket v podjetjih. V 36,4 % podjetij so bili to direktorji oziroma predsedniki uprav, v 27,6 % pomočniki direktorja oziroma člani uprav, v 25,3 % člani najvišjega menedžmenta, v 10,7 % pa razne strokovne službe, najpogosteje vodje službe za plan in analizo oziroma službe za kontroling. Če takšna struktura izpolnjevacev vprašalnikov res vsaj približno drži, jo lahko ocenimo kot zadovoljivo dobro, saj so v večini primerov na vprašanja odgovarjali ljudje, ki se morajo glede na svojo funkcijo na obravnavano tematiko zelo dobro spoznati.

Kar se tiče strukture podjetij v vzorcu, je le-to mogoče prikazati po več kriterijih, med katerimi izpostavljamo naslednje:

(1) Pravna oblika: delniška družba (45,3 %), družba z omejeno odgovornostjo (54,7 %);

(2) Sektor: proizvodni (33,3 %), storitveni (34,2 %), trgovinski (32,4 %);

(3) Velikost[2]: majhno (33,3 %), srednje (33,3 %), veliko (33,3 %);

(4) Leto ustanovitve: leta 1989 ali prej (50,7 %), leta 1990 ali kasneje (49,3 %);

(5) Vrsta večinskega lastništva: država (3,6 %), menedžerji (33,8 %), zaposleni (10,2 %), zunanji lastniki (52,4 %);

(6) Narodnost kapitala: domač (slovenski) (88,0 %), tuj (12,0 %);

(7) Večinski prodajni trg: slovenski trg (72,9 %), trgi bivše Jugoslavije (4,0 %), trgi držav EU (20,0 %), drugi trgi (3,1 %) (od tega 3,1 % evropski trgi brez EU in 0,0 % neevropski trgi).

Če predstavljeno strukturo podjetij v vzorcu primerjamo z dejansko[3] strukturo slovenskih podjetij po nekaterih ključnih kriterijih, za katere je moč dobiti uradne statistične podatke, moramo ugotoviti, da seveda vzorec ni najbolj reprezentativen, kar je večinoma posledica že pojasnjene in argumentirane uporabe stratificiranega vzorčenja.

Da bi testirali veljavnost postavljenih raziskovalnih hipotez, smo na osnovi študija strokovne literature najprej oblikovali seznam potencialnih osnov in oblik konkurenčne prednosti podjetja. Na temelju tega seznama smo nato opredelili posamezne spremenljivke, s katerimi smo operirali v raziskavi. Gre za skupaj 116 spremenljivk za osnove konkurenčne prednosti (prikazujemo jih na sliki P1 oziroma v tabeli P2 v prilogi) ter 15 spremenljivk za oblike konkurenčne prednosti (prikazujemo jih na sliki P3 oziroma v tabeli P4 v prilogi). Do ocen za vrednosti teh spremenljivk smo, kot že rečeno, prišli z anketiranjem

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[1] Izbira stratificiranega načina vzorčenja je bila pogojena s širšimi cilji raziskave, kot so cilji v okviru tega prispevka. V raziskavi smo namreč med drugim preverjali tudi, kakšne so razlike v osnovah in oblikah konkurenčne prednosti med posameznimi skupinami podjetij, na primer med proizvodnimi, storitvenimi in trgovskimi podjetji, med velikimi, srednjimi in majhnimi podjetji itd. Ker bi bilo z uporabo enostavnega slučajnega vzorčenja kot druge najboljše alternative v vzorcu praktično nemogoče zagotoviti zadosten delež velikih in srednjih podjetij (s tem pa tudi ne bi bilo mogoče testiranje razlik v osnovah in oblikah konkurenčne prednosti med temi skupinami podjetij), smo torej v raziskavi morali uporabiti stratificirano vzorčenje.

[2] Pri delitvi podjetij na majhna, srednja in velika smo se držali določil Zakona o gospodarskih družbah Republike Slovenije (Uradni list RS 2001).

[3] Dejanska struktura podjetij po pravni obliki pokaže, da je bilo konec leta 2001 v Sloveniji 83,2 % družb z omejeno odgovornostjo, 8,2 % družb z neomejeno odgovornostjo, 2,6 % komanditnih družb, 2,6 % delniških družb, predrugih 3,4 % podjetij pa je imelo različne druge pravne oblike. Struktura podjetij z vidika sektorske pripadnosti pokaže, da je bilo konec leta 2001 v Sloveniji 45,4 % storitvenih podjetij, 37,2 % trgovskih podjetij in 17,4 % proizvodnih podjetij. Kar se tiče strukture podjetij po velikosti, izraženi s številom zaposlenih, je bilo konec leta 2001 v Sloveniji kar 95,0 % majhnih podjetij, 4,1 % srednje velikih podjetij in le 0,9 % velikih podjetij. Končno naj omenimo še strukturo podjetij z vidika lastništva. Konec leta 2001 je bilo v Sloveniji 93,6 % podjetij v privatni lasti, 2,6 % podjetij v državni (in družbeni) lasti, 2,6 % podjetij v mešani zasebni in državni lasti, 1,2 % pa je bilo podjetij v zadružni lasti. Z narodnostnega vidika je bilo kar 90,6 % podjetij v domači (slovenski) lasti, 5,0 % podjetij v tuji lasti ter 4,4 % podjetij v mešani domači in tuji lasti (Statistični urad Republike Slovenije 2002).

menedžerjev. Večina vprašanj v vprašalniku je od anketirancev zahtevala, da svoj odgovor podajo v obliki stopnje (ne)strinjanja s ponujenimi trditvami oziroma da ocenijo skladnost zapisane trditve z dejanskim stanjem v podjetju. Pri teh vprašanjih smo anketirancem ponudili pet možnih odgovorov (gre za t. im. 5-stopenjsko Likertovo skalo), kjer ocena 1 pomeni popolno nestrinjanje, ocena 5 pa popolno strinjanje. Na ta način smo zbrali ocene za obe skupini spremenljivk (torej tako za osnove kot za oblike konkurenčne prednosti), potem pa smo te ocene uporabili kot vložek pri statistični analizi – tj. pri razvrščanju spremenljivk v skupine in pri faktorski analizi.

4. Temeljne ugotovitve empirične raziskave

4.1. Prepletanje osnov konkurenčne prednosti

S hipotezo 1 želimo preveriti, ali podjetja (SPE) gradijo svojo konkurenčno prednost na več različnih osnovah hkrati oziroma, povedano drugače, ali se šole o osnovah konkurenčne prednosti z vsebinskega vidika medsebojno prepletajo. Naš cilj je torej razvrstiti vse potencialne osnove konkurenčne prednosti v skupine, pri čemer so v neko skupino uvrščene tiste potencialne osnove, ki imajo medsebojno visoke korelacijske koeficiente in hkrati nizke korelacijske koeficiente s potencialnimi osnovami iz drugih skupin. Če bi ugotovili, da so v neki skupini osnove konkurenčne prednosti, ki jih obravnavajo različne šole, bi nam to omogočalo oblikovati sklep, da se šole o osnovah konkurenčne prednosti z vsebinskega vidika medsebojno prepletajo. Glede na to, kaj je naš cilj, pri preverjanju hipoteze 1 uporabljamo metodo razvrščanja spremenljivk v skupine, ki je namenjena združevanju spremenljivk v skupine oziroma klastre, za katere je značilno, (1) da je vsak klaster glede na določene lastnosti spremenljivk homogen ter (2) da se vsak klaster po proučevanih lastnostih spremenljivk razlikuje od drugih klastrov. V okviru več možnih različic metode razvrščanja spremenljivk smo glede na zastavljeni cilj izbrali eno od hierarhičnih[4] metod razvrščanja, in sicer t. im. povprečno metodo znotraj skupin[5], kot kriterij za razvrščanje oziroma mero podobnosti pa Pearsonov korelacijski koeficient.

Rezultate hierarhičnih metod razvrščanja v skupine je ponavadi najbolje razložiti grafično, s t. im. dendrogramom oziroma drevesom razvrščanja. Kot kažeta slika P1 in tabela P2 (slednja služi le kot razjasnitev oznak spremenljivk na sliki P1) v prilogi, je v zvezi z osnovami konkurenčne prednosti še najbolj smiselno govoriti o šestih klastrih spremenljivk oziroma o šestih skupinah osnov konkurenčne prednosti. V prvo se uvrščajo organizacijski viri, sposobnosti, vezane na poslovni proces, sposobnosti na strani izložkov in znanje, vezano na podjetje kot celoto (strukturni kapital), v drugo strategije, človeški viri, menedžerske sposobnosti in znanje, vezano na posameznike, v tretjo fizični in finančni viri, sposobnosti na strani vložkov in nekatere funkcijske sposobnosti, v četrto majhna pogajalska moč dobaviteljev in majhna pogajalska moč kupcev, v peto majhna nevarnost substitucije, majhna nevarnost vstopa novih konkurentov v panogo in nizka stopnja konkurence v panogi ter v šesto osnove vezane na narodnogospodarske značilnosti.

Na podlagi rezultatov metode razvrščanja spremenljivk se že kažejo neka pravila prepletanja osnov konkurenčne prednosti v slovenskih podjetjih. Kljub temu hipotezo 1 zaradi njenega velikega pomena dodatno preverjamo tudi s faktorsko analizo, katere glavni namen je odkrivanje manjšega števila latentnih spremenljivk (faktorjev), ki pojasnjujejo povezave v množici proučevanih spremenljivk in odkrivajo njihove skupne razsežnosti. V okviru več možnih metod ekstrakcije faktorjev hipotezo 1 preverjamo z

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[4] Za hierarhične metode razvrščanja v skupine je značilno postopno združevanje objektov. Na začetku vsak objekt tvori svoj klaster, nato pa procedura združi tista dva objekta, ki sta si najbolj podobna. Postopek združevanja objektov nato po tej logiki poteka tako dolgo, dokler vsi objekti niso združeni v en sam klaster. Prednosti hierarhičnih metod so predvsem, da dopuščajo zelo razumljivo grafično prikazovanje razvrščanja objektov, da ne zahtevajo vnaprejšnje določitve oziroma poznavanja števila klastrov ter seveda sama enostavnost, kar pomeni, da objekte ponavadi dovolj dobro uvrstijo v klastre, ne da bi bilo potrebno pregledati vse ali celo večino možnih razvrstitev, kar je ob velikem številu objektov pogosto celo za najzmogljivejše računalnike težak zalogaj. Na drugi strani sta glavni slabosti hierarhičnih metod predvsem dve, namreč, da objekt, ki je enkrat uvrščen v nek klaster, ne more več biti premeščen v drugega, in t. i. verižni efekt, ko so novi objekti uvrščeni v obstoječe klastre, namesto da bi bili združeni v novega (Sharma 1996).

[5] Metode hierarhičnega razvrščanja objektov se razlikujejo po tem, kako merijo razdaljo med dvema klastroma oziroma znotraj enega klastra. Povprečna metoda znotraj skupin se je v praksi izkazala kot ena izmed najboljših, njeno bistvo pa je, da združuje objekte tako, da je razdalja znotraj klastrov čim manjša (torej tako, da je klaster čim bolj kompakten). V primerjavi z Wardovo metodo, ki se tudi pogosto uporablja v praksi, je uporaba povprečne metode znotraj skupin bolj smiselna predvsem v primerih, ko kot mero podobnosti uporabljamo Pearsonov korelacijski koeficient. Tudi v primerjavi z nekaterimi drugimi metodami ima povprečna metoda nekatere prednosti, ki jih natančneje obravnava Sharma (1996).

Tabela 1: Deleži s skupnimi faktorji povezane variabilnosti osnov konkurenčne prednosti ter izbira števila skupnih faktorjev

Faktor	Začetna lastna vrednost			Metoda glavnih osi			Metoda glavnih osi z rotacijo		
	Skupaj	% variance	Kumul. %	Skupaj	% variance	Kumul. %	Skupaj	% variance	Kumul. %
1	40,257	34,704	34,704	40,050	34,526	34,526	23,246	20,040	20,040
2	16,786	14,471	49,175	16,565	14,280	48,806	19,807	17,075	37,115
3	12,255	10,565	59,740	12,037	10,377	59,183	14,859	12,810	49,925
4	10,131	8,734	68,473	9,914	8,546	67,729	12,634	10,892	60,816
5	4,532	3,907	72,380	4,303	3,710	71,439	9,582	8,261	69,077
6	2,360	2,035	74,415	2,140	1,845	73,284	4,560	3,931	73,008
7	1,559	1,344	75,759	1,313	1,132	74,416	1,218	1,050	74,058
8	1,489	1,284	77,042	1,229	1,060	75,475	1,186	1,022	75,081
9	1,247	1,075	78,117	1,057	0,911	76,387	1,140	0,983	76,064
10	1,130	0,974	79,092	0,944	0,814	77,201	1,125	0,970	77,034
11	1,026	0,885	79,976	0,773	0,666	77,867	0,966	0,833	77,867
12	0,948	0,818	80,794	-	-	-	-	-	-

najbolj razširjeno metodo, tj. metodo glavnih osi, katere prednost je predvsem ta, da za neko množico spremenljivk priznava tako obstoj njihovih skupnih faktorjev kot tudi obstoj za vsako posamezno spremenljivko specifičnega faktorja. Zaradi lažjega tolmačenja faktorjev uporabljamo tudi rotacijo faktorjev, in sicer metodo "varimax" pravokotne rotacije. V zvezi z izbiro števila faktorjev obstaja v strokovni literaturi več izkustvenih pravil. Eno izmed bolj razširjenih je t. im. Kaiserjevo pravilo, ki priporoča izbiro tolikšnega števila faktorjev, kolikor jih ima začetno lastno vrednost (drugi stolpec v tabeli 1) vsaj 1, torej v tem primeru 11 faktorjev. Seveda je treba pri tem ponovno poudariti, da gre pri Kaiserjevem pravilu le za neko izkustveno določeno vrednost, ki se je seveda ni treba za vsako ceno vedno držati. Izjemo od tega pravila smo naredili tudi v našem primeru in se odločili za obravnavo le šestih faktorjev. Razlog za to ni le v tem, da je šest tudi število klastrov, ki smo jih dobili z metodo klastriranja, pač pa lahko izbiro šestih faktorjev argumentiramo tudi na temelju njihove povezanosti z variabilnostjo obravnavanih spremenljivk. Kot kaže tabela 1 (stolpec 9), so namreč s šestim faktorjem po rotaciji povezani še 4 %, s sedmim pa le še 1 % te variabilnosti.

Sedaj, ko vemo, da je smiselno obravnavati šest faktorjev, nastopi vprašanje, kako te faktorje vsebinsko razložiti. Zaradi lažje razlage faktorjev smo, kot že rečeno, uporabili varimax metodo rotacije faktorjev, po kateri je faktorska struktura takšna, da ima vsaka spremenljivka visoko vrednost uteži na enem samem faktorju. To rotacijo smo izbrali zato, da bi lažje ugotovili, katere osnove konkurenčne prednosti imajo visoke uteži pri posameznih faktorjih. Rezultat te rotacije, tj. matriko rotiranih faktorjev, za posamezne sklope osnov konkurenčne prednosti prikazujemo v tabeli 2. Te osnove smo razvrstili glede na to, pri katerem faktorju imajo najvišjo utež, in ugotovili, da se faktorji skoraj v celoti ujemajo s klastri spremenljivk, ki smo jih dobili z metodo razvrščanja v skupine. To je razvidno iz primerjave spremenljivk z najvišjo utežjo pri posameznem faktorju v tabeli 2 in spremenljivk v posameznih klastrih v tabeli P2 v prilogi, pri čemer pa moramo opozoriti na to, da se spremenljivke, ki imajo najvišjo utež pri faktorju 4, večinoma prekrivajo s spremenljivkami iz klastra 5, spremenljivke, ki imajo najvišjo utež pri faktorju 5, pa se večinoma prekrivajo s spremenljivkami iz klastra 4 (gre torej le za zamenjavo vrstnega reda faktorjev oziroma klastrov, ki je posledica različnih postopkov znotraj statističnega paketa SPSS in na analizo vsebinsko ne vpliva).

Tako na temelju metode razvrščanja v skupine kot na temelju faktorske analize smo torej prišli do podobnih rezultatov. Govoriti je možno o šestih skupinah oziroma o šestih skupnih faktorjih vseh osnov konkurenčne prednosti, ki se med seboj razlikujejo predvsem po tem, od kod izvirajo, iz podjetja ali iz okolja. Če izvirajo iz podjetja, jih lahko razdelimo na oprijemljive in neoprijemljive oziroma na tiste, ki so vezane na podjetje, in tiste, ki so vezane na posameznike. Na drugi strani je osnove, ki izvirajo primarno iz okolja, smiselno razdeliti na tiste, ki so vezane na panogo, in tiste, ki so vezane na narodno gospodarstvo. Šest skupin

Tabela 2: Matrika rotiranih faktorjev (za temeljne osnove konkurenčne prednosti) na temelju ekstrakcije z metodo glavnih osi in rotacije z metodo varimax

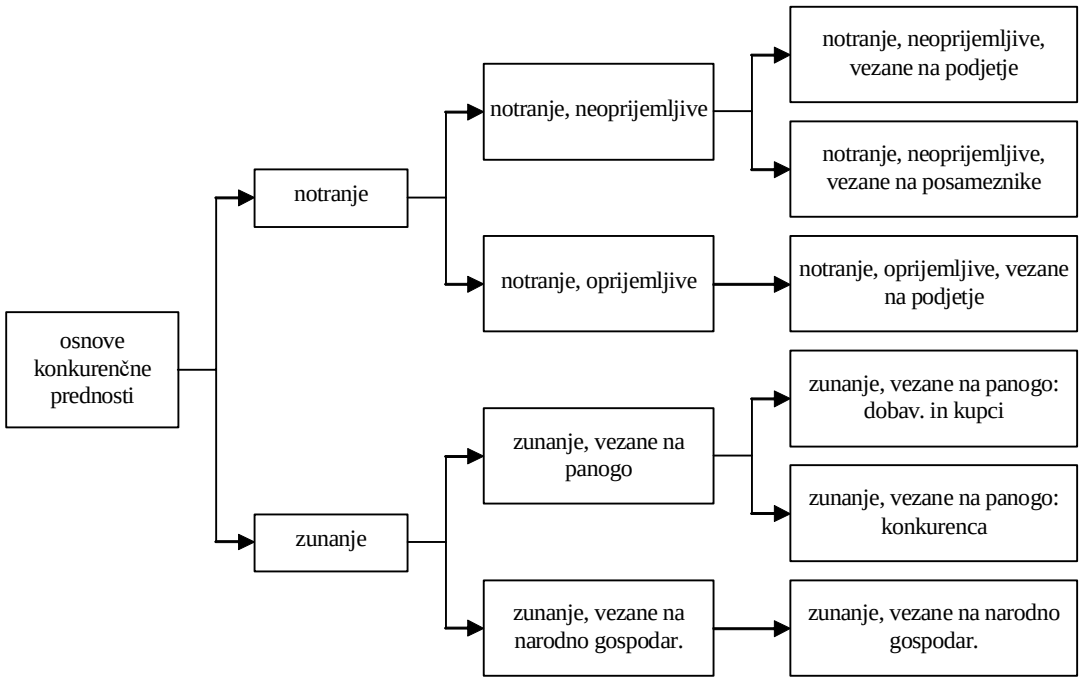
Temeljne osnove konkurenčne prednosti	Faktorji					
	1	2	3	4	5	6
Sposobnosti, vezane na poslovni proces	*0,729*	0,419	0,160	0,140	0,063	-0,053
Sposobnosti na strani izložkov	*0,732*	0,356	0,296	0,068	0,040	0,022
Proizvodne in raziskovalno-razvojne sposobnosti	*0,830*	0,079	0,009	0,256	0,135	-0,092
Trženjske sposobnosti	*0,825*	0,030	-0,013	0,164	0,149	0,031
Strukturni kapital	*0,643*	0,497	0,249	0,094	0,126	0,127
Tiho znanje	*0,681*	0,395	0,212	0,076	0,007	-0,043
Skupaj - organizacijski viri	*0,732*	0,408	0,333	0,077	0,087	0,062
Skupaj - neoprijemljivi viri	*0,689*	0,429	0,292	0,078	0,158	0,045
Izkoriščanje narodnogospodarskih značilnosti	0,134	*0,843*	0,033	0,043	-0,039	-0,148
Skupaj menedžerske sposobnosti	0,154	*0,875*	0,098	0,080	0,070	0,031
Človeški kapital	0,235	*0,835*	0,067	0,026	0,013	0,059
Eksplicitno znanje	0,179	*0,851*	0,051	0,105	0,064	0,061
Ustrezno pozicioniranje v panogi	0,249	*0,694*	0,133	0,149	-0,069	0,026
Aktivno zmanjševanje moči konkurenčnih sil	0,177	*0,672*	0,161	0,135	0,031	-0,056
Izkoriščanje sprememb v panogi	0,159	*0,675*	-0,022	0,298	-0,067	0,079
Skupaj - človeški viri	0,315	*0,817*	0,080	0,119	-0,020	-0,002
Skupaj - sposobnosti na strani vložkov	0,188	0,174	*0,829*	0,021	0,132	0,104
Kadrovske sposobnosti	0,161	0,180	*0,819*	0,058	0,220	0,051
Nabavne sposobnosti	0,102	0,282	*0,807*	-0,058	0,181	0,042
Finančne sposobnosti	0,131	0,114	*0,825*	0,013	0,186	0,014
Skupaj - fizični viri	0,050	-0,259	*0,850*	-0,019	0,063	0,082
Skupaj - finančni viri	0,038	0,214	*0,828*	0,007	0,117	0,062
Skupaj - oprijemljivi viri	0,179	0,254	*0,801*	0,054	0,159	0,025
Ugoden vpliv domače konkurence	0,049	0,212	0,120	*0,478*	0,292	0,157
Ni nevarnosti substitucije	0,035	0,072	0,187	*0,625*	0,460	0,156
Majhna nevarnost vstopa novincev	-0,034	0,174	0,138	*0,671*	0,386	0,142
Konkurenca v panogi ni preveč ostra	-0,044	0,120	0,084	*0,566*	0,329	0,159
Majhna pogajalska moč dobaviteljev	0,011	0,039	0,167	0,445	*0,533*	0,299
Majhna pogajalska moč kupcev	-0,030	0,227	0,230	0,380	*0,522*	0,189
Kakovost domačih proizvodnih dejavnikov	0,088	0,086	0,139	0,140	0,340	*0,795*
Kakovost domačega povpraševanja	0,045	0,159	0,216	0,120	0,250	*0,756*
Obseg domačega povpraševanja	0,044	0,092	0,207	0,179	0,297	*0,725*
Ugoden vpliv sorodnih in podpornih panog	0,069	0,011	0,113	0,209	0,404	*0,732*

osnov konkurenčne prednosti lahko torej opredelimo takole (glej sliko 1):

(1) Notranje neoprijemljive osnove, ki so v celoti *vezane na podjetje* in ne na posameznike (klaster 1 oziroma faktor 1) – sem sodijo organizacijski viri, sposobnosti, vezane na poslovni proces, sposobnosti na strani izložkov in znanje, vezano na podjetje kot celoto.

(2) Notranje, pretežno *neoprijemljive* osnove, ki so *vezane na posameznike* v podjetju (klaster 2 oziroma faktor 2) – sem sodijo strategije, človeški viri, menedžerske sposobnosti in znanje, vezano na posameznike.

Slika 1: Predlagana klasifikacija osnov konkurenčne prednosti glede na rezultate raziskave



(3) *Notranje*, pretežno *oprijemljive* osnove, ki so *vezane na podjetje* ali na posamezne dele (faze) njegovega poslovnega procesa (klaster 3 oziroma faktor 3) – sem sodijo fizični in finančni viri, sposobnosti na strani vložkov in nekatere funkcijske sposobnosti;

(4) *Zunanje* osnove, ki se *nanašajo na dobavitelje* in *kupce* (klaster 4 oziroma faktor 5) – sem sodijo majhna pogajalska moč dobaviteljev in majhna pogajalska moč kupcev.

(5) *Zunanje* osnove, ki se *nanašajo* predvsem *na konkurenco* (klaster 5 oziroma faktor 4) – sem sodijo majhna nevarnost substitucije, majhna nevarnost vstopa novih konkurentov v panogo in nizka stopnja konkurence v panogi.

(6) *Zunanje* osnove, ki se *nanašajo na narodnogospodarske značilnosti* in so pomembne le za konkurenčni boj slovenskih podjetij s tujimi konkurenti (klaster 6 oziroma faktor 6).

Če se sedaj vprašamo, kakšen zaključek je moč sprejeti v zvezi s hipotezo 1, je na temelju obeh analiz (tako metode razvrščanja spremenljivk v skupine kot tudi faktorske analize) več ali manj jasno, da lahko **hipotezo 1 delno potrdimo.** Le delna potrditev je tu verjetno na mestu zato, ker se očitno vsebinsko ne prepletajo vse šole, pač pa le nekatere med njimi. Močno prepletanje je mogoče opaziti med šolami na temelju virov, sposobnosti in znanja (do neke mere se z njimi glede na uvrstitev spremenljivk o strategijah podjetja v klaster oziroma faktor 2 očitno prepleta tudi šola na temelju novejše industrijske organizacije), za šolo na temelju klasične (in v večjem delu tudi novejše) industrijske organizacije pa tega ni moč trditi, saj se spremenljivke, ki tvorijo bistvo obeh šol (oziroma različic ene šole), držijo bolj zase (klastri oziroma faktorji 4, 5 in 6).

4.2. Prepletanje oblik konkurenčne prednosti

Na popolnoma enak način, kot smo preverjali hipotezo 1, preverjamo tudi hipotezo 2. Razlika je le v tem, da s hipotezo 2 ne ugotavljamo več prepletanja potencialnih osnov konkurenčne prednosti, pač pa z njo preverjamo medsebojno prepletanje posameznih oblik konkurenčne prednosti podjetja. Pri tem se zopet zatekamo k uporabi metode hierarhičnega razvrščanja spremenljivk v skupine oziroma natančneje k uporabi povprečne metode znotraj skupin ter k Pearsonovem korelacijskem koeficientu, ki nam ponovno služi kot kriterij za razvrščanje oziroma mera podobnosti. Kot kažeta slika P3 in tabela P4 (slednja služi le kot razjasnitev oznak spremenljivk v sliki P3) v prilogi, je v zvezi z oblikami konkurenčne prednosti še najbolj smiselno govoriti le o dveh klastrih spremenljivk oziroma o dveh skupinah oblik konkurenčne prednosti, in sicer o konkurenčni prednosti v obliki nižjih cen (klaster 1) ter o konkurenčni prednosti v obliki diferenciacije (klaster 2).

Hipotezo 2, podobno kot smo to storili tudi pri hipotezi 1, še dodatno preverjamo tudi s faktorsko

Tabela 3: Deleži s skupnimi faktorji povezane variabilnosti oblik konkurenčne prednosti ter izbira števila skupnih faktorjev

Faktor	Začetna lastna vrednost			Metoda glavnih osi		
	Skupaj	% variance	Kumul. %	Skupaj	% variance	Kumul. %
1	13,307	88,712	88,712	13,192	87,949	87,949
2	0,401	2,671	91,382	-	-	-

analizo, v okviru katere kot metodo ekstrakcije zopet uporabljamo metodo glavnih osi. Kot kaže tabela 3, je v tem primeru smiselno govoriti le o enem skupnem faktorju vseh oblik konkurenčne prednosti. Dvomov o pravilnosti takšne odločitve glede na Kaiserjevo pravilo v tem primeru ni, saj je začetna lastna vrednost pri prvem faktorju (13,307) precej večja, pri drugem pa precej manjša (0,401) od 1 (glej drugi stolpec v tabeli 3).

Matriko faktorjev (ker imamo opravka z le enim skupnim faktorjem, rotacija faktorjev ni možna, zato tudi ne moremo govoriti o matriki rotiranih faktorjev) za najpomembnejše oblike konkurenčne prednosti prikazujemo v tabeli 4. Matrika faktorjev kaže na izredno visoke uteži skupnega faktorja pri vseh oblikah diferenciacijske prednosti in nekoliko manjše pri konkurenčni prednosti v obliki nižjih cen. To vsebinsko pomeni, da imajo vse oblike konkurenčne prednosti sicer res le en skupen faktor - očitno gre za nek enoten faktor boljšega položaja na trgu oziroma v očeh kupcev v primerjavi s konkurenti - ki pa je vsebinsko bolj povezan z oblikami diferenciacijske prednosti kot pa s konkurenčno prednostjo v obliki nižjih cen.

Kakšen sklep je torej smiselno sprejeti v zvezi s hipotezo 2? Glede na rezultate metode razvrščanja v skupine pravzaprav ni mogoče prav dobro reči, koliko se posamezne oblike konkurenčne prednosti dejansko prepletajo. V najboljšem primeru sta opazna le dva klastra spremenljivk, tj. cenovna in diferenciacijska konkurenčna prednost, pa še ta sklep je zaradi relativno kratke razdalje med obema klastroma precej tvegan. Iz zagate nam v tem primeru pomaga dodatno preverjanje hipoteze s faktorsko analizo, ki kaže, da imajo vse oblike konkurenčne prednosti le en skupen faktor, tj. nek boljši položaj na trgu oziroma v očeh kupcev v primerjavi s konkurenti. Očitno je torej, da se posamezne oblike konkurenčne prednosti medsebojno precej prepletajo, kar pomeni, da je možno **hipotezo 2 potrditi**.

5. Diskusija in sklep

Kar zadeva testiranje raziskovalnih hipotez in drugih pomembnih spoznanj, smo prišli v prispevku predvsem do naslednjih sklepov:

- Podjetja gradijo svojo konkurenčno prednost hkrati na več različnih osnovah, tj. osnovah, ki jih obravnavajo različne šole, kar pomeni, da se šole o osnovah konkurenčne prednosti z vsebinskega vidika vsaj delno prepletajo. Tu imamo v mislih seveda predvsem šole na temelju virov, sposobnosti in znanja, precej manj pa šolo na temelju industrijske organizacije, še posebej njeno klasično različico. Hipotezo 1 je torej moč delno potrditi.
- Govoriti je možno o šestih skupinah osnov konkurenčne prednosti, ki se med seboj razlikujejo predvsem po tem, od kod izvirajo, iz podjetja ali iz okolja. Če izvirajo iz podjetja, jih lahko razdelimo na oprijemljive in neoprijemljive oziroma na tiste, ki so vezane na podjetje, in tiste, ki so vezane na posameznike. Na drugi strani je osnove, ki

Tabela 4: Matrika faktorjev (za glavne oblike konkurenčne prednosti) na temelju ekstrakcije z metodo glavnih osi

Oblike konkurenčne prednosti	Faktor 1
Nižje cene glede na konkurente	0,791
Diferenciacija glede na konkurente	0,984
Odličnost proizvoda/storitve	0,985
Celovitost ponudbe	0,927
Hitrost zadovoljevanja potreb kupcev	0,932
Prilagodljivost pri zadovoljevanju potreb kupcev	0,946
Pozitivna podoba/imidž podjetja/SPE	0,934

izvirajo primarno iz okolja, smiselno razdeliti na tiste, ki so vezane na panogo, in tiste, ki so vezane na narodno gospodarstvo.

- Vse oblike konkurenčne prednosti imajo v grobem le en skupen faktor, tj. nek boljši položaj na trgu oziroma v očeh kupcev v primerjavi s konkurenti. Z drugimi besedami to pomeni, da podjetja dosegajo konkurenčno prednost hkrati v več različnih oblikah oziroma da se oblike konkurenčne prednosti z vsebinskega vidika medsebojno precej prepletajo, kar pomeni, da lahko hipotezo 2 potrdimo.

Po vseh predstavljenih empiričnih ugotovitvah se je seveda smiselno vprašati, kakšne so teoretične implikacije teh ugotovitev. Vsekakor drži, da posamezne šole, tako kot so opredeljene, pač predstavljajo neko boljšo ali slabšo razlago nastanka konkurenčne prednosti podjetja. Za vse šole je namreč moč najti vsaj minimalno empirično podporo, še najmanj za šolo na temelju klasične industrijske organizacije (glej na primer Čater 2003). Za vse posamezne šole, dokler se jih obravnava ločeno, jr torej pogojno še mogoče reči, da so kolikor toliko smiselno opredeljene, občutek smiselnosti pa je mnogo manjši, ko je treba opredeljenost vseh šol analizirati hkrati. Z metodama razvrščanja v skupine in faktorske analize smo namreč ugotovili, da gre za tako močno prepletanje virov, sposobnosti in znanja, da je verjetno smiselno te šole tako ali drugače obravnavati skupaj "pod eno streho". Očitno torej značilnost, ki je skupna vsem trem šolam, tj. da gre pri vseh za pristop "od notri navzven", pretehta značilnosti, zaradi katerih so šole med seboj v dosedanji literaturi več ali manj ločene, tj. da obravnavajo osnove konkurenčne prednosti različno široko (šola ne temelju virov najširše, šola na temelju znanja pa najožje) ter na različnih organizacijskih ravneh (šola na temelju virov bolj na ravni strateške poslovne enote, šoli na temelju sposobnosti in znanja pa bolj na ravni celotnega podjetja). Do podobnih zaključkov o potrebi po drugačnih opredelitvah omenjenih treh šol, predvsem v smislu njihovega tesnejšega povezovanja ali celo združevanja, so prišli tudi nekateri drugi avtorji (glej na primer Kamoche 1993; Mahoney 1995; Kamoche 1996; Makadok 2001). Dodaten argument za takšen sklep prav gotovo leži tudi v dejstvu, da je včasih meja med viri, sposobnostmi in znanjem tako tanka, da se je težko odločiti, v okviru katere od teh treh šol je neko potencialno osnovo najbolj smiselno obravnavati. K temu še dodatno prispeva neenotna strokovna literatura, ki isto osnovo (na primer inovativnost zaposlenih) ponekod obravnava kot vir, ponekod kot sposobnost, ponekod pa kot vrsto znanja.

V primeru redefiniranja oziroma povezovanja šol na temelju virov, sposobnosti in znanja, ki je torej vsaj smiselno, če že ne nujno, je treba odgovoriti predvsem na tri vprašanja:

(1) Kako poimenovati takšno skupno teorijo (šolo)? Glede tega vprašanja, ki je sicer vsebinsko manj pomembno, je prav gotovo možnih več odgovorov, med katerimi se kot najsprejemljivejša zdita zlasti prva dva:
   (a) Šola na temelju notranjih (internih) osnov: To ime je primerno predvsem zato, ker pojasnjuje sam izvor osnov, čeprav se po drugi strani z njim izgubi del informacij o tem, za katere osnove v bistvu gre.
   (b) Šola na temelju virov, sposobnosti in znanja: S tem imenom se poudarja predvsem, da gre za neke vrste sintezo prej treh ločenih šol. Poleg tega si bralec lažje predstavlja, za katere osnove pravzaprav gre, je pa res, da se lahko komu takšno poimenovanje zdi po nepotrebnem predolgo.
   (c) Šola na temelju virov: Tako ime na eni strani prispeva k enostavnejši terminologiji, čeprav so po drugi strani osnove konkurenčne prednosti, vsaj glede na številne empirične raziskave, z njim opredeljene preširoko. V primeru uporabe tega imena bi bilo torej potrebno bralcu dodatno pojasniti še, za kakšne vrste virov primarno gre.

(2) Na katerih ravneh primarno obravnavati osnove konkurenčne prednosti? V primeru sinteze šol na temelju virov, sposobnosti in znanja, se seveda pojavi tudi dilema, ali osnove konkurenčne prednosti primarno obravnavati na ravni strateške poslovne enote ali na ravni podjetja. Ne glede na različne poglede na to vprašanje v strokovni literaturi najbrž ni velikega dvoma, da lahko konkurenčna prednost podjetja (strateške poslovne enote) izvira tako na temelju nekega vira, s katerim razpolaga ena sama enota, kot tudi na temelju neke skupne (osrednje) sposobnosti na ravni celotnega podjetja, zaradi katere pride do nekih sinergičnih učinkov, ki se odražajo v večji konkurenčnosti in uspešnosti vseh strateških poslovnih enot oziroma podjetja kot celote. Ravno zaradi tega je nujno v primeru povezave oziroma združitve treh "notranjih" šol priznati, da osnove konkurenčne prednosti pač izvirajo z obeh ravni, tako ravni strateške poslovne enote kot ravni celotnega podjetja. Z drugimi besedami seveda to pomeni, da so zdaj s to novo šolo na temelju virov, sposobnosti in

znanja tesno povezane tako celovite kot tudi poslovne strategije.

(3) Kako klasificirati notranje osnove v okviru skupne šole? V primeru sinteze prej treh ločenih šol delitev notranjih osnov konkurenčne prednosti na vire, sposobnosti in znanje ter znotraj teh treh kategorij še na posamezne skupine, kot smo jih obravnavali v teoretičnem delu prispevka, skoraj zagotovo ne bi bila primerna. Bolj kot to, ali je neka osnova konkurenčne prednosti vir, sposobnost ali znanje, je namreč (sodeč po empiričnih rezultatih) pomembno to, kakšno je vsebinsko ozadje te osnove. Primernejša klasifikacija notranjih osnov konkurenčne prednosti se zato zdi tista, ki te osnove deli na oprijemljive in neoprijemljive, slednje pa še naprej na tiste, ki so vezane na podjetje, in tiste, ki so vezane na posameznike.

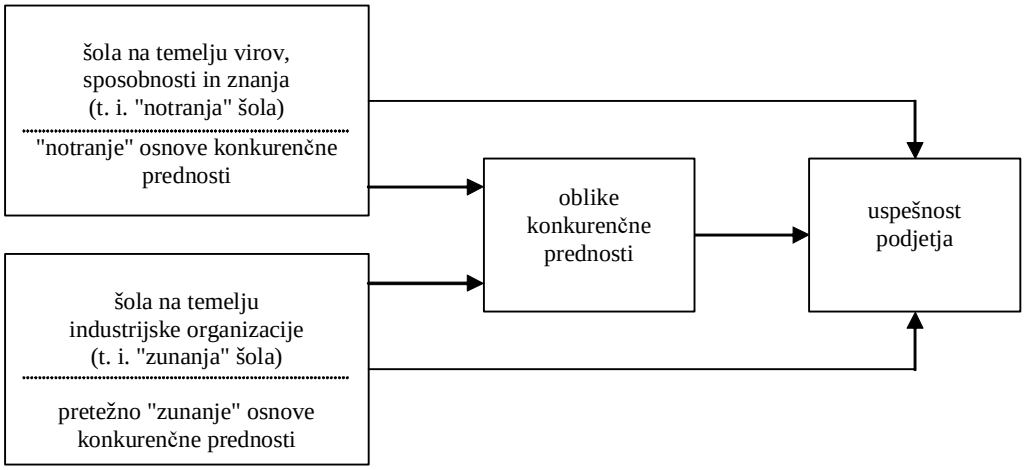
Če smo do sedaj razglabljali predvsem o dorečenosti treh šol, ki obravnavajo notranje osnove konkurenčne prednosti, in ugotovili, da so v bistvu močno prepletene, zaradi česar bi jih verjetno kazalo obravnavati kar kot eno samo "teorijo", se sedaj postavlja vprašanje povezave oziroma odnosa med to združeno notranjo šolo in šolo na temelju industrijske organizacije. Na temelju empiričnih ugotovitev lahko zaključimo, da sta si šoli vsekakor toliko narazen, da je smiselno govoriti o dveh različnih šolah. Glavna razlika med njima je v tem, da šola na temelju virov, sposobnosti in znanja poudarja zlasti pomen notranjih (iz podjetja izhajajočih) osnov konkurenčne prednosti, šola na temelju industrijske organizacije pa nekoliko bolj poudarja pomen zunanjih (iz okolja izhajajočih) osnov konkurenčne prednosti (razen seveda v tistem delu, ko obravnava strateške odgovore podjetij na vplive iz okolja). Kot smo že ugotovili, gre torej za dva povsem različna pristopa, in sicer pri šoli na temelju virov, sposobnosti in znanja za pristop "od notri navzven", pri šoli na temelju industrijske organizacije pa za pristop "od zunaj navznoter".

Kljub temu na videz popolnoma tekmovalnemu odnosu med obema pristopoma oziroma šolama pa je potrebno poudariti, da je še bolj kot tekmovalnost pomembna komplementarnost med njima. S tem mislimo predvsem na to, da je za pridobitev celovitega vpogleda v "skrivnost" nastanka konkurenčne prednosti podjetja nujno osnove konkurenčne prednosti, tako notranje kot zunanje, raziskovati skupaj. Vsakršno izolirano obravnavanje osnov v skladu s šolo na temelju virov, sposobnosti in znanja na eni in šolo na temelju industrijske organizacije na drugi strani namreč zelo verjetno zamegli sliko o dejanskem nastanku konkurenčne prednosti. Tako rezultati v okviru tega prispevka kot tudi rezultati večine predhodnih empiričnih raziskav (glej na primer Hansen, Wernerfelt 1989; Rumelt 1991; Roquebert, Phillips, Westfall 1996; McGahan, Porter 1997; Mauri, Michaels 1998) namreč kažejo, da so sicer res precej pomembnejše notranje osnove, da pa slika le ni popolna, če se v celoti pozabi na zunanje osnove. V zvezi s tem so nadvse zanimivi pogledi nekaterih avtorjev, ki se zavzemajo za bolj "prijateljski" odnos med zagovorniki obeh šol. Verdin in Williamson (1993) na primer pišeta, da je dialog med zagovorniki šole na temelju virov oziroma sposobnosti in šole na temelju industrijske organizacije podoben dialogu gluhih, pri čemer takšen odnos seveda obsojata in predlagata povezovanje obeh teorij. Foss (1996) na drugi strani govori o t. im. uravnoteženem pluralizmu kot novem pristopu k strateškem menedžmentu, ki vsebuje nek zmeren obseg "uvoza" ekonomije v poslovne vede. Pri tem avtor misli na to, da se obe šoli ne smeta zapirati, ampak morata ostati odprti tudi za drugačne poglede. Tako ali drugače se s komplementarnostjo in nujnostjo povezave raziskav v okviru obeh šol strinjajo tudi številni drugi avtorji (glej na primer Mauri, Michaels 1998; Spanos, Lioukas 2001).

Če naši empirični rezultati omogočajo sprejem nekih sklepov in pogojno celo oblikovanje predlogov za redefiniranje šol o osnovah konkurenčne prednosti, pa so na drugi strani sklepi glede oblik konkurenčne prednosti ravno dovolj nejasni, da z njimi ne moremo z dovolj visoko gotovostjo ne potrditi ne zavrniti teorije o različnih oblikah konkurenčne prednosti. V najboljšem primeru lahko rečemo le, da se sicer kažejo neki obrisi obstoja takšnih oblik konkurenčnih prednosti, kot jih na primer obravnava Porter (1985), da pa tega s še sprejemljivo stopnjo tveganja ne moremo potrditi. Lahko pa, kot kažejo rezultati empirične raziskave, podpremo sklepe tistih avtorjev (glej na primer Karnani 1984; Flynn, Schroeder, Sakakibara 1995; Flynn, Flynn 1996), ki trdijo, da je možno, da imajo podjetja konkurenčno prednost hkrati v obliki nižjih cen oziroma stroškov in v obliki diferenciacije, ne pa le v eni od the dveh oblik.

Sklep, ki se nam na podlagi vsega povedanega ponuja, je, da je proces konkuriranja v podjetjih (torej proces, ki se začne pri osnovah konkurenčne prednosti, se nadaljuje v njihovih pojavnih oblikah in se konča v večji ali manjši uspešnosti podjetja) zaradi številnih prepletanj posameznih osnov in oblik konkurenčne prednosti pogosto izredno kompleksen. Ravno zaradi te kompleksnosti skrivnosti nastanka konkurenčne prednosti podjetja ni mogoče pojasniti z le eno od šol, pač pa se je treba nujno zateči k vsaj dvema različnima pristopoma, saj lahko vsak od njiju prispeva svoj (včasih večji, včasih manjši) delež k razjasnitvi celotnega problema. Glede na vse povedano, temeljno ugotovitev tega prispevka morda še najbolje, čeprav na zelo poenostavljen način, predstavlja slika 2.

Slika 2: Razvijanje konkurenčne prednosti na temelju komplementarnosti notranjih in zunanjih osnov



Naših ugotovitev na žalost ne moremo primerjati s sklepi podobnih empiričnih raziskav o osnovah in oblikah konkurenčne prednosti iz preteklosti, ker podobnih raziskav tako v tranzicijskih gospodarstvih kot tudi v razvitih tržnih gospodarstvih v strokovni literaturi, ki nam je bila na voljo, preprosto ni. S tega vidika lahko torej ta prispevek neskromno štejemo kot neke vrste uvod v nadaljnjo razpravo o prepletanju osnov in oblik konkurenčne prednosti podjetja.

Naj se na koncu na kratko dotaknemo še ključnih omejitev v zvezi s predstavljenimi spoznanji. Ena največjih, če ne celo ključna omejitev, je prav gotovo ta, da so prave osnove (in tudi oblike) konkurenčne prednosti pogosto dobro skrite, zato jih seveda ni mogoče meriti na popolnoma objektiven način, pač pa se je treba zateči k subjektivnim in zaradi tega manj natančnim ocenam menedžerjev. Te težave bi se dalo delno odpraviti z osebnim anketiranjem oziroma z nekoliko daljšim opazovanjem in spoznavanjem podjetja. Omejitev te raziskave je vsekakor tudi uporaba stratificiranega vzorčenja po velikosti podjetij, katerega izbiro smo že argumentirali. Zaradi tega seveda vzorec ni povsem reprezentativen glede na dejansko strukturo slovenskih podjetij po velikosti, kar s sabo prinaša nekatere pomanjkljivosti, kot je na primer večje tveganje pri posploševanju rezultatov za vsa slovenska podjetja. Predlog za nadaljnje raziskave je tu mogoče predvsem ta, da bi se verjetno kazalo lotiti podobnega projekta na bistveno bolj homogenem vzorcu podjetij, na primer samo za velika podjetja, samo za podjetja iz določenih panog itd.

Literatura

Barney Jay B., 1997. Gaining and Sustaining Competitive Advantage. Reading: Addison-Wesley.

Bartmess Andrew, Cerny Keith, 1993. Building Competitive Advantage through a Global Network of Capabilities. California Menedžment Review, št. 2, str. 78-103.

Čater Tomaž, 2001a. Hipoteze o osnovah konkurenčne prednosti podjetja. Organizacija, št. 2, str. 64-74.

Čater Tomaž, 2001b. Menedžment znanja kot pripomoček za razvijanje konkurenčne prednosti podjetja. IB revija, št. 1, str. 76-85.

Čater Tomaž, 2003. Osnove konkurenčnih prednosti slovenskih podjetij. Doktorska disertacija. Ljubljana: Ekonomska fakuleta.

Demarest Marc, 1997. Understanding Knowledge Management. Long Range Planning, št. 3, str. 374-384.

Edvinsson Leif, 1997. Developing Intellectual Capital at Scandia. Long Range Planning, št. 3, str. 366-373.

Flynn Barbara B., Schroeder Roger G., Sakakibara Sadao, 1995. The Impact of Quality Management Practices on Performance and Competitive Advantage. Decision Sciences, št. 5, str. 659-691.

Flynn James E., Flynn Barbara B., 1996. Achieving Simultaneous Cost and Differentiation Competitive Advantages through Continuous Improvement: World Class Manufacturing as a Competitive Strategy. Journal of Managerial Issues, št. 3, str. 360-379.

Foss Nicolai J., 1996. Research in Strategy, Economics, and Michael Porter. Journal of Management Studies, št. 1, str. 1-24.

Gadhoum Yoser, 1998. Corporate Governance and Top Managers: Potential Sources of Sustainable Competitive Advantage. Human Systems Management, št. 3, str. 205-222.

Gospodarski vestnik, 2002. FIPO baza 2002. URL: http://www.gvin.com/fipo2002.

Hansen Gary S., Wernerfelt Birger, 1989. Determinants of Firm Performance: The Relative

Importance of Economic and Organizational Factors. Strategic Management Journal, št. 5, str. 399-411.

Helms Marilyn M., Ettkin Lawrence P., 2000. Time-Based Competitiveness: A Strategic Perspective. Competitiveness Review, št. 2, str. 1-14.

Kamoche Ken, 1993. Strategic Human Resource Management within a Resource-Capability View of the Firm. Working Paper. Birmingham: Birmingham Business School.

Kamoche Ken, 1996. Strategic Human Resource Management within a Resource-Capability View of the Firm. Journal of Management Studies, št. 2, str. 213-233.

Karnani Aneel, 1984. Generic Competitive Strategies: An Analytical Approach. Strategic Management Journal, št. 4, str. 367-380.

King Adelaide W., Fowler Sally W., Zeithaml Carl P., 2001. Managing Organizational Competencies for Competitive Advantage: The Middle-Management Edge. Academy of Management Executive, št. 2, str. 95-106.

Kotha Suresh, Vadlamani Bhatt L., 1995. Assessing Generic Strategies: An Empirical Investigation of Two Competing Typologies in Discrete Manufacturing Industries. Strategic Management Journal, št. 1, str. 75-83.

Lado Augustine A., Boyd Nancy G., Wright Peter, 1992. A Competency-Based Model of Sustainable Competitive Advantage: Toward a Conceptual Integration. Journal of Management, št. 1, str. 77-91.

Leonard Dorothy, Sensiper Sylvia, 1998. The Role of Tacit Knowledge in Group Innovation. California Management Review, št. 3, str. 112-132.

Mahoney Joseph T., 1995. The Management of Resources and the Resource of Mnagement. Journal of Business Research, št. 2, str. 91-101.

Makadok Richard, 2001. Toward a Synthesis of the Resource-Based and Dynamic-Capability Views of Rent Creation. Strategic Mnagement Journal, št. 5, str. 387-401.

Mauri Alfredo J., Michaels Max P., 1998. Firm and Industry Effects within Strategic Management: An Empirical Examination. Strategic Management Journal, št. 3. str. 211-219.

McAulay Laurie, Russell Graeme, Sims Julian, 1997. Tacit Knowledge for Competitive Advantage. Management Accounting, št. 11, str. 36-37.

McGahan Anita M., Porter Michael E., 1997. How Much Does Industry Matter, Really? Strategic Management Journal, Summer Special Issue, str. 15-30.

Michalisin Michael D., Smith Robert D., Kline Douglas M., 1997. In Search of Strategic Assets. International Journal of Organizational Analysis, št. 4, str. 360-387.

Nonaka Ikujiro, Takeuchi Hirotaka, 1995. The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation. Oxford: Oxford University Press.

Porter Michael E., 1979. How Competitive Forces Shape Strategy. Harvard Business Review, št. 2, str. 137-145.

Porter Michael E., 1981. The Contributions of Industrial Organization to Strategic Management. Academy of Management Review, št. 4, str. 609-620.

Porter Michael E., 1985. Competitive Advantage: Creating and Sustaining Superior Performance. New York: Free Press.

Porter Michael E., 1990. The Competitive Advantage of Nations. New York: Free Press.

Prahalad C. K., Hamel Gary, 1990. The Core Competence of the Corporation. Harvard Business Review, št. 5-6, str. 79-93.

Pučko Danijel, 1998. Poslovodenje znanja in vplivi na strateško poslovodenje ter analizo. Organizacija, št. 10, str. 557-565.

Roquebert Jaime A., Phillips Robert L., Westfall Peter A., 1996. Markets vs. Management: What 'Drives' Profitability? Strategic Management Journal, št. 8, str. 653-664.

Rumelt Richard P., 1991. How Much Does Industry Matter? Strategic Management Journal, št. 3, str. 167-185.

Sashi C. M., Stern Louis W., 1995. Product Differentiation and Market Performance in Producer Goods Industries. Journal of Business Research, št. 2, str. 115-127.

Sharma Subhash, 1996. Applied Multivariate Techniques. New York: John Wiley & Sons.

Spanos Yiannis E., Lioukas Spyros, 2001. An Examination into the Causal Logic of Rent Generation: Contrasting Porter's Competitive Strategy Framework and the Resource-Based Perspective. Strategic Manegement Journal, št. 10, str. 907-934.

Stalk George, Evans Philip, Shulman Lawrence E., 1992. Competing on Capabilities: The New Rules of Corporate Strategy. Harvard Business Review, št. 4, str. 57-69.

Statistični urad Republike Slovenije, 2002. Statistični letopis RS 2002. Ljubljana: Statistični urad Republike Slovenije.

Ulrich Dave, 1987. Organizational Capability as a Competitive Advantage: Human Resource Professionals as Strategic Partners. Human Resource Planning, št. 4, str. 169-184.

Uradni list RS, 2001. Zakon o gospodarskih družbah (ZGD-F). Uradni list RS, št. 45/01, str. 5030-5068.

Vasconcellos Jorge A., Hambrick Donald C., 1989. Key Success Factors: Test of a General Framework in the Mature Industrial-Product Sector. Strategic Manegement Journal, št. 4, str. 367-382.

Verdin Paul J., Williamson Peter J., 1993. Core Competence, Competitive Advantage and Market Analysis: Forging the Links. Working Paper. Fontainebleau: INSEAD.

Whitehill Martin, 1997. Knowledge-Based Strategy to Deliver Sustained Competitive Advantage. Long Range Planning, št. 4, str. 621-627.

Woodruff Robert B., 1997. Customer Value: The Next Source for Competitive Advantage. Journal of the Academy of Marketing Science, št. 2, str. 139-153.

Zupan Nada, 1996. Human Resources as a Source of Competitive Advantage in Transitional Companies: The Case of Slovenia. Slovenska ekonomska revija, št. 5-6, str. 510-524.

Ključne besede: *podjetje, konkurenčna prednost, industrijska organizacija, viri, sposobnosti, znanje, nižje cene, diferenciacija*

Key words: *firm, competitive advantage, industrial organisation, resources, capabilities, knowledge, lower prices, differentiation*

Slika P1: Dendrogram razvrščanja potencialnih osnov konkurenčne prednosti v skupine na temelju povprečne metode znotraj skupin (mera: Pearsonov korelacijski koeficient)

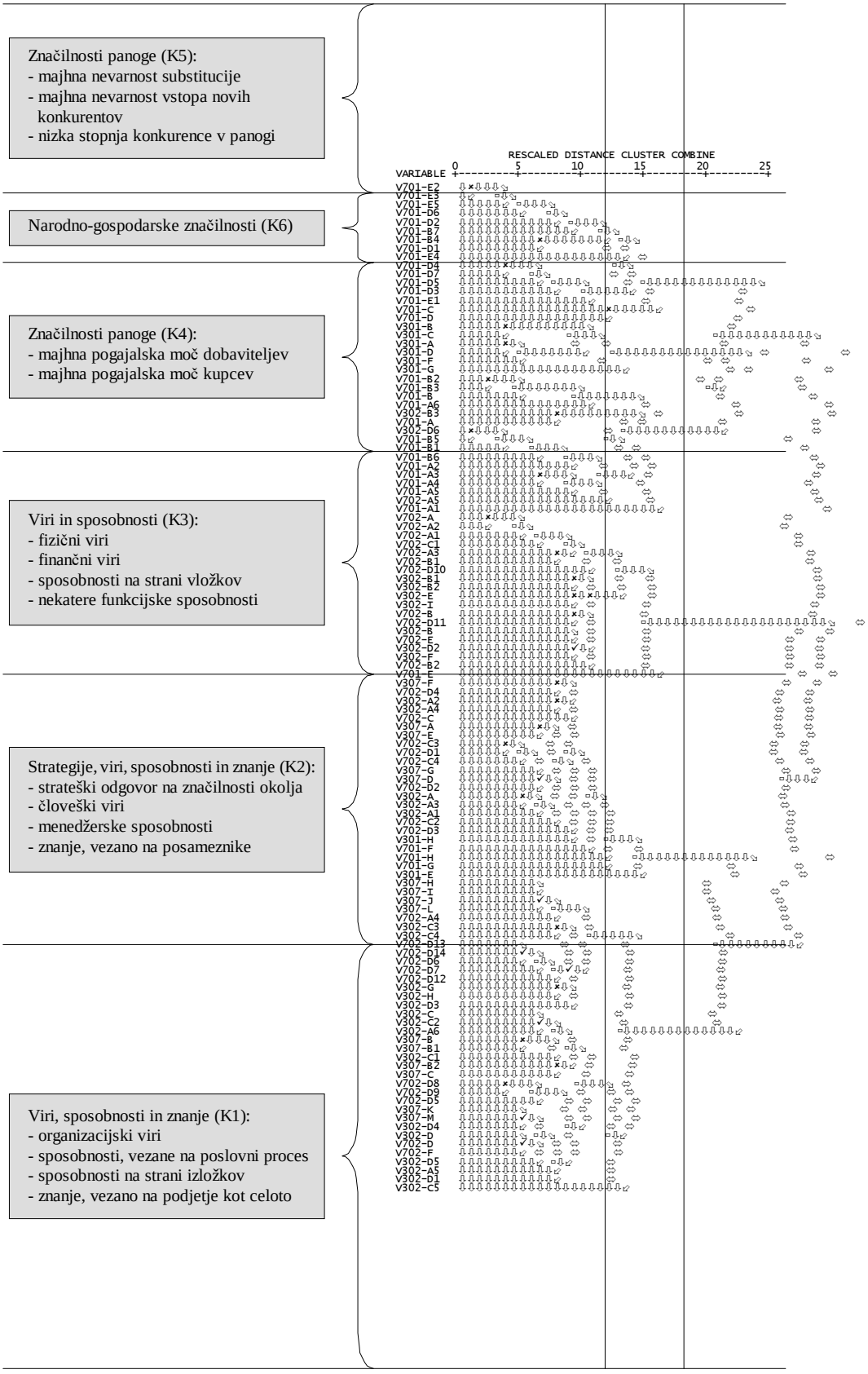


Tabela P2: Razvrstitev potencialnih osnov konkurenčne prednosti v šest klastrov na temelju povprečne metode znotraj skupin (mera: Pearsonov korelacijski koeficient)

Klaster 1	V307-H = sistemsko znanje; V307-I = motivirana kreativnost; V307-J = znanje za menedžment znanja; V307-L = znanje na temelju strateških povezav; V702-A4 = informacijska tehnologija; V302-C3 = sposobnost ustvarjanja ugodne organizacijske kulture; V302-C4 = sposobnost maksimalnega izkoriščanja proizvodnih kapacitet; V702-D13 = intelektualna lastnina; V702-D14 = informacijski sistem in baze podatkov; V702-D6 = povezave znotraj podjetja/SPE; V702-D7 = povezave podjetja/SPE z okoljem; V702-D12 = znamke; V302-G = proizvodne in raziskovalno-razvojne sposobnosti; V302-H = trženjske sposobnosti; V302-D3 = ugodni ekološki vplivi na okolje; V302-C = sposobnosti, vezane na poslovni proces; V302-C2 = sposobnost organizacijskega učenja; V302-A6 = sposobnost hitrega odzivanja na spremembe v okolju; V307-B = strukturni kapital; V307-B1 = organizacijski kapital; V302-C1 = inovacijska sposobnost v poslovnem procesu; V307-B2 = kapital v odjemalcih; V307-C = tiho znanje; V702-D8 = sloves podjetja/SPE; V702-D9 = razvito zaupanje pri partnerjih in kupcih; V702-D5 = organizacijska kultura; V307-K = tehnološko znanje; V307-M = izkušnje; V302-D4 = sposobnost zagotovitve in ohranjanja lojalnosti kupcev; V302-D = sposobnosti na strani izložkov; V702-D = organizacijski viri; V702-F = neoprijemljivi viri; V302-D5 = sposobnost prilagajanja zahtevam kupcev; V302-A5 = sposobnost ohranjanja dobrih odnosov z okoljem; V302-D1 = sposobnost razvijanja novih in izboljševanja starih proizvodov/storitev; V302-C5 = sposobnost obvladovanja izdelave osrednjih proizvodov.
Klaster 2	V307-F = konceptualno znanje; V702-D4 = organizacijska struktura; V302-A2 = sposobnost organiziranja; V302-A4 = sposobnost kontroliranja; V702-C = človeški viri; V307-A = človeški kapital; V307-E = znanje skupin/teamov; V702-C3 = kakovost strokovnega kadra; V702-D1 = sistem planiranja; V702-C4 = sposobnost vodstvenega kadra; V307-G = aplikativno znanje; V307-D = eksplicitno znanje; V702-D2 = sistem vodenja; V302-A = menedžerske sposobnosti; V302-A3 = sposobnost vodenja; V302-A1 = sposobnost planiranja; V702-C2 = usposobljenost delovne sile; V702-D3 = sistem kontroliranja; V301-H = izkoriščanje narodno-gospodarskih značilnosti; V701-F = ustrezno pozicioniranje v panogi; V701-H = izkoriščanje sprememb v panogi; V701-G = aktivno zmanjševanje moči konkurenčnih sil; V301-E = ugoden vpliv domače konkurence.
Klaster 3	V702-A = fizični viri; V702-A2 = zgradbe in infrastruktura; V702-A1 = zemlja in geografska lokacija; V702-C1 = cenenost delovne sile; V702-A3 = klasična tehnologija; V702-B1 = dostop do potrebnega obsega finančnih virov; V702-D10 = velikost tržnega deleža; V302-B1 = sposobnost zagotavljanja potrebne kvantitete in kvalitete virov; V302-B2 = sposobnost poslovanja z minimalnimi zalogami; V302-E = kadrovske sposobnosti; V302-I = finančne sposobnosti; V702-B = finančni viri; V702-D11 = ISO standardi; V302-B = sposobnosti na strani vložkov; V702-E = oprijemljivi viri; V302-D2 = sposobnost ponujanja široke palete proizvodov/storitev na širokem trgu; V302-F = nabavne sposobnosti; V702-B2 = dostop do finančnih virov po ugodnih pogojih; V701-E = neostra konkurenca v panogi.
Klaster 4	V701-B2 = diferenciranost proizvodov/storitev; 701-B3 = velik pomen proizvodov/storitev za kupce; V701-B = majhna pogajalska moč kupcev; V701-A6 = velika pomembnost podjetja/SPE za dobavitelje; V302-B3 = pogajalska sposobnost v primerjavi z dobavitelji; V701-A = majhna pogajalska moč dobaviteljev; V302-D6 = pogajalska sposobnost v primerjavi s kupci; V701-B5 = visoki stroški zamenjave dobaviteljev za kupce; V701-B1 = veliko število kupcev; V701-B6 = neodvisnost od majhnega števila močnih kupcev; V701-A2 = nediferenciranost materiala in storitev dobaviteljev; V701-A3 = relativna neodvisnost od materiala in storitev dobaviteljev; V701-A4 = obstoj dobrih substitutov za material in storitve dobaviteljev; V701-A5 = nizki stroški zamenjave dobaviteljev za podjetje/SPE; V702-A5 = dostop do cenenih materialov, surovin, energije in storitev; V701-A1 = veliko število dobaviteljev.
Klaster 5	V701-E2 = nizka stopnja podobnosti med konkurenti v panogi; V701-E3 = nizki stroški izstopa iz panoge; V701-E5 = heterogenost proizvodov/storitev v panogi; V701-D6 = vladne omejitve za vstop novih konkurentov v panogo; V701-D2 = stroškovna prednost obstoječih podjetij pred novimi konkurenti v panogi; V701-B7 = neinformiranost kupcev o proizvodih/storitvah; V701-B4 = neobstoj dobrih substitutov za proizvode/storitve podjetja/SPE; V701-D1 = prednost obstoječih podjetij pred novimi konkurenti v panogi zaradi ekonomije obsega; V701-E4 = hitra rast panoge; V701-D4 = velike kapitalske zahteve za vstop v panogo; V701-D7 = psihološke ovire za vstop novih konkurentov v panogo; V701-D5 = težave novih konkurentov z dostopom do distribucijskih kanalov v panogi; V701-D3 = velika lojalnost kupcev v panogi; V701-E1 = majhno število konkurentov v panogi; V701-C = majhna nevarnost substitucije; V701-D = majhna nevarnost vstopa novih konkurentov v panogo.
Klaster 6	V301-B = kakovost domačega povpraševanja; V301-C = obseg domačega povpraševanja; V301-A = kakovost domačih proizvodnih dejavnikov; V301-D = ugoden vpliv sorodnih in podpornih panog; V301-F = ugoden vpliv vladne politike; V301-G = ugoden vpliv naključja.

Slika P3: Dendrogram razvrščanja oblik konkurenčne prednosti v skupine na temelju povprečne metode znotraj skupin (mera: Pearsonov korelacijski koeficient)

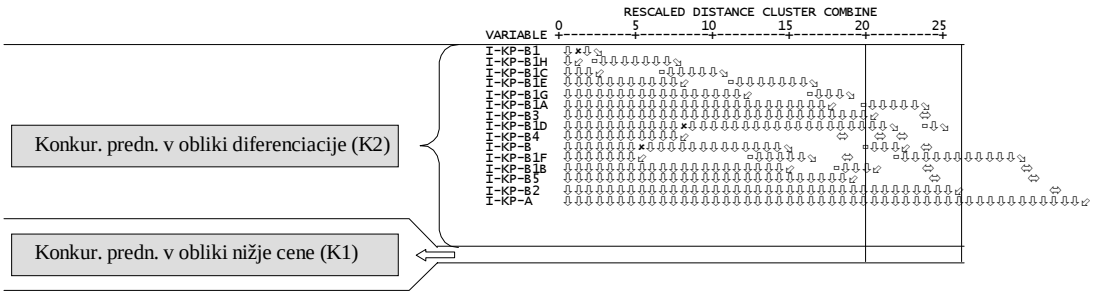


Tabela P4: Razvrstitev oblik konkurenčne prednosti v dva klastra na temelju povprečne metode znotraj skupin (mera: Pearsonov korelacijski koeficient)

Klaster 1	I-KP-A = nižje cene glede na konkurente.
Klaster 2	I-KP-B1 = odličnost proizvoda/storitve; I-KP-B1H = zaznavanje proizvoda/storitve s strani kupcev; I-KP-B1C = zanesljivost proizvoda/storitve; I-KP-B1E = trajnost proizvoda/storitve; I-KP-B1G = estetičnost proizvoda/storitve; I-KP-B1A = funkcionalnost proizvoda/storitve; I-KP-B3 = hitrost zadovoljevanja potreb kupcev; I-KP-B1D = skladnost proizvoda/storitve z raznimi standardi; I-KP-B4 = prilagodljivost pri zadovoljevanju potreb kupcev; I-KP-B = diferenciacija glede na konkurente; I-KP-B1F = poprodajne storitve; I-KP-B1B = luksuzni dodatki k proizvodu/storitvi; I-KP-B5 = pozitivna podoba/imidž podjetja/SPE; I-KP-B2 = celovitost ponudbe.

UDK: 719:502

*Miroslav Verbič**

Analiza izraženih preferenc kot pristop k ekonomskemu vrednotenju okoljskih vrednot ter naravne in kulturne dediščine

Povzetek

V članku analiziramo pristop izraženih preferenc za ekonomsko vrednotenje naravne in kulturne dediščine, ki obsega metode kontingenčnega vrednotenja in diskretne izbire ter omogoča vrednotenje kar največjega in najbolj raznolikega nabora okoljskih in prostorskih dobrin. Koncept hipotetičnega trga, na katerem temelji ta pristop, je hkrati vir njegovih največjih prednosti in največjih slabosti. Obravnavane metode so praktično edine metode za ekonomsko vrednotenje okoljskih in prostorskih vrednot, ki preko analize izraženega obnašanja ljudi omogočajo vrednotenje vrednosti neuporabe, ki jih ljudje neposredno ne razkrivajo, saj jim zaradi splošne dosegljivosti in nekonkurenčnosti v potrošnji ni treba na trgu povpraševati po teh vidikih dobrin. Tovrsten pristop pa zaradi konceptualnih in empiričnih težav pri pridobivanju ocen ekonomske vrednosti prostorskih vrednot hkrati sproža veliko akademskih razprav in je zato še vedno predmet dinamičnega interdisciplinarnega razvoja.

Summary

The article presents an analysis of stated preference approach to economic valuation of natural and cultural heritage. This approach, which consists of contingent valuation and discrete choice analysis, enables us to value the most comprehensive range of environmental goods. The concept of hypothetical market that the approach is based on is simultaneously the source of its greatest advantages and greatest weaknesses. The methods being analysed are principally the only methods for economic valuation of environmental values that enable us to valuate non-use values through the analysis of expressed behaviour of individuals. The non-use values of goods cannot be observed directly, since individuals do not inquire about these aspects of goods in the market due to non-exclusiveness and non-rivalry in consumption. However, the approach generates various academic debates due to conceptual and empirical difficulties in acquiring the prices of economic values of environmental goods and is as such subject of dynamic interdisciplinary development.

1. Uvod

Pogosto se zgodi, da okoljski oziroma prostorski projekt ali politiko spremlja namesto analize stroškov in koristi le analiza stroškov in operativnih koristi. Pri tem so izraženi v denarju operativni stroški in koristi, prostorski učinki pa so bodisi količinsko izraženi bodisi zgolj opisani, zaradi česar so v intuitivnem odločitvenem procesu lahko podcenjeni ali precenjeni. Odločevalec je tako v nezavidljivem položaju, ko mora presoditi, ali bodo pozitivni učinki na blaginjo ljudi odtehtali posledično prostorsko degradacijo. Da bi dali prostorskim učinkom ustrezno težo v odločitvenem procesu, je torej izjemnega pomena njihovo denarno ovrednotenje. Če obstaja za prostorsko dobrino dovolj konkurenčen trg, proučujemo ekonomske spremembe s tržnimi cenami. Ker to pogosto ni mogoče, uporabimo eno izmed specifičnih metod za ekonomsko vrednotenje prostorskih vrednot. V tem članku se osredotočamo predvsem na analizo izraženih preferenc kot pristop k ekonomskemu vrednotenju okoljskih in prostorskih vrednot ter pripadajoče naravne in kulturne dediščine.

Cilj pričujočega članka je analizirati predpostavke in uporabo ekonometričnih tehnik v okviru pristopa izraženih preferenc. Doseči ga želimo s proučevanjem zelo različnih sestavin tega pristopa

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k ekonomskemu vrednotenju prostorskih vrednot. Tako bomo v drugem poglavju umestili pristop izraženih preferenc v splet različnih metod za ekonomsko vrednotenje prostorskih vrednot. V tretjem poglavju se bomo ukvarjali z metodami kontingenčnega vrednotenja, kjer bomo posebej izpostavili vrste veljavnosti in pristranskosti postopka. V četrtem poglavju pa bomo obravnavali ključne vidike v zvezi z metodami diskretne izbire in njihovo aplikacijo. V petem poglavju sklenemo naše delo z nekaterimi ključnimi ugotovitvami.

2. Ekonomsko vrednotenje okoljskih in prostorskih vrednot

Da bi družba lahko izbrala primeren obseg prostorskih dobrin v razmerju z drugimi dobrinami, v skladu s tem pa tudi primeren obseg prostorskih virov, je treba prostorske vrednote ustrezno ovrednotiti. Metode za ekonomsko vrednotenje prostorskih vrednot, ki predstavlja za nas ključen vidik vrednotenja, delimo v osnovi na metode krivulje povpraševanja in metode netržnega povpraševanja (Garrod in Willis, 1999; World Bank, 1998). Ker prve vrednotijo dano dobrino, kot že ime pove, s pomočjo krivulje povpraševanja, druge pa tega niso sposobne, menimo, da nam slednje lahko služijo le kot dodaten pripomoček pri odločanju, nikakor pa ne kot osnovno merilo za izbiro projekta v okviru obravnave prostorskih vrednot.

V okviru metod krivulje povpraševanja za ekonomsko vrednotenje prostorskih vrednot, ki so torej predmet našega proučevanja, v osnovi ločimo pristop razkrivanja preferenc ter pristop izraženih preferenc (Garrod in Willis, 1999, str. 7-10; Bateman *et al*., 2002, str. 30). Povpraševanje po prostorskih vrednotah lahko namreč razkrijemo s proučevanjem nakupov povezanih dobrin na privatnih trgih, pri čemer lahko gre za substitute, komplementarne dobrine ali za druge faktorske dejavnike v produkcijski funkciji gospodinjstva (angl. *revealed preference approach*). Povpraševanje po prostorskih vrednotah pa lahko tudi merimo s proučevanjem izraženih preferenc posameznika do teh dobrin glede na njegovo povpraševanje po drugih dobrinah, pri čemer dotičnega posameznika eksplicitno povprašamo, kako vrednoti določeno prostorsko dobrino oziroma v njej utelešene prostorske vrednote (angl. *expressed or stated preference approach*). Ker smo o pristopu razkrivanja preferenc, kamor sodita metoda potnih stroškov in metoda hedonističnih cen, že obširneje spregovorili (*cf*. Verbič, 2004; 2004a), se bomo tokrat lotili pristopa izraženih preferenc, kamor sodijo metode kontingenčnega vrednotenja in metode diskretne izbire.

Kontingenčno vrednotenje in diskretna izbira sta pomembni orodji za ekonomsko vrednotenje prostorskih vrednot, saj z razkrivanjem preferenc oziroma obnašanja posameznikov na trgu ne moremo vrednotiti vseh prostorskih dobrin (Moons, 2003, str. 11; Pagiola, 1996, str. 8-9). Predvsem na ta način ne moremo vrednotiti vrednosti neuporabe, saj za obstoj prostorske dobrine *per se* ne obstajajo povezane tržne dobrine (substituti, komplementi oziroma proizvodni dejavniki). Za vrednotenje prostorskih vrednot, kot so biotska raznovrstnost, izgled pokrajine, ohranjanje kulturno-umetniških in knjižnih zbirk, artefaktov in različnih spomenikov ter značilnosti starih mest in vasi, lahko potemtakem uporabimo le metode izraženih preferenc (Garrod in Willis, 1999, str. 125-126). V nadaljevanju si bomo pogledali teoretično in metodološko zasnovo navedenih dveh pristopov izraženih preferenc, je primere njihove praktične aplikacije pa je mogoče zaslediti v Verbič in Slabe-Erker (2004).

3. Analiza metod kontingenčnega vrednotenja

Glavni cilj metod kontingenčnega vrednotenja je v modeliranju odzivov posameznikov v smislu njihovih akcij ob nastopu konkretne hipotetične situacije, pri čemer posameznike oziroma podjetja soočimo s podobnimi vprašanji, ki se nanašajo na zasebno tržno dobrino (umetnino, licenco za mobilno telefonijo tretje generacije ali kaj podobnega). Če gre za *ex ante* analizo, se v primeru prostorskega vrednotenja vprašanja nanašajo na največji znesek, ki ga je posameznik (podjetje) pripravljen plačati za spremembo (izboljšavo ali nakup) na ravni prostorske dobrine (pripravljenost plačila; angl. *willingness to pay – WTP*), če pa gre za *ex post* analizo, se vprašanja nanašajo na najmanjši znesek, ki ga je posameznik (podjetje) pripravljen sprejeti kot kompenzacijo za posledice sprememb (poslabšanj ali izgube) na ravni prostorske dobrine (pripravljenost sprejetja kompenzacije; angl. *willingness to accept – WTA*). Po specifičnem postopku vrednotenja, ki ga izvedemo s postavljanjem vprašanj o hipotetičnih situacijah na hipotetičnih trgih, so dobile metode kontingenčnega oziroma pogojnega vrednotenja tudi svoje ime.

V nadaljevanju si bomo najprej pogledali postopek kontingenčnega vrednotenja prostorskih vrednot, kjer bomo spregovorili tudi o posameznih metodah oziroma različicah metode kontingenčnega vrednotenja. Zatem bomo obravnavali ugotavljanje in vrste veljavnosti postopka ter proučevali obvladovanje pristranskosti pri kontingenčnem vrednotenju prostorskih vrednot, našo obravnavo metod kontingenčnega

vrednotenja pa sklenemo z analizo učinkov umestitve, substitucije in dohodka.

3.1. Postopek kontingenčnega vrednotenja

Prvi korak postopka kontingenčnega vrednotenja prostorskih vrednot se nanaša na oblikovanje hipotetičnega trga za prostorsko dobrino, ki je predmet analize (*cf*. Garrod in Willis, 1999, str. 132). V ta namen podrobno opredelimo splet vrednosti prostorske dobrine, pri čemer se posebej osredotočimo na vrednosti neuporabe. Hkrati določimo raven rivalitete v potrošnji za opredeljene prostorske dobrine. Opredeliti moramo tudi predmet prostorske regulacije oziroma njihov splet, če gre za kompleksno prostorsko varstvo oziroma za analizo kompleksnega posega v prostor. Na osnovi tega zasnujemo scenarije, kjer poleg osnovnega scenarija (izhodiščnega stanja) oblikujemo vsaj še eno možno usmeritev prostorskega razvoja.

Ko opredelimo predmete prostorskih sprememb (njihovo raven), ki predstavljajo vzrok za potencialno plačilo, moramo določiti verodostojno obliko plačila (angl. *bid vehicle*), s čimer bo mogoče zbrati potrebna sredstva. V ta namen obstajajo različne oblike plačila, ki jih lahko delimo na: (1) splošne in posredne, kot so davek od dohodka fizičnih oseb, davek na dodano vrednost, davek na premoženje in nadomestilo za uporabo stavbnega zemljišča ter (2) specifične in neposredne, kot so različne vstopnine. Vse oblike niso primerne za zbiranje sredstev pripravljenosti na plačilo v vseh primerih (*cf*. Garrod in Willis, 1999, str. 132-133; Moons, 2003, str. 13), zato je treba paziti, da ima izbrana oblika plačila verodostojno povezavo s prostorsko dobrino, ki je predmet vrednotenja ter da jo ljudje dojemajo kot „pošteno“ in „pravično“ v svoji incidenci ter do tistih, ki bodo uporabljali koristi od prostorske spremembe. Pri tem velja posebej izpostaviti in upoštevati pojav t. im. davčne iluzije, pri katerem ljudje zaradi oblike plačila ne zaznajo pravilne teže davčnega bremena.

Sledi predhodno testiranje aplikacije kontingenčnega vrednotenja v ciljni skupini, ki ima namen vpogleda v razumevanje prostorske spremembe s strani anketirancev in v njihov odnos do predlagane prostorske spremembe (*cf*. Bateman *et al*., 2002, str. 151-156). Tovrsten postopek je sicer lahko pomemben vir informacij pri oblikovanju anketnega vprašalnika in konkretne aplikacije kontingenčnega vrednotenja, vendar pa so lahko odzivi sodelujočih tudi pristranski in lahko vsebujejo vrednostne sodbe (*cf*. Garrod in Willis, 1997). Vzroki pristranskosti odzivov so lahko v usmerjanju moderatorja, različni ravni razpoložljivosti informacij ter v učinkih skupine v primerjavi s kasnejšimi individualnimi anketami. Odzive ciljnih skupin moramo zato kljub vsemu jemati z zadostno mero previdnosti.

Naslednji korak postopka kontingenčnega vrednotenja prostorskih vrednot je pridobitev vrednosti meril koristnosti prostorske dobrine, tj. pripravljenosti plačila ali pripravljenosti sprejetja. To dosežemo z anketnimi vprašalniki, v katerih apliciramo konkretno obliko metode kontingenčnega vrednotenja (angl. *bid elicitation format*). Tako poznamo pet različic metode kontingenčnega vrednotenja (Garrod in Willis, 1999, str. 134-136; Moons, 2003, str. 13-14; Bateman *et al*., 2002, str. 135-142), ki jih nekateri okoljski ekonomisti pojmujejo tudi kot posamezne metode kontingenčnega vrednotenja: (1) odprta različica, (2) zaprta različica, (3) dvojna izbira, (4) izklicni pristop in (5) uporaba seznama plačil. Pri odprti različica kontingenčnega vrednotenja (angl. *open-ended question – OE*) povprašamo posameznike, koliko so največ pripravljeni prispevati za rešitev nekega konkretnega prostorskega problema oziroma za izpeljavo konkretnega prostorskega projekta. Takšna oblika je primerna, kadar imajo posamezniki izkušnje pri nakupu podobnih dobrin, ni pa posebno priporočljiva za pridobivanje vrednosti meril koristnosti prostorskih dobrin, pri katerih prevladujeta vrednost pasivne uporabe (vrednost neuporabe) oziroma kjer ne obstajajo trgi za tovrstne ali podobne dobrine (Arrow *et al*., 1993). V takšnih primerih uporabljamo zaprto različico kontingenčnega vrednotenja (angl. *closed-ended question – CE*), pri kateri opredelimo razpon vrednosti, anketirani pa izbere eno izmed njih. Takšna oblika omejuje posameznika pri izražanju vrednosti meril koristnosti prostorske dobrine, zato je primerna za projekte, kjer se razpon vrednosti lahko vnaprej ugotovi na osnovi izvedene analize podobnih prostorskih dobrin.

Pri izklicnem pristopu (angl. *iterative bidding game*) se postavi niz vprašanj dvojne izbire, pri čemer je vrednost v vsakem nadaljnjem vprašanju odvisna od predhodnega odgovora. Natančno vrednost merila koristnosti prostorske dobrine ugotovimo z izvedbo iteracij med vrednostjo, ki jo je posameznik še pripravljen plačati oziroma sprejeti, in vrednostjo, ki je ni več pripravljen plačati oziroma sprejeti. Velja omeniti, da je tovrsten pristop podvržen začetni pristranskosti (*cf*. Herriges in Shogren, 1996). Omenimo še pristop seznama potencialnih plačil (angl. *payment card format*), kjer posamezniki iz seznama med nič in neko zgornjo mejo izberejo znesek, ki so ga pripravljeni prispevati za rešitev konkretnega prostorskega problema. Prednost tega pristopa je v vizualni informaciji, ki jo dobijo anketiranci, kadar takšni seznami vsebujejo tudi informacije o že obstoječih plačilih za druge dobrine ter podatke o dohodkovnih razredih in davčnih

obremenitvah. Pri tej različici kontingenčnega vrednotenja pogosto nastopi t. im. problematika sidranja (Garrod in Willis, 1999, str. 190).

Ko smo oblikovali hipotetični scenarij oziroma več scenarijev ter opredelili konkretno obliko metode kontingenčnega vrednotenja, se lahko lotimo oblikovanja anketnega vprašalnika in izvedbe ankete. Vprašalniki pri kontingenčnem vrednotenju navadno sprašujejo po treh vrstah podatkov (Garrod in Willis, 1999, str. 136; Moons, 2003, str. 12; Bateman *et al*., 2002, str. 180): (1) odnos do prostorskih dobrin v splošnem in preference do konkretne obravnavane dobrine nasproti drugim dobrinam, kot so zavedanje obstoja substitutov, uporaba dobrine in zavedanje vrednosti neuporabe dobrine; (2) vrednosti pripravljenosti plačila oziroma pripravljenosti sprejetja za dobrino z dodatnimi vprašanji o vzrokih za izbiro konkretne vrednosti in vprašanji za iskanje protislovij v odgovorih, kar pride prav pri kasnejšem izločanju nelegitimnih odzivov ter (3) družbeno-ekonomski podatki o anketirancu in njegovem gospodinjstvu. Slednji se zbirajo z namenom ugotavljanja reprezentativnosti vzorca in teoretične veljavnosti vrednosti meril koristnosti prostorske dobrine. Ob tem je pomembna izbira velikosti vzorca, saj je od tega odvisna natančnost ocen statistik populacijskih parametrov. Načeloma velja, da povečevanje velikosti vzorca zmanjšuje variabilnost povprečne pripravljenosti na plačilo, kar se kaže v nižjih standardnih odklonih in ožjih intervalih zaupanja (*cf*. Bateman *et al*., 2002, str. 107-111).

Sledi ocenjevanje povprečnih vrednosti meril koristnosti prostorskih dobrin (pripravljenosti plačila ali pripravljenosti sprejetja). Na voljo imamo različne statistične mere povprečne vrednosti, kot so aritmetična sredina, mediana, modus, odrezana in prilagojena cenilka, standardni odklon in druge mere razpršenosti. Najprimernejše so mere, ki temeljijo na aritmetični sredini, saj v ekonomski teoriji predstavljajo kardinalno merilo koristnosti, ki jo posameznik izvede iz dobrine (Garrod in Willis, 1999, str. 139). Vendar ima tudi mediana svoje prednosti, saj za razliko od aritmetične sredine ni pod vplivom visokih zneskov meril koristnosti v zgornjem delu porazdelitve in odraža znesek, ki bi bil v primeru enakosti med številom posameznikov in glasov porabljen za nakup javne dobrine ali za aplikacijo ekonomske politike. Čeprav mediana odraža vrednost t. im. medianskega volivca, v primeru, da aritmetična sredina in mediana ne sovpadata, slednja podceni koristnost, ki jo posameznik izvede iz dobrine.

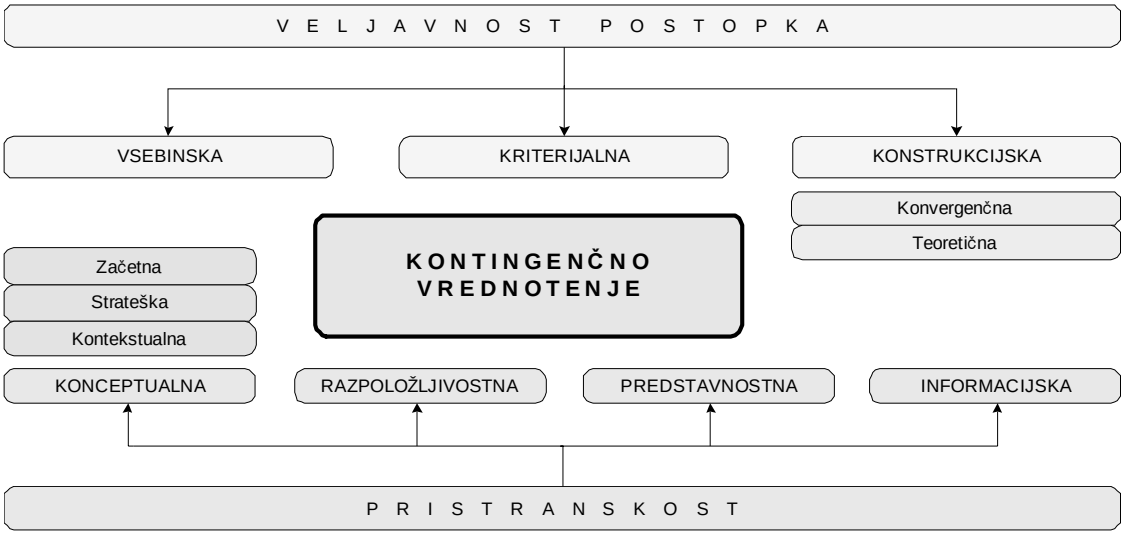
Odrezana cenilka (angl. *trimmed estimator*) temelji na aritmetični sredini, pri čemer izločimo opazovanja, za katera menimo, da zaradi različnih vzrokov predstavljajo napačne odzive pripravljenosti na plačilo. Takšni „osamelci“ lahko namreč močno popačijo povprečno vrednost pripravljenosti na plačilo. Težava je v odločitvi, katera opazovanja izločiti, zato nekateri okoljski ekonomisti enostavno izločijo spodnjih in zgornjih pet ali deset odstotkov opazovanj iz porazdelitve vrednosti pripravljenosti plačila, kar ni popolnoma legitimno (*cf*. Garrod in Willis, 1999, str. 140). Prilagojena cenilka (angl. *modified estimator*) pa temelji na aritmetični sredini, kjer izločimo iz izračuna vsa pristranska in nelegitimna opazovanja. Slednja identificiramo z (že omenjenim) nizom vprašanj, s katerimi ugotovimo, zakaj so anketiranci navedli konkretne vrednosti meril koristnosti prostorske dobrine in se nanašajo na strateško obnašanje, protestno obnašanje in/ali zastonjkarstvo.

Ko smo oblikovali povprečne vrednosti meril koristnosti prostorskih dobrin, sledi njihovo agregiranje po celotni populaciji, kar nam da celotno vrednost merila koristnosti prostorske dobrine (Bateman *et al*., 2002, str. 344-345, 347). Dostopnost in zanesljivost podatkov o celotni populaciji, ki se nanaša na obravnavano prostorsko dobrino, je zelo različna. Kadar je dostop do prostorske dobrine neomejen oziroma prost, je velikost populacije težko ugotoviti. Takšna populacija je tudi sestavljena iz različnih skupin, ki imajo zelo različne vrednosti meril koristnosti prostorske dobrine. Velikost populacije, ki stalno prebiva na obravnavanem območju, je na drugi strani relativno lahko ugotoviti iz popisnih podatkov, vendar se pojavlja vprašanje o tem, kolikšen del te populacije je relevanten pri analizi konkretne prostorske dobrine. Čeprav so ocene pripravljenosti na plačilo za vrednosti neuporabe prostorske dobrine ponavadi majhne, je zaradi velikosti populacije celotna vrednost pripravljenosti plačila lahko zelo velika (Garrod in Willis, 1999, str. 141). To utegne biti še posebej pomembno pri vrednotenju posledic delovnih nesreč ogromnih prostorskih razsežnosti, kot je razlitje nafte pri transportu.

3.2. Ugotavljanje veljavnosti postopka

Dokončen preizkus natančnosti metod kontingenčnega vrednotenja in njihove uporabnosti pri merjenju koristi v analizi koristi in stroškov je v ugotavljanju, ali bodo posamezniki dejansko plačali znesek, za katerega so v anketi navedli, da so ga pripravljeni plačati. Pri tem ločimo tri vrste veljavnosti postopka, ki so prikazane tudi na sliki 1 (Garrod in Willis, 1999, str. 141-153; World Bank, 1998, str. 9): (1) vsebinska veljavnost se nanaša na ustrezno oblikovanje raziskave in postavljena vprašanja v zvezi z vrednoteno dobrino;

Slika 1: Vrste veljavnosti postopka in pristranskosti pri kontingenčnem vrednotenju



Prirejeno po Garrodu in Willisu (1999, str. 141-163) ter Batemanu *et al*. (2002, str. 296-334, 302-303).

(2) kriterialna veljavnost se nanaša na primerjavo ocen kontingenčnega vrednotenja z eksperimenti na dejanskih ali zgolj simuliranih trgih; (3) konstrukcijska veljavnost pa se nanaša na skladnost ali konvergenco med merili kontingenčnega vrednotenja in merili, pridobljenimi pri vrednotenju iste dobrine z drugimi metodami krivulje povpraševanja za ekonomsko vrednotenje prostorskih vrednot ter na raven konsistentnosti rezultatov s teoretičnimi pričakovanji. Poglejmo si jih nekoliko podrobneje.

Vsebinska veljavnost postopka vrednotenja je odvisna od intuitivne presoje in izkušenj osebe, ki revidira raziskavo in jo je kot tako težko oceniti (Garrod in Willis, 1999, str. 142-143). Nanaša se na nedvoumnost in podrobnost opisa vrednotene dobrine, zmožnost razumevanja dobrine in predlaganih sprememb na ravni dobrine, realnost in izvedljivost oblike plačila, časovno razpoložljivost posameznikov pri odgovarjanju na vprašanja o merilih koristnosti prostorske dobrine in ocenjevanju dosegljivosti substitutov ter posledic danih odgovorov za proračun njihovega gospodinjstva, pa tudi na naslavljanje substitucijskih možnosti in učinkov umestitve ter vrednotenje kompleksnih prostorskih programov (*cf*. Bateman *et al*., 2002, str. 305-312).

Kriterialna veljavnost postopka vrednotenja je povezana z dejstvom, da hipotetična vprašanja na osnovi hipotetičnih trgov pri kontingenčnem vrednotenju posamezniku ne ponujajo zadostnih spodbud, da bi v odločanje vložil toliko napora kot v primerih dejanskih trgov, kjer se napačne odločitve kaznujejo (Garrod in Willis, 1999, str. 143). Primerjava vrednosti kontingenčnega vrednotenja in tržnih vrednosti, ki bi bila ustrezno merilo kriterialne veljavnosti, je težko izvedljiva, saj so tržne cene le redko dosegljive za javne dobrine. Dosegljive pa so za zasebne dobrine, za katere veljajo tudi Fishbeinovi in Ajzenovi (1975) pogoji natančnosti in zanesljivosti ocen pripravljenosti na plačilo, po katerih bo natančnost največja, kadar obstaja: (1) skladnost med postavljenimi vprašanji in sklepi, ki sledijo iz odgovorov; (2) tesna povezava med fazo anketiranja in fazo vedenjskega (realiziranega) namena anketirancev ter (3) seznanjenost s posledicami sprememb v količini in kakovosti obravnavane dobrine. Če vrednosti kontingenčnega vrednotenja niso v skladu s tržnimi vrednostmi za zasebne dobrine, potem je še toliko manj verjetno, da bo to veljalo za javne dobrine, ki še manj zadovoljujejo Fishbein-Ajzenove pogoje.

Konstrukcijsko veljavnost postopka vrednotenja pa delimo na konvergenčno in teoretično veljavnost. V zvezi s konvergenčno veljavnostjo postopka vrednotenja velja povedati, da so metoda potnih stroškov, metoda hedonističnih cen in metoda kontingenčnega vrednotenja konstrukti istega merila uporabne vrednosti koristi, izvedenih iz konkretne dobrine, zato ne moremo pričakovati konvergence med njimi pri dobrinah, v katerih sta združeni uporabna vrednost in vrednost neuporabe (Garrod in Willis, 1999, str. 150; Bateman *et al*., 2002, str. 313-316). Preverjanje teoretične veljavnosti postopka vrednotenja je, na drugi strani, dokaj pogosto, saj je relativno enostavno izvesti regresijo merila koristnosti prostorske dobrine anketiranca glede na pojasnjevalne spremenljivke,

za katere menimo, da so teoretično podprti dejavniki tega merila (*cf*. Garrod in Willis, 1999, str. 152-153; Bateman *et al*., 2002, str. 318-322). O teoretični veljavnosti sodimo na podlagi predznaka in velikosti ocenjenih koeficientov, ki morajo biti konsistentni s teoretičnimi pričakovanji. Nizka vrednost determinacijskega koeficienta (multiple) regresije je sicer določeno merilo nezanesljivosti, ni pa nujno kazalec teoretične nekonsistentnosti, saj lahko odraža zgolj večjo razpršenost opazovanj okoli regresijske premice oziroma znake dominantnosti stohastične variabilnosti v podatkih nad sistematično komponento, ki je pri ocenjevanju vrednosti neuporabe prostorskih dobrin prej pravilo kot pa izjema.

3.3. Obvladovanje učinkov pristranskosti

Kot smo ugotovili v naši obravnavi metod kontingenčnega vrednotenja, obstaja pri konkretni aplikaciji pristopa kar nekaj različnih virov pristranskosti. V nadaljevanju tega razdelka bomo osvetlili vsebinsko problematiko v zvezi z naslednjimi koncepti teorije odločanja: (1) konceptualna pristranskost, (2) informacijska pristranskost, (3) predstavnostna pristranskost in (4) razpoložljivostna pristranskost. Obravnavane pristranskosti so prikazane tudi na sliki 1.

Konceptualna pristranskost (angl. *design bias*) spada med psihološke pristranskosti in se odraža v obliki učinkov strateške pristranskosti, začetne pristranskosti in kontekstualne pristranskosti (*cf*. Garrod in Willis, 1999, str. 153-159; Rai, 1999). Osrednje mesto pripada učinkom strateške pristranskosti, ki so tudi sicer v središču pozornosti ekonomistov (Moons, 2003, str. 14). V okoljski ekonomiki se to kaže pri odzivih na vprašanja v zvezi s pripravljenostjo plačati. Če anketiranci menijo, da bodo njihovi zneski pripravljenosti na plačilo uresničiti oziroma jih bodo morali plačati, bodo verjetno podcenili resnično pripravljenost plačati za prostorsko dobrino, za katero načeloma velja neizključljivost iz potrošnje (Pagiola, 1996, str. 10). Gre torej za klasični primer zastonjkarstva. Če na drugi strani anketiranci menijo, da so njihovi zneski pripravljenosti na plačilo (sedaj) zgolj hipotetični in ne bodo pobrani, lahko precenijo svojo dejansko pripravljenost na plačilo, saj se s tem poveča verjetnost, da bo (kasneje ali kje drugje) uvedeno in bo plačal nekdo drug (*cf*. Pagiola, 1996, str. 9). Strateško pristranskost je pri kontingenčnem vrednotenju sicer zelo težko ugotoviti, vendar laboratorijski poskusi iz behavioralne oziroma eksperimentalne ekonomike kažejo, da njeni učinki niso zelo pomembni, saj ljudje zagotavljajo ponudbo javnih dobrin tudi iz povsem neekonomskih razlogov (*cf*. Smith, 1980). Začetna pristranskost se nanaša na zaprto različico ter izklicni pristop h kontingenčnem vrednotenju in vpliva preko razpoložljivega razpona zneskov pripravljenosti na plačilo na končno vrednost pripravljenosti plačati prostorske dobrine, saj ljudje verjamejo, da je začetna vrednost njihovo vodilo (*cf*. Garrod in Willis, 1999, str. 155). Učinki začetne pristranskosti so tesno povezani s problematiko sidranja. Boyle *et al*. (1985) so tako ugotovili, da je končna vrednost pogosto statistično značilno korelirana z začetno vrednostjo pripravljenosti na plačilo in da je mogoče z manipulacijo začetne vrednosti relativno močno vplivati na anketirančev končni znesek pripravljenosti plačati. Žal je začetno vrednost težko optimalno izbrati, saj nobena ne ustreza vsem anketirancem.

Učinki kontekstualne pristranskosti (angl. *framing effects*) se nanašajo na kontekst, v katerega je umeščena prostorska dobrina. Do njih pride v primeru, ko sta dva nabora izbir objektivno identična, pa vendar sprememba opisa izidov obeh naborov pomakne prototipsko izbiro od obnašanja, ki je nenaklonjeno tveganju, k obnašanju, ki je tveganju naklonjeno (Rai, 1999). Nujen pogoj teorije izbire v razmerah negotovosti von Neumanna in Morgensterna (1947) je namreč načelo nespremenljivosti, po katerem naj bi različne predstavitve istega problema izbire dajala enake preference. To načelo je v zgornjem primeru kršeno, vendar učinki kontekstualne pristranskosti niso neizogibni. Izognemo se jim namreč lahko z oblikovanjem nevtralnega konteksta, ki omogoča nepristranske sodbe; najlažje tako, da vključimo oba nabora opisov – tako tistega, ki vodi do obnašanja, ki je nenaklonjeno tveganju, kot tudi tistega, ki vodi do obnašanja, ki je tveganju naklonjeno. Raziskava Berglanda (1993) je še pokazala, da je kontekstualna pristranskost šibkejša pri posameznikih z jasno artikuliranim stališčem in močnejša pri posameznikih, ki nimajo oblikovanega trdnega stališča o predmetu proučevanja.

Informacijska pristranskost izvira iz dejstva, da ne obstaja eksogen kriterij, ki bi določal konkretno količino informacij in natančen kontekst, v katerem naj se vrednotenje prostorske dobrine predstavi anketirancem. Priskrbljene informacije, ki vplivajo bodisi na mejno stopnjo substitucije bodisi na mejno učinkovitost investicij, bodo zato učinkovale tudi na vrednost pripravljenosti na plačilo (Garrod in Willis, 1999, str. 159). Prav tako morajo biti odzivi kontingenčnega vrednotenja umeščeni v konkreten kontekst, o čemer smo že govorili pri učinkih kontekstualne pristranskosti. Tržne cene so namreč v svojem jedru pogojne narave, saj so odvisne od institucij, informacij, pogojev ponudbe in povpraševanja ter od pričakovanj vseh teh

dejavnikov. Po hipotezi racionalnih pričakovanj tržna cena v vsakem trenutku odraža takrat razpoložljive informacije. Pa tudi vrednosti kontingenčnega vrednotenja so pogojne narave, saj so odvisne vsaj od razpoložljivih informacij, oblike vprašanj in vključenosti naborov izbir. Če informacijske in kontekstualne spremembe ne bi vplivale na razlike v cenah in na prodajo, bi bila s tem nenazadnje kršena Lancastrova (1966) teorija potrošniškega obnašanja.

Predstavnostna pristranskost (angl. *representativeness bias*) se nanaša na neobčutljivost za vnaprejšnje verjetnosti dogodkov, neobčutljivost za velikosti vzorca, napačno predstavo o naključju, neobčutljivost za napovedljivosti, iluzijo veljavnosti in napačne predstave o regresiji (Garrod in Willis, 1999, str. 160-162). Navedene vrste predstavnostne pristranskosti vplivajo na presojo v razmerah negotovosti in s tem na posameznikovo percepcijo prostorskih dobrin in njihovih vrednosti (Rai, 1999). Neobčutljivost za vnaprejšnje verjetnosti dogodkov, ki je najpomembnejša med njimi, pomeni nezmožnost razmišljanja v Bayesovem smislu, ko posameznik pri določanju verjetnosti dogodka zanemari začetno stanje in ne izračunava pogojne verjetnosti kot produkta verjetnosti začetnega stanja in verjetnosti dodatnih dogodkov. Poleg te oblike, ki je splošno zaznan pojav pri analizi odločanja, imata pomembno mesto tudi pretirana samozavest pri presojanju (*cf*. Einhorn, 1980) in nezmožnost sprejemanja napak, da bi v prihodnje delali manj napak (*cf*. Einhorn, 1986). Čeprav se posledica tovrstnega obnašanja kažejo v nezmožnosti pravilnega ocenjevanja kovariabilnosti, pa do sedaj v okoljski ekonomiki ni bilo konkretnih študij, ki bi proučile pomembnost različnih oblik predstavnostne pristranskosti.

Razpoložljivostna pristranskost (angl. *availability bias*), ki jo v našem prispevku omenjamo kot zadnjo obliko pristranskosti pri kontingenčnem vrednotenju, pa se nanaša na položaje, v katerih ljudje ocenjujejo pogostost razvrstitve ali verjetnost dogodka tako, kot se jih spomnijo (Rai, 1999; Garrod in Willis, 1999, str. 162-163). Tako je pogostost nekaterih dogodkov v zavesti ljudi (močno) precenjena, nekaterih drugih pa (močno) podcenjena. Vzroki pristranskosti dojetih tveganj glede na dejanska tveganja so dokaj različni. Ljudje namreč še posebej ne marajo (Slovic *et al*., 1980): (1) vsiljenih tveganj naproti prostovoljno sprejetim tveganjem; (2) katastrofičnih tveganj naproti kroničnim tveganjem; (3) tveganj, nad katerimi nimajo nobenega nadzora; (4) tveganj, pred katerimi obstajata splošna nelagodnost in strah ter (5) tveganj, ki imajo hude in resne posledice. Razpoložljivost informacij je pri percepciji prostorskih tveganj in razumevanju pripravljenosti na plačilo ključnega pomena, zato smo začudeni nad tako majhno pozornostjo proučevanju razlik med dojetimi in dejanskimi tveganji oziroma med dejansko pripravljenostjo plačila posameznikov in potrebno pripravljenostjo plačila družbe ob realizaciji prostorskih tveganj. Ker modelske pristranskosti določajo, kako se vzorčne povprečne sredine ujemajo s populacijskimi, je njihovo obvladovanje ključnega pomena za objektivnost raziskovalnih izsledkov.

3.4. Analiza učinkov umestitve, substitucije in dohodka

V zvezi s kontingenčnim vrednotenjem se pojavljajo še trije ekonomski koncepti, ki so pomembni za razumevanje vrednosti meril koristnosti prostorskih dobrin. Gre za učinke umestitve, substitucije in dohodka, ki pridejo še posebno do izraza pri kompleksnih prostorskih projektih, zato si jih bomo v nadaljevanju podrobneje pogledali.

Učinki umestitve (angl. *embedding effects*) se nanašajo na spremembe v dveh ali več argumentih multivariatne funkcije koristnosti (Bateman *et al*., 2002, str. 392-397). Kadar preusmerimo našo pozornost od obravnave prostorskega projekta, ki služi ohranjanju konkretne prostorske dobrine k projektu, ki služi poleg ohranjanja prejšnje še ohranjanju dodatne prostorske dobrine, lahko rečemo, da je prvi projekt v celoti vključen v slednjega. Do omenjenih učinkov pride, kadar je isti dobrini dodeljena nižja vrednost pripravljenosti plačila, če je izvedena iz pripravljenosti plačila za širšo (generično) dobrino, kot pa če je ocenjena samostojno (Garrod in Willis, 1999, str. 163). Interpretiramo jih lahko kot posledico napak bodisi v zasnovi analize kontingenčnega vrednotenja (*cf*. Smith, 1992) bodisi v metodi kontingenčnega vrednotenja *per se* ter nekonsistentnosti v aksiomih teorije potrošnje (*cf*. Kahneman in Knetsch, 1992).

Arrow *et al*. (1993) so sprejeli stališče, po katerem so učinki umestitve rezultat nepremišljenega oblikovanja vprašalnika in dejstva, da različne ravni preskrbe prostorske dobrine pogosto niso ustrezno pojasnjene anketirancem. Več informacij in bolj natančna specifikacija konteksta bi po njihovem mnenju zmanjšali učinke umestitve. Po drugi strani pa bi koncept kontingenčnega vrednotenja lahko imel pomanjkljivosti že na teoretični ravni, pred samo aplikacijo, in sicer pri obravnavi koncepta substitucije ter proračunskih omejitev. Randall in Hoehn (1996) ter Navrud in Ready (2002, str. 23) s tem v zvezi menijo, da ekonomska teorija predvideva učinke umestitve, ne opredeljuje pa pričakovane velikosti teh učinkov, zato ni mogoče

reči, ali so opazovani učinki umestitve v danem primeru približno pravilni ali pa so „napihnjeni“ zaradi napak v praktični operacionalizaciji. Pomembna pa je tudi prisotnost ali vsaj dojeta prisotnost substitutov, saj dodajanje substitutov v množico izbora zmanjšuje vrednost vsake posamezne komponente (Garrod in Willis, 1999, str. 165). Učinki umestitve so potemtakem natanko tisto, kar predvideva teorija potrošnje; povečanje števila substitutov namreč zmanjšuje potrošniški presežek posamezne dobrine.

Specifične probleme pri kontingenčnem vrednotenju povzroča prostorska politika, ki simultano spreminja raven več prostorskih dobrin, ki jih gospodinjstva pojmujejo kot substitucijske ali komplementarne dobrine. Konvencionalni postopki kontingenčnega vrednotenja vrednotijo posamezen element prostorske politike ob predpostavki nespremenjenih ostalih elementov prostorskega programa. Randall in Hoehn (1996) sta pokazala, da takšnih neodvisno vrednotenih elementov ni mogoče agregirati brez posledične pristranskosti. Z naraščanjem števila prostorskih programov namreč naraščajo substitucijski učinki, zato neodvisno vrednotenje in agregiranje preceni potrošniški presežek in napačno opredeli škodljive politike za potencialno koristne. Rešitev je bodisi v simultanem bodisi v sekvenčnem vrednotenju elementov prostorskih programov (Garrod in Willis, 1999, str. 167-169), vendar je pomembno poudariti, da je v primerih, ko vrednotimo prostorske vrednote za analizo koristi in stroškov z namenom izbire optimalne kombinacije prostorskih programov v okviru kompleksne prostorske politike, potrebno sekvenčno in ne simultano vrednotenje, saj lahko le tako vrednotimo posamezne dodatke k prostorskemu programu.

Za konec naše obravnave metod kontingenčnega vrednotenja pa se bomo dotaknili še koncepta elastičnosti prostorskih dobrin. Pogosto namreč opazimo, da je konvencionalno ocenjena dohodkovna elastičnost prostorskih dobrin manjša od ena, kar ni v skladu s pričakovanji in našo dosedanjo obravnavo prostorskih dobrin (*cf.* Garrod in Willis, 1999, str. 169-170). Do tega pride, kadar elastičnost računamo z odvajanjem iz konvencionalne funkcije povpraševanja, v kateri je količina odvisna spremenljivka, cena in dohodek pa sta pojasnjevalni spremenljivki. Ker je prostorska dobrina (načeloma) nekonkurenčna v potrošnji, je njena količina dana, skupna cena pa je seštevek posameznih cen, plačanih s strani posameznikov in ne obratno, kot pri zasebni dobrini. Zato moramo odvajati obratno funkcijo, v kateri je cena odvisna spremenljivka, količina in dohodek pa sta pojasnjevalni spremenljivki. Dobimo t. im. raven dohodkovne fleksibilnosti, ki predstavlja dohodkovne učinke oziroma proporcionalno spremembo v pripravljenosti plačila (ceni) glede na proporcionalno spremembo v dohodku. Njena vrednost je večja od ena, ne glede na vrednost konvencionalne dohodkovne elastičnosti, če je le pripadajoča cenovna elastičnost v absolutnem smislu manjša od konvencionalne dohodkovne elastičnosti. K temu velja dodati, da se dolgoročne elastičnosti navadno razlikujejo od kratkoročnih; kratkoročno povpraševanje po prostorskih dobrinah je relativno neelastično, sčasoma pa potrošniki svoje „nakupe“ prilagodijo ceni.

4. Analiza metod diskretne izbire

Do sredine osemdesetih let 20. stoletja so bile v središču pozornosti metode kontingenčnega vrednotenja, in sicer odprta različica ter izklicni pristop s seznamom potencialnih plačil ali brez njega. Zaradi težav tega pristopa, ki so povezane s hipotetičnimi vprašanji o hipotetičnih tržnih situacijah, so okoljski ekonomisti začeli iskati nove metodološke oblike, ki ne bi temeljile na neposrednem izražanju maksimalne pripravljenosti plačati. Namesto tega bi lahko anketirancem ponudili izbiro med diskretnimi možnostmi (alternativami), ki bi se nanašale na specifikacijo prostorske dobrine in stroške, povezane z njo. Tako so se pričele uporabljati metode diskretne izbire, ki v svoji osnovi temeljijo na odločitvah, ki se nanašajo na odnos med denarnim zneskom in konkretno prostorsko spremembo (Garrod in Willis, 1999, str. 187). Lahko gre za enostavno odločitev o sprejetju ali zavrnitvi enega samega predloga, lahko pa gre tudi za kompleksno rangiranje različnih alternativ, ki se lahko razlikujejo glede na raven različnih atributov, ki jih prostorska dobrina poseduje. Prednost metod diskretne izbire naproti metodam kontingenčnega vrednotenja je torej v tem, da dopuščajo anketirancem izražanje preferenc med različnimi skupinami prostorskih dobrin ali lastnosti pri danih cenah oziroma stroških vsake od teh skupin za potrošnika. Ker se nanašajo na tehtanje različnih scenarijev, so metode diskretne izbire še posebej uporabne za kreiranje odločitev ekonomske politike, kjer ima lahko nabor možnih ukrepov različne posledice za okolje in prostor.

Pri razvoju metod diskretne izbire so teoretiki v precejšnji meri izkoriščali spoznanja iz psihologije, ekonomije in trženjskih raziskav, kjer se je skušalo razumeti, kako ljudje obdelujejo informacije, oblikujejo preference in se posledično tudi odločajo (Garrod in Willis, 1999, str. 188). Še posebej pomembna je bila pri modeliranju odločitev, ki jih posamezniki oblikujejo, ko izbirajo

med alternativami, ki ponujajo različne ravni prostorske kakovosti ob različnih stroških, teorija slučajnostne koristnosti (Thurstone, 1927; McFadden, 1974). Najprej se je v sklopu metod diskretne izbire začela uporabljati metoda kontingenčnega vrednotenja diskretne izbire, sledila je aplikacija kontingenčnega rangiranja, kasneje pa so se začeli uveljavljati odločitveni eksperimenti izraženih preferenc (*cf.* Garrod in Willis, 1999, str. 197-188; Bateman *et al.*, 2002, str. 249-251). V tem vrstnem redu bomo posamezne metode diskretne izbire predstavili tudi v nadaljevanju pričujočega prispevka.

4.1. Kontingenčno vrednotenje diskretne izbire

Metodo kontingenčnega vrednotenja diskretne izbire (angl. *discrete choice contingent valuation method*), ki ji pravimo tudi referendumska metoda kontingenčnega vrednotenja (angl. *referendum contingent valuation method*), sta uvedla Bishop in Heberlein (1979) in je postala do sredine devetdesetih let 20. stoletja prevladujoča metoda za kontingenčno vrednotenje prostorskih vrednot v svetu. Pri aplikaciji te metode postavimo anketirancu vprašanja, s katerimi skušamo ugotoviti, ali je pripravljen plačati določen znesek za konkretno prostorsko izboljšavo. Gre torej za pristop, ki je analogen prvi fazi izklicnega pristopa pri konvencionalnem kontingenčnem vrednotenju, le da se postopek tukaj konča z zabeleženim pritrdilnim oziroma odklonilnim odgovorom anketiranca ter zneskom, na katerega se je vprašanje nanašalo (*cf.* Garrod in Willis, 1999, str. 188-189).

Ker sta na vprašanje možna le dva odgovora, tovrstna vprašanja imenujemo vprašanja dvojne izbire (angl. *dichotomous choice question*). Četudi je anketirancu ponujena možnost, da ne odgovori oziroma da ne ve odgovora, se tovrstna opazovanja izločijo iz nadaljnje analize. Če znesek pripravljenosti plačati sistematično spreminjamo v dovolj velikem vzorcu, dobimo množico pritrdilnih oziroma odklonilnih odgovorov, s pomočjo katerih lahko ocenimo ustrezno merilo blaginje, kot je aritmetična sredina ali pa mediana pripravljenosti na plačilo prostorske spremembe. To dosežemo z ocenjevanjem verjetnosti, da bo posameznik odgovoril pritrdilno na vprašanja o različnih ponujenih zneskih. Merila maksimalne pripravljenosti na plačilo, konsistentna z ekonomsko teorijo, dobimo z modeliranjem verjetnosti z ustreznim ekonometričnim modelom. Da bi bolje razumeli kontingenčno vrednotenje diskretne izbire, se bomo v nadaljevanju podrobneje posvetili: (1) problematiki opredelitve zneskov pripravljenosti plačati, (2) modeliranju podatkov referendumske metode kontingenčnega vrednotenja ter (3) ocenjevanju pripravljenosti na plačilo.

Opredelitev denarnih zneskov pripravljenosti plačati je zelo pomembno opravilo pri aplikaciji metode kontingenčnega vrednotenja diskretne izbire, saj sta Cooper in Loomis (1992) pokazala, da so ocene blaginje zelo občutljive na specifikacijo zneskov plačila. Podobno kot pri konvencionalnih metodah kontingenčnega vrednotenja so tudi tukaj pomembni učinki sidranja oziroma začetne pristranskosti, poleg tega pa ima pomembno vlogo še izbira največjega zneska. Kljub temu raziskovalci zelo različno pristopajo k opredelitvi zneskov pripravljenosti na plačilo. Nekateri jih določijo dokaj poljubno, drugi pa v ta namen uporabljajo velike pilotske študije in kompleksne prijeme. Boyle *at al.* (1988) so razvili pristop, ki temelji na pilotski študiji z uporabo odprte različice metode kontingenčnega vrednotenja. S pomočjo odzivov na vprašanja odprtega tipa se konstruira porazdelitev pripravljenosti na plačilo, iz katere se nato generira zneske pripravljenosti plačati (dvostopenjski pristop). Albertinijeva (1995) pa je uporabila simulacijski pristop za proučevanje optimalnih oblik pripravljenosti na plačilo in ob predpostavki logaritemsko normalne porazdelitve pripravljenosti na plačilo izvedla ustrezne oblike tako za konvencionalna vprašanja dvojne izbire kot tudi za nadgrajeno različico z nadaljnjimi vprašanji (angl. *follow-up questions*).

Ko na dani vzorec apliciramo vprašanja dvojne izbire, analiziramo odzive na različne zneske pripravljenosti plačati. Veljavnost odzivov lahko preverimo z dodatnimi vprašanji, ki se nanašajo na vzroke pozitivnih (pritrdilnih) oziroma negativnih (odklonilnih) odgovorov na vprašanja. Dodatna vprašanja lahko imajo obliko zaprtega seznama odgovorov, izmed katerih anketiranci izbirajo vzroke svojih odgovorov (odzivov), lahko pa so tudi odprte narave. Odzive, za katere ugotovimo, da ne odražajo pristne pripravljenosti plačati, lahko iz vzorca odstranimo in na ta način zmanjšamo pristranskost. Odzive anketirancev, ki niso mogli ali niso želeli odgovarjati, obravnavamo posebej (*cf.* Garrod in Willis, 1999, str. 193). Modeliranje podatkov referendumske metode kontingenčnega vrednotenja lahko sedaj izvedemo na preostalih opazovanjih (*cf.* Garrod in Willis, 1999, str. 193; Bateman *et al.*, 2002, str. 182-184):

$$U_i = V_i + u_i, \qquad (1)$$

kjer je U_i neopazovana skupna koristnost; V_i opazovana objektivna ali deterministična kompo-

nenta koristnosti in u_i stohastična oziroma slučajnostna komponenta koristnosti. Ko predpostavimo, da posameznik maksimira svojo koristnost, dobimo verjetnost, da bo izbral alternativo *i* pred alternativo *j* (Garrod in Willis, 1999, str. 193; *cf*. Bateman *et al*., 2002, str. 184-188):

$$p_i = P[U_i > U_1 > U_2 > ... > U_{i-1} > ... > U_j], \quad (2)$$

ki jo lahko ob upoštevanju izraza preuredimo v naslednjo obliko (*cf*. Navrud in Ready, 2002, str. 161):

$$p_i = P[(u_1 - u_i) < (V_i - V_1), ..., (u_j - u_i) < (V_i - V_j)]. \quad (3)$$

Ob predpostavki neodvisne in enakomerno porazdeljene slučajnostne komponente z Weibullovo funkcijo gostote verjetnosti lahko verjetnost zapišemo v obliki različice McFadenovega univerzalnega logit (angl. *mother logit – MOL*) modela (McFadden, 1974; *cf*. Garrod in Willis, 1999, str. 193-194; Bateman *et al*., 2002, str. 280):

$$p_i = \frac{e^{V_i}}{\sum e^{V_j}} \quad (4)$$

Kadar se za slučajnostno komponento predpostavlja normalna porazdeljenost, lahko verjetnost izrazimo v obliki že obravnavanega probit modela, ki ima v bivariatnem primeru obliko razlike v koristnostih med alternativama *i* in *j*:

$$p_i = \frac{1}{1 + e^{V_j - V_i}} \quad (5)$$

oziroma

$$p_i(y_i=1) = \frac{1}{1 + e^{f(x)}}, \quad (6)$$

kjer je f (**X**) funkcijska specifikacija razlike v koristnostih (*cf*. Hanemann, 1984; Bateman *et al*., 2002, str. 190), ki vsebuje znesek pripravljenosti plačati ter različne spremenljivke obnašanja in preferenc anketiranca. Če izraz preuredimo in predpostavimo logistično porazdelitev slučajne komponente koristnosti, dobimo še logit model referendumske metode kontingenčnega vrednotenja:

$$\log \frac{1 - p_i(y_i=1)}{p_i(y_i=1)} = f(\mathrm{X}). \quad (7)$$

Različne funkcijske specifikacije dajejo tudi pri tej metodi zelo različne ocene blaginje, zato velja, da morajo biti v primeru, ko ni jasnih teoretičnih in statističnih osnov za preferiranje določene specifikacije, z različnimi funkcijskimi operacionalizacijami dobljena merila blaginje med seboj podobna po vrednostih.

V zvezi z modeliranjem podatkov referendumske metode kontingenčnega vrednotenja so Ozuna *et al*. (1993) konstruirali teste ugotavljanja napačne specifikacije v primeru izpuščenih pojasnjevalnih spremenljivk, heteroskedastičnosti in napačne specifikacije pripadajoče verjetnostne porazdelitve, saj lahko v tovrstnih primerih pride do pristranskosti v ocenah cenilke največjega verjetja, nekonsistentnosti v ocenah parametrov in nepravilno ocenjenih meril blaginje. Velja pripomniti, da poleg najbolj razširjene osnovne metode največjega verjetja obstajajo še druge cenilke, kot sta Cosslettova (1983), od porazdelitve neodvisna metoda največjega verjetja, in Horowitzova (1992) glajena metoda največjega verjetja. Te cenilke so bolj robustne pri ocenjevanju parametrov posredne koristnosti, vendar so programsko bistveno slabše podprte. V splošnem pri tovrstnem ocenjevanju preferiramo ocene verjetnosti z manj omejitvami, kar nas vodi k semiparametričnim in neparametričnim pristopom, ki imajo še to prednost, da z njimi lažje obvladujemo problematiko cenzuriranja vzorca in razvrščanja podatkov v skupine (Garrod in Willis, 1999, str. 195-196). Slabost takšnih cenilk je v slabi statistični učinkovitosti ter močni odvisnosti od velikosti vzorca in specifikacije zneskov plačila.

Ko smo oblikovali ustrezen model referendumske metode kontingenčnega vrednotenja, moramo izračunati oziroma oceniti merila pripravljenosti na plačilo. Že navedeni logit model izraža verjetnost, da se bo anketiranec strinjal s plačilom določenega zneska za nakup oziroma izboljšanje ravni dane prostorske dobrine. Ko vse pojasnjevalne spremenljivke, razen zneska plačila, zamenjamo z njihovimi dejanskimi vrednostmi in upoštevamo zalogo funkcijskih vrednosti, dobimo namesto večrazsežnega prostora verjetnosti enostavno (dvorazsežno) pozitivno polravnino verjetnosti, v kateri se oblikuje logistična krivulja verjetnosti v odvisnosti od zneska plačila. Pojasnjevalne spremenljivke zamenjamo z njihovimi vrednostmi na osnovi celotnega vzorca, za kar uporabimo ustrezno povprečno vrednost (Garrod in Willis, 1999, str. 196). Posledična krivulja verjetnosti zato predstavlja verjetnost, da bo naključno izbrani posameznik iz vzorca sprejel dani znesek plačila. Na njeni osnovi lahko nato izračunamo aritmetično sredino ali mediano pripravljenosti na plačilo (*cf*. Hanemann, 1984).

4.2. Kontingenčno rangiranje

Metoda kontingenčnega rangiranja (angl. *contingent ranking method – CR*) je pristop v okviru modeliranja diskretne izbire, pri katerem zahtevamo od vzorca

posameznikov, da rangirajo diskretno množico alternativ od najbolj zaželene do najmanj zaželene alternative (Garrod in Willis, 1999, str. 211-212). Vsaka alternativa v množici izbora (angl. *choice set*) se razlikuje od drugih po ravni lastnosti (atributov) utelešenih komponent. S pomočjo vrednosti atributov in opazovanih rezultatov rangiranja lahko za obravnavani vzorec podatkov ocenimo model maksimiranja koristnosti diskretne izbire. Ocenjene parametre modela nato uporabimo za ocenjevanje odnosa anketirancev med razpoložljivim dohodkom in predlaganimi izboljšavami na ravni obravnavane prostorske dobrine. Za obravnavano prostorsko izboljšavo lahko generiramo mero kompenzacije dohodka pripravljenosti na plačilo.

Tovrsten pristop sicer predstavlja perspektivno alternativo v naslednjem razdelku obravnavanim odločitvenim eksperimentom, a je bil v preteklosti kljub temu bistveno redkeje uporabljen za ekonomsko vrednotenje prostorskih vrednot od drugih dveh metod diskretne izbire. Aplikacije, ki vendarle obstajajo, večinoma temeljijo na metodologiji, ki so jo razvili Beggs *et al*. (1981), alternativno razlago njihovemu pristopu pa najdemo v delu Chapmana in Staelina (1982), ki temelji na teoremu rangiranja (*cf*. Luce in Suppes, 1965). Model Beggsa *et al*. (1981) predstavlja razširitev konvencionalnega pristopa z urejeno diskretno odvisno spremenljivko, tj. urejenih probit in logit modelov (angl. *ordered probit / logit models*), saj v celoti izkorišča rangirane podatke. Vsak dogodek kontingenčnega vrednotenja z $j \hat{I} J$ alternativami v množici izbora namreč ne generira le enega odziva anketiranca, ampak j odzivov, kjer se vsak izmed njih razlikuje glede na dano alternativo in raven atributov alternative. Takšen pristop pa zahteva tudi drugačno cenilko in drugačno metodo analize.

Model diskretne izbire, s katerim lahko ocenimo parametre modela kontingenčnega rangiranja, lahko izkoristi večjo množico informacij, opredeljeno s polnim naborom rangiranih izbir (*cf*. Garrod in Willis, 1999, str. 212). Prva izbira posameznika i, tj. alternativa k, enostavno pomeni, da koristnost te alternative za posameznika i, $U_{i,k}$, presega koristnost katerekoli izmed drugih alternativ v množici izbora. Model verjetnosti, ki temelji na takšnih podatkih, torej za vsako alternativo generira verjetnost, da bo posameznikova koristnost te alternative presegala koristnost drugih alternativ (*cf*. Bateman *et al*., 2002, str. 289-290). Dobimo verjetnost celotnega rangiranja posameznika i, $P(U_{i,1}, ..., U_{i,j}, ..., U_{i,J})$ in naslednji model slučajnostne koristnosti (Beggs *et al*., 1981; *cf*. Navrud in Ready, 2002, str. 161):

$$U_{i,j} = V(s_i, x_{i,j}) + u_{i,j} = V_{i,j} + u_{i,j}, \qquad (8)$$

kjer je $\mathbf{s}_i$ vektor atributov posameznika i; $\mathbf{x}_{i,j}$ vektor atributov množice izbora $j = 1, ..., J$; $V_{i,j}$ koristnost reprezentativnega posameznika in $u_{i,j}$ stohastična komponenta koristnosti, ki se porazdeljuje glede na dano porazdelitveno funkcijo (normalno, logistično ali kakšno drugo). Če predpostavimo, da je posredna funkcija koristnosti linearna v parametrih, lahko izpeljemo funkcijo verjetnosti, ki opredeljuje skupno verjetnost danega rangiranja kot funkcijo parametrov posredne funkcije koristnosti. Z metodo največjega verjetja ocenimo koeficiente posredne funkcije koristnosti, ki maksimirajo verjetnost, da bo posameznik rangiral alternative tako, kot so bile dejansko izbrane (Garrod in Willis, 1999, str. 213). Ocenjeni koeficienti funkcije posredne koristnosti v vzorcu so konstantni, posredna koristnost pa se spreminja, saj se njeni funkcijski parametri družbeno-ekonomskih in demografskih lastnosti gospodinjstev ter ravni atributov v rangirani množici izbora spreminjajo glede na posameznike.

Lareau in Rae (1989) sta s pomočjo cenilk, ki izhajajo iz zgornje procedure, izrazila odnos med ravnmi posameznih atributov in razpoložljivim dohodkom. Predpostavila sta posredno funkcijo koristnosti naslednje oblike (Lareau in Rae, 1989):

$$V = \alpha e + \mu c \qquad (9)$$

kjer je **c** vektor stroškov, povezanih z dano ravnijo prostorske kakovosti in **e** vektor prostorskih atributov, uporabljenih v množici izbora. Iz ekonomske teorije blaginje (*cf*. Garrod in Willis, 1999, str. 214) izhaja, da bo posameznikova maksimalna pripravljenost plačati povečanje prostorske kakovosti, generirana z enotskim povečanjem v **e**, takšna, da bo celotna posameznikova raven koristnosti ostala nespremenjena; povečanje blaginje, generirano s povečanjem ravni prostorskih atributov $\Delta\mathbf{e}$, bo torej kompenzirano z zmanjšanjem blaginje, ki ga povzročajo večji stroški $\Delta\mathbf{c}$. Pri tem za vrednost parametrov $\boldsymbol{\alpha}$ *a priori* predpostavljamo pozitivne vrednosti, za vrednost parametrov $\boldsymbol{\mu}$ pa negativne vrednosti. Ker je njuno razmerje negativno, naj bi znatno povečanje v prostorski kakovosti vodilo k pozitivni vrednosti pripravljenosti na plačilo. Odnos med pripravljenostjo plačati in dohodkom (angl. *WTP / income trade-off*) dobimo s parcialnim odvajanjem prvega reda posredne funkcije koristnosti glede na **e** in **c**. Kadar merimo enotsko povečanje prostorske kakovosti, dobimo s tem tudi mejni odnos med pripravljenostjo plačati in dohodkom, ki je kompenzirajoča mera variabilnosti.

Da bi zmanjšali breme za anketirance in računsko zahtevnost ocenjevanja, uporabimo želen nabor atributov in njihovih ravni pri faktorski ali delni faktorski zasnovi, s katero oblikujemo profile za ocenjevanje funkcije koristnosti obravnavane dobrine (Garrod in Willis, 1999, str. 207). Popolna faktorska zasnova omogoča oblikovanje (pre)velikega števila profilov, zato naš problem

zožimo na vzorčenje iz popolne faktorske zasnove tako, da ocenimo vse parametre z razumno statistično učinkovitostjo. To dosežemo z naborom ortogonalnih glavnih učinkov, vzorčenih iz popolne faktorske zasnove, s katerimi oblikujemo profile (*cf*. Louviere, 1988). Glavni učinki so definirani v obliki odzivov, ki jih dobimo s prehajanjem od ene ravni atributa na drugo raven pri konstantnih ravneh vseh drugih atributov.

Čeprav je model Lareaua in Raea (1989) zaradi polnega izkoriščanja rangiranih podatkov bolj statistično učinkovit od drugih modelov diskretne izbire, njegove omejujoče predpostavke, ki se nanašajo na obnašanje pri rangiranju, niso neznatne. Predpostavlja se namreč, da so vsi rezultati rangiranja med seboj neodvisni in se porazdeljujejo po logistični porazdelitvi. Protiargument pravi, da se samo prve izbire v vsakem rangiranju porazdeljujejo po logistični porazdelitvi in da bi naj bile samo te uporabljene pri modeliranju (*cf*. Garrod in Willis, 1999, str. 215), kar nas privede bližje odločitvenim eksperimentom, ki jih bomo obravnavali v naslednjem razdelku.

4.3. Odločitveni eksperimenti izraženih preferenc

Odločitveni eksperimenti izraženih preferenc (angl. *stated preference choice experiments*) se za razliko od kontingenčnega vrednotenja, ki se osredotoča na vrednotenje scenarija oziroma spremembe v prostorski kakovosti, nanašajo tudi na proučevanje odzivov posameznika na spremembe v posameznih atributih scenarija. Poleg tega, da proučujemo scenarij kot celoto, lahko razčlenimo posamezne atribute in opredelimo preference do njih. Odločitveni eksperimenti (angl. *choice experiments*), kot jih tudi skrajšano imenujemo, so bolj abstraktni od kontingenčnega vrednotenja, vendar omogočajo tudi večjo fleksibilnost analize.

V praksi so se začeli aplicirati v psihologiji, transportu in trženjskih raziskavah v šestdesetih letih 20. stoletja, v okoljski ekonomiki pa se za ekonomsko vrednotenje prostorskih vrednot aktivno uporabljajo šele v zadnjem desetletju (Garrod in Willis, 1999, str. 203-204). Najdemo jih tudi pod imenom modeli izražene izbire (angl. *stated choice models*) ter v obliki t. im. „conjoint" analize. Njihov namen je ugotoviti, kako potrošniki oblikujejo preference za blago in storitve. To dosežemo z identifikacijo koristnosti, ki jo posamezniki pripisujejo atributom posameznih dobrin, ko se odločajo o njihovem nakupu. V ozadju odločitvenih eksperimentov je mikroekonomska teorija, ki temelji na konceptu koristnosti oziroma vrednosti, izvedenim iz lastnosti (atributov) konkretne dobrine oziroma situacije v Lancastrovem (1966) smislu. Preference torej ne temeljijo na posameznih atributih, temveč na njihovem spletu. Tovrstne odločitve lahko modeliramo na osnovi teorije slučajnostne koristnosti (Thurstone, 1927) ali pa na osnovi teorije odločanja, ki temelji na psiholoških paradigmah (Louviere, 1996).

Eksperimentalni pristop k modeliranju odločitvenih eksperimentov je dokaj podoben tistemu pri kontingenčnem rangiranju. V ta namen namreč uporabljamo profile, s katerimi opišemo proučevane dobrine in so opredeljeni z ravnijo posameznih atributov. Kot ugotavljata Garrod in Willis (1999, str. 204), sta izbira in specifikacija teh atributov pomemben del raziskovalnega procesa. Namen raziskovanja je bodisi oblikovati profil, s katerim maksimiramo koristnost za potrošnike, bodisi ugotoviti prispevke posameznih ravni atributov k skupni koristnosti dobrine za potrošnika. Profile navadno uporabimo v anketi, kjer jih posamezniki proučijo in se nato odločijo zanje glede na svoje preference. Da anketirancem olajšamo delo, v ta namen s posebno predštudijo izberemo (relativno majhno) množico profilov izmed vseh možnih profilov, ki jih je navadno zelo veliko (*cf*. Garrod in Willis, 1999, str. 204-205). Od anketirancev se lahko zahteva, da množico profilov rangirajo na enostaven način (brez polnega izkoriščanja informacij), jih ovrednotijo s katero od semantičnih diferenčnih lestvic, jih izbirajo na osnovi parne primerjave ali zgolj izberejo profil, ki „jim je najbližje" (*cf*. World Bank, 1998, str. 9). Od njih se pričakuje, da takšno nalogo večkrat ponovijo.

Profili torej opredeljujejo glavne atribute prostorske dobrine in se med sabo razlikujejo po različnih ravneh koristnosti, ki jih preko svojih spletov atributov ponujajo posameznikom. Teorija slučajnostne koristnosti pri tem predpostavlja, da bodo potrošniki, soočeni z izbiro med različnimi alternativami, izbrali tisto alternativo, ki jim nudi največjo koristnost ob danih dohodkovnih, informacijskih in drugih omejitvah. Izmed zgoraj navedenih pristopov k anketiranju se najpogosteje uporablja slednji, kjer anketirancem predstavimo več profilov, med katerimi izberejo tistega, ki jim predstavlja največjo koristnost. Postopek raziskovanja je pri tem sestavljen iz naslednjih treh korakov (Garrod in Willis, 1999, str. 206): (1) začetna izločilna analiza (angl. *initial screening*) atributov in ravni atributov v dani situaciji; (2) razvoj eksperimentalnega pristopa, s katerim pripravimo kombinacije atributov, ki jih nato predstavimo anketirancem ter (3) analiza odločitev anketirancev. V nadaljevanju si jih bomo natančneje pogledali, skupaj s pripadajočimi merili blaginje.

Prostorske dobrine lahko opišemo s številnimi lastnostmi (atributi) komponent, zato je izbira najpomembnejših med njimi ključen korak eksperimentalnega pristopa. Rezultat izbora atributov morajo biti ustrezne, merljive in relevantne lastnosti prostorskih dobrin, zato z začetno izločilno analizo izločimo tiste med njimi, ki tem kriterijem ne ustrezajo (Garrod in Willis, 1999, str. 206). Pri tem si poleg uporabe teoretičnega znanja pomagamo tudi z izkušnjami in aplikativnimi spoznanji. Neustrezna predstavitev scenarijev lahko pripelje do učinkov kontekstualne in informacijske pristranskosti (*cf*. Bateman *et al*., 2002, str. 273-274), zato si tudi tukaj pomagamo s predhodnim testiranjem aplikacije eksperimentalnega pristopa v ciljni skupini. Cilj tega koraka eksperimentalnega pristopa je zaradi problemov kognitivne in računske obvladljivosti opredeliti dovolj majhno število relevantnih atributov za nadaljnjo analizo. Pogosto pa se zgodi, da večino koristnosti prostorske dobrine dejansko generira le nekaj atributov dobrine (*cf*. Garrod in Willis, 1999, str. 207). Poleg tega moramo opredeliti med seboj neodvisne atribute, da se izognemo problemu multikolinearnosti in posledični nekonsistentnosti ocen koristnosti atributov. Da bi zmanjšali količino dela za anketirance in računsko kompleksnost pri ocenjevanju, med razvojem eksperimentalnega pristopa oblikujemo scenarije. Pri tem si pomagamo s postopki, ki so podobni tistim pri kontingenčnem vrednotenju.

Ker se anketiranci odločijo le za en izbor iz vsake množice profilov, lahko nato s pomočjo teorije slučajnostne koristnosti modeliramo odločitve kot funkcijo ravni atributov. Teorija slučajnostne koristnosti (Thurstone, 1927; McFadden, 1974) temelji na hipotezi, po kateri se posamezniki odločajo na osnovi atributov alternativ (objektivna komponenta) z določeno stopnjo slučajnosti (stohastična komponenta). Do stohastične komponente pride bodisi zaradi slučajnosti v preferencah posameznika bodisi zaradi nepopolnih informacij. Funkcijo koristnosti lahko potemtakem zapišemo v obliki izrazov ali , ki smo ju spoznali že pri kontingenčnem vrednotenju diskretne izbire oziroma pri kontingenčnem rangiranju. Pri tem se za pogojno posredno funkcijo koristnosti navadno predpostavlja linearna funkcijska oblika oziroma linearna kombinacija atributov (vključno s ceno) alternative z njihovimi parametri. Za porazdelitev slučajnih vplivov lahko privzamemo različne porazdelitve, kot sta normalna ali logistična porazdelitev, o čemer smo v okviru metod diskretne izbire že pisali. Najpogosteje pa se uporabljata Weibullova (1951) in Gumbelova (1961) porazdelitev, ki implicirata uporabo veččlenskega logit (angl. *multinomial logit*) modela oziroma univerzalnega logit modela.

Veččlenski oziroma univerzalni logit model temelji na ocenjevanju verjetnosti in obetov, zato je zelo primeren za proučevanje vprašanj izbire. Za razliko od enostavnejših modelov ni niti linearen niti aditiven, temveč predpostavlja sigmoidno krivuljo odzivov. Ključna predpostavka tega modela se nanaša na neodvisnost od nepomembnih alternativ (angl. *independence of irrelevant alternatives – IIA*), kar v našem primeru pomeni, da verjetnost izbora drugih alternativ v parni primerjavi ne vpliva na izbiro med dvema ponujenima profiloma. Izpolnjivost te predpostavke je z današnjimi ekonometričnimi orodji in procedurami relativno lahko preveriti, vendar velja omeniti, da nekateri ekonomisti dvomijo o njeni teoretični veljavnosti (Garrod in Willis, 1999, str. 209). Menijo namreč, da posamezniki pri odločanju tehtajo vse razpoložljive izbire in da ta predpostavka posledično predstavlja napako v metodologiji.

Dotaknimo se pri obravnavi analize odločitev anketirancev še učinkov avtokorelacije, ki jih pri odločitvenih eksperimentih povzročajo multiple izbire anketirancev. Tovrsten pristop se pri odločitvenih eksperimentih pogosto uporablja za pridobivanje podatkov, saj je tako potrebnih manj intervjujev (Garrod in Willis, 1999, str. 210). Posledica pristopa je pojav medsebojne odvisnosti v strukturi rezidualov, ki ga kot problem v konvencionalni logit in probit analizi navadno ignoriramo. Ouwersloot in Rietveld (1996) sta pokazala, da je mogoče s pristopom, razvitim na osnovi ekonometrične teorije panelnih podatkov, učinke tovrstne avtokorelacije obvladovati.

Ker odločitveni eksperimenti temeljijo na teoriji slučajnostne koristnosti, tudi pripadajoča merila blaginje izvedemo iz ekonomskih konceptov te teorije. Ko posamezniki izbirajo med dvema ali več profili, okoljskim analitikom s tem priskrbijo podatke, na osnovi katerih je mogoče opredeliti vrednost izboljšanih prostorskih pogojev (*cf*. Garrod in Willis, 1999, str. 210-211). Izbira določenega profila namreč pomeni, da je posameznik za prostorsko spremembo pripravljen plačati vsaj toliko, kolikor znaša znesek pripravljenosti plačila, ki pripada temu profilu. Analiza tovrstnih primerjav v nekem rangu stroškov prostorske spremembe pa omogoča razkriti verjetnost podpore anketiranca predlagani okoljski spremembi.

5. Sklep

V okviru pristopa izraženih preferenc ločimo metode kontingenčnega vrednotenja in metode diskretne izbire, ki spadajo med najpogosteje uporabljene in hkrati najbolj kontroverzne metode za ekonomsko vrednotenje prostorskih vrednot. So

zelo fleksibilne in omogočajo vrednotenje večjega in bolj raznolikega nabora prostorskih dobrin kot katerakoli druga metoda za ekonomsko vrednotenje prostorskih vrednot.

Metode kontingenčnega vrednotenja, med katerimi omenimo vsaj odprto in zaprto različico, izklicni pristop ter pristop seznama plačil, se uporabljajo tako za ocenjevanje uporabnih vrednosti kot tudi vrednosti neuporabe. Njihova aplikacija se izvede v obliki vprašalnika, v katerem se posameznike za razliko od postopkov razkrivanja preferenc neposredno vpraša, koliko so pripravljeni plačati za določeno prostorsko dobrino oziroma za njeno izboljšanje v specifični hipotetični situaciji, včasih pa tudi, koliko so pri konkretnih hipotetičnih pogojih pripravljeni sprejeti kot kompenzacijo za odrekanje dani prostorski dobrini. Problem odsotnosti trgov za prostorske dobrine tako zaobidemo s predstavitvijo hipotetičnega trga potrošnikom prostorske dobrine.

Metode diskretne izbire so podobne kontingenčnemu vrednotenju predvsem v tem, da jih lahko uporabimo za ekonomsko vrednotenje praktično katerekoli naravne, kulturne ali kakšne druge prostorske vrednote. Tudi metoda kontingenčnega vrednotenja diskretne izbire, metoda kontingenčnega rangiranja ter metoda odločitvenih eksperimentov temeljijo na proučevanju odzivov ljudi na hipotetična vprašanja o hipotetičnih tržnih situacijah, vendar pa se od njih tudi pomembno razlikujejo, saj ne zahtevajo od posameznikov izražanje vrednosti. Namesto tega vrednosti izvedemo iz hipotetičnih odločitev posameznikov. Aplikacija metod diskretne izbire se izvede v obliki vprašalnika, v katerem se od posameznikov terja, da izrazijo preference do različnih skupin prostorskih dobrin s pripadajočimi cenami. Ker se pri tem osredotočamo na tehtanje med scenariji z različnimi lastnostmi, so metode diskretne izbire še posebej primerne za odločanje v sferi ekonomske politike, kjer ima nabor različnih ukrepov za posledico različne učinke na prostorske tokove.

Koncept hipotetičnega trga, na katerem temelji pristop izraženih preferenc, je hkrati vir njegovih največjih prednosti in največjih slabosti. Metode kontingenčnega vrednotenja in diskretne izbire so praktično edine metode za ekonomsko vrednotenje prostorskih vrednot, ki preko analize predvidevanega (izraženega) obnašanja ljudi in ne dejanskega (opazovanega) obnašanja omogočajo vrednotenje vrednosti neuporabe. Gre za opcijske, eksistenčne in druge vrednosti prostorskih dobrin, ki jih ljudje neposredno ne razkrijejo, saj jim zaradi splošne dosegljivosti in nekonkurenčnosti v potrošnji ni treba na trgu povpraševati po teh vidikih prostorskih dobrin. Tovrsten pristop pa zaradi konceptualnih, empiričnih in praktičnih težav pri pridobivanju ocen ekonomske vrednosti prostorskih vrednot s pomočjo odzivov ljudi na hipotetična vprašanja o hipotetičnih tržnih situacijah hkrati sproža veliko akademskih razprav in je zato še vedno predmet dinamičnega interdisciplinarnega razvoja.

Literatura

Albertini A.: Optimal Designs for Discrete Choice Contingent Valuation Surveys: Single-Bound, Double-Bound and Bivariate Models. Journal of Environmental Economics and Management, 28 (1995), str. 287-306.

Arrow K. J., Solow R., Portney P. R., Leamer E. E., Radner R., Schuman H.: Report on the National Oceanic and Atmospheric Administration (NOAA) Panel on Contingent Valuation. Federal Register, 58 (1993), str. 4016-4614.

Bateman I., Carson R., Day B., Hanemann M., Hanley N., Hett T., Jones-Lee M., Loomes G., Mourato S., Özdemiroglu E., Pearce D. W., Sugden R., Swanson J.: Economic Valuation With Stated Preference Techniques: A Manual. Cheltenham : Edward Elgar, 2002. 458 str.

Beggs S., Cardell S., Hausman J.: Assessing the Potential Demand for Electric Cars. Journal of Econometrics, 16 (1981), str. 1-19.

Bergland O.: Framing Effects in CVM Experiments: Old-Growth Forests Preservation in the Pacific North-West. Ĺs : Agricultural University of Norway, Department of Economics and Social Sciences, Discussion Paper, 3, 1993.

Bishop R. C., Heberlein T. A.: Measuring Values of Extra-Market Goods: Are Indirect Measures Biased? American Journal of Agricultural Economics, 61(1979), str. 926-930.

Bishop R. C., Heberlein T. A.: Does Contingent Valuation Work? V: Cummings R. G., Brookshire D. S., Schulze W. D. (ur.): Valuing Environmental Goods: A State of the Arts Assessment of the Contingent Valuation Method. Totowa, NJ : Rowman & Allanheld, 1986, str. 123-147.

Boyle K. J., Bishop R. C., Welsh M. P.: Starting Point Bias in Contingent Valuation Bidding Games. Land Economics, 61 (1985), str. 188-194.

Boyle K. J., Welsh M. P., Bishop R. C.: Validation of Empirical Measures of Welfare Change. Land Economics, 64 (1988), str. 94-98.

Chapman R. G., Staelin R.: Exploiting Ranked Choice Set Data Within the Stochastic Utility Model. Journal of Marketing Research, 19 (1982), str. 288-301.

Cooper J. C., Loomis J.: Sensitivity of Willingness-to-Pay Estimates to Bid Design in Dichotomous Choice Contingent Valuation Models. Land Economics, 68 (1992), str. 211-224.

Einhorn H. J.: Overconfidence in Judgement. New Directions for Methodology of Social and Behavioural Science, 4 (1980), str. 1-16.

Einhorn H. J.: Accepting Error to Make Less Error. Journal of Personality Assessment, 50 (1986), str. 387-395.

Fishbein M., Ajzen I.: Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Reading, MA : Addison-Wesley, 1975. 578 str.

Garrod G. D., Willis K. G.: The Non-use Benefits of Enhancing Forest Biodiversity: A Contingent Ranking Study. Ecological Economics, 21 (1997), str. 45-61.

Garrod G. D., Willis K. G.: Economic Valuation of the Environment: Methods and Case Studies. Cheltenham : Edward Elgar, 1999. 384 str.

Gumbel E. J.: Bivariate Logistic Distributions. Journal of the American Statistical Association, 56 (1961), str. 335-349.

Hanemann W. M.: Welfare Evaluations in Contingent Valuation Experiments with Discrete Responses. American Journal of Agricultural Economics, 66 (1984), str. 332 341.

Herriges J. A., Shogren J. F.: Starting Point Bias in Dichotomous Choice Valuation with Follow-up Questioning. Journal of Environmental Economics and Management, 30 (1996), str. 112-131.

Horowitz J. L.: A Smoothed Maximum Score Estimator for the Binary Response Model. Econometrica, 60 (1992), str. 505-531.

Kahneman D., Knetsch J. L.: Valuing Public Goods: The Purchase of Moral Satisfaction. Journal of Environmental Economics and Management, 22 (1992), str. 57 70.

Lancaster K. J.: A New Approach to Consumer Theory. Journal of Political Economy, 74 (1966), 2, str. 132-157.

Lareau T. J., Rae D. A.: Valuing WTP for Diesel Odor Reductions: An Application of Contingent Ranking Technique. Southern Economic Journal, 55 (1989), str. 728-742.

Louviere J. J.: Conjoint Analysis of Stated Preferences: A Review of Methods, Recent Developments and External validity. Journal of Transport Economics and Policy, 22 (1988), str. 93-119.

Louviere J. J.: Relating Stated Preference Measures and Models to Choices in Real Markets: Calibration of CV Responses. V: Bjornstad D. J., Kahn J. R. (ur.): The Contingent Valuation of Environmental Resources. Cheltenham : Edward Elgar, 1996. 305 str.

Luce R. D., Suppes P.: Preference, Utility and Subjective Probability. V: Luce R. D., Bush R. R., Galanter E. (ur.): Handbook of Mathematical Psychology. New York, NY : John Wiley, 1965. 3 zv.

McFadden D.: On Conditional Logit Model of Qualitative Choice Bahavior. V: Zarembka P. (ur.): Frontiers of Econometrics. New York : Academic Press, 1974. 252 str.

Moons E.: The Development and Application of Economic Valuation Techniques and Their Use in Environmental Policy – A Survey. Leuven : Faculty of Economics and Applied Economic Sciences, Working Paper, 7, 2003. 34 str.

Navrud S., Ready R. C.: Valuing Cultural Heritage. Applying Environmental Evaluation Techniques to Historic Buildings, Monuments and Artefacts. Cheltenham : Edward Elgar, 2002. 280 str.

Ouwersloot H., Rietveld P.: Stated Choice Experiments with Repeated Observations. Journal of Transport Economics and Policy, 30 (1996), str. 203-212.

Ozuna T., Jang K. Y., Stoll J. R.: Testing for Misspecification in the Referendum Contingent Valuation Approach. American Journal of Agricultural Economics, 75 (1993), str. 332-338.

Pagiola S.: Economic Analysis of Investments in Cultural Heritage: Insights from Environmental Economics. Washington, DC : World Bank, 1996. 13 str.

Rai A.: Decision-Making Biases: Implications for the Design of Support Systems. Atlanta, GA : Georgia State University. [URL: www.gsu.edu/~dscaar/notes_8473/biases.ppt], 20.03.1999.

Randall A., Hoehn J. P.: Embedding and Market Demand Systems. Journal of Environmental Economics and Management, 30 (1996), str. 369-380.

Slovic P. B., Fischoff B., Lichtenstein S.: Facts and Fears: Understanding Perceived Risk. V: Schwing R. C., Albers W. A. (ur.): Societal Risk Assessment: How Safe is Safe Enough? New York : Plenum Press, 1980, str. 181-216.

Smith V. L.: Experiments with a Decentralised Mechanism for Public Good Decisions. American Economic Review, 70 (1980), str. 584-499.

Smith V. K.: Arbitrary Values, Good Causes, and Premature Verdicts: Comment. Journal of Environmental Economics and Management, 22 (1992), str. 71-89.

Thurstone L. L.: A Law of Comparative Judgement. Psychological Review, 4(1927), str. 271-286.

Verbič M.: Ekonomski vidik prostorskih vrednot v procesu usklajevanja razvojnih interesov in varstvenih zahtev: Konstrukcija, analiza in evalvacija metod za ekonomsko vrednotenje prostorskih vrednot.

Ljubljana : Inštitut za ekonomska raziskovanja, 2004. 100 str.

Verbič M.: Razkrivanje preferenc kot pristop k ekonomskemu vrednotenju okoljskih vrednot ter naravne in kulturne dediščine: Analiza predpostavk in uporaba ekonometričnih tehnik. IB revija, 38 (2004a), 4, sprejeto v objavo.

Verbič M., Slabe Erker R.: Smernice za ekonomsko vrednotenje naravne in kulturne dediščine. Ljubljana : Inštitut za ekonomska raziskovanja, 2004. 62 str.

Von Neumann J., Morgenstern O.: Theory of Games and Economic Behaviour. Princeton : Princeton University Press, 1947. 641 str.

Weibull W.: A Statistical Distribution Function of Wide Applicability. Journal of Applied Mechanics, 18 (1951), str. 293-297.

Willis K. G., Powe N. A.: Contingent Valuation and Real Economic Commitments: A Private Good Experiment. Journal of Environmental Planning and Management, 41 (1998), str. 611-619.

World Bank: Economic Analysis and Environmental Assessment. Washington, DC : World Bank, Environment Department, Environmental Assessment Sourcebook Update, 23, 1998. 14 str.

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*The Evolution and Determinants of Slovenia's Wage Structure in the 1990s***

Summary

The paper analyzes the effects of Slovenia's transition to a market economy on the structure of wages. It describes the newly established wage-setting mechanism, discusses the factors expected to shape the wage structure and their predicted effects, and - based on the estimation of earnings functions - empirically analyzes the determinants of wages. The paper finds that during 1992-2001, the returns to education and work experience further increased, continuing their trend from the early transition. Controlling for skill and job characteristics, Slovenian women earned 9 to 10 percent less than men - the wage gap considered low by international standards. Wage inequality strongly increased in 1990-91, but the latter 1990s - the period when real wages rose for all points in the wage distribution - arrested this trend, due to disproportionate wage gains workers in the lower tail of the wage distribution, the development which can partly be attributed to the 1995 introduction of the minimum wage. Various firm characteristics also mattered, with wages of state, foreign-owned, and large firms exceeding wages in other ownership types, domestically-owned, and small firms.

Povzetek

Članek analizira učinke prehoda v tržno gospodarstvo na strukturo plač v Sloveniji. Za iztočnico opiše novi sistem določanja plač. Nato obravnava dejavnike, ki oblikujejo strukturo plač, opiše njihove pričakovane učinke in na podlagi ocenjenitve plačnih funkcij te dejavnike empirično analizira. Rezultati kažejo, da se je v letih 1992-2001 nadaljeval trend večanja nagrade po izobrazbi in delovnih izkušnjah, ki se je pričel v začetku tranzicije. V devetdesetih letih so plače žensk zaostajale za 9 do 10 odstotkov za plačami moških, pri čemer so upoštevane razlike v usposobljenosti med moškimi in ženskami in razlike v značilnostih njihovih delovnih mest. Po mednarodnih standardih je to razmeroma majhen razkorak. Rezultati tudi kažejo, da so se razlike v plačah močno povečale v letih 1990-91, v naslednjih letih, ko so se realne plače povečale v vseh delih plačne distribucije, pa se je ta trend zaustavil, kar je vsak deloma mogoče pripisati uvedbi minimalne plače v letu 1995. Članek tudi ugotavlja, da na plače vplivata tudi velikost in lastniška struktura.

1. Introduction

The transition to a market economy has produced dramatic changes in how the Slovenian labour market works. The related reforms shattered job security, replaced the previous rigid system of wage determination with collective bargaining, and strengthened financial discipline that squeezed subsidies for ailing enterprises. The disruption of the previously stable economic system caused major dislocations of workers. Not only the level of employment and unemployment, but also the transition rates among different labour market states and wages have been seriously affected. Employment has been drastically reduced, disproportionately affecting both young and old workers, as well as the less educated. Unemployment has soared, rising from its virtual absence in the mid-1980s into double digits in the 1990s. The probability of an employed worker becoming unemployed has increased sharply, while the probability of changing jobs has declined

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considerably. The chances of finding a job after becoming unemployed have declined.

Not surprisingly, the transition also produced large changes in the structure of wages. In their study of changes to the wage structure in Slovenia's early transition (1987-91), Orazem and Vodopivec (1995) revealed several dramatic findings:

- Relative wages and employment had risen for the most educated and fallen for the least educated. The apparent shift in relative labour demand towards the most educated had occurred in all industries.
- Relative wages and employment had risen with years of work experience. At pensionable age relative wages were growing even faster, while relative employment had plummeted – the effect consistent with a labour supply shock for pensionable-age workers.
- Women had gained relative to men in both wages and employment primarily because women occupied sectors less adversely affected by the transition.
- Overall wage inequality had increased.

The purpose of the present study is to follow up the study of Orazem and Vodopivec (1995) and investigate the development of the wage structure during the 1990s. It attempts to answer the following questions: Did returns to education and skills continue to grow during the 1990s? What happened to the gender-wage gap? What were the effects of the 1995 introduction of the minimum wage? Did any particular sector wages lag behind the economy average? How did firm characteristics (like ownership and financial standing) affect the formation of wages? What was the overall effect of various forces on wage inequality? The key findings of the study are that, during the 1990s, the returns to education and work experience continued to increase; that the female wage gap stabilised at about 9 -11 percent; and that – due to the disproportionate gains of the lower tail of wage distribution –wage inequality stopped growing (although those at the very top of the wage distribution also gained in relative terms).

The paper proceeds with an institutional background describing both the key features of the wage-setting mechanism under self-management and of the newly established wage determination system that was set up after the demolition of the previous system (Section 2). The forces expected to shape the wage structure during the transition, and their possible effects on wages, are discussed in Section 3. Section 4 describes the data sources, while Section 5 presents the results of the empirical analysis of the evolution of wages in 1992-2001. Section 6 provides some concluding remarks.

2. Institutional Background: Wage Setting in the 1990s

The systemic and political changes brought by transition reforms unleashed powerful forces which profoundly influenced labour market outcomes, including the determination of wages, in the 1990s. In this section we review the main institutional features that shaped the wage-setting process in the self-managed system, and the legislative and bargaining framework which was put in place after it was dismantled.

Under the self management system, the absence of explicit property rights dictated a specific wage-setting mechanism. Both government and workers had clearly delineated roles. The government set the firm's wage bill (called a 'socially warranted' wage bill) with the aim to even out differences in pay among firms – the objective was achieved through a massive inter-firm income redistribution.[1] Within government-fixed boundaries, the workers' role was to set individual wages within the firm. The wage scale was determined by a referendum of employees. Not surprisingly, in comparison to capitalist firms Yugoslav firms had extremely compressed wage scales. For example, in an enterprise with several thousand workers the pay of the highest paid manager was 4.54 times that of the lowest paid worker (for further details on wage determination, see Vodopivec, 1993).

The 1988 Yugoslav Law on Enterprises transferred decision-making rights from workers to equity owners, thus formally ending the era of self-management. Important changes occurred in both employment and wage poli-cies. The main novelty in the area of employment was the employer's right to lay off a worker (although this option was extremely costly for the employer). On the wage-setting front, the self-managed mechanism was replaced by a system with three components: the Labour Code, collective bargaining, and incomes policy.

The Yugoslav Labour Code was accepted in October 1989, while Slovenia adopted its own in April 1990 (Official Gazette of Slovenia, No. 14/ 1990) and amended it several times during the 1990s (a new Labour Code took effect in January

[1] For a quantification of redistributive flows for Slovenian firms in 1986, see Vodopivec (1993).

2003). The 1990 Labour Code removed administrative con-straints and collective decision-making, leaving wage determination as a managerial responsibility. Managerial discretion to set pay was not absolute, however the law introduced collective bargaining, a genuinely new component of wage setting. The outcomes of collective bargaining are binding for all employers (regardless of their participation in the bargaining process). The first general collective agreement for Slovenia was ratified in August 1990 and followed by several other general, as well as numerous industry collective agreements. The latter ones tend to follow the then-prevailing general collective agreement, but could specify more detailed conditions of pay as deemed appropriate for their specific areas.

General collective agreements, among others, prescribe the components of the wage and determine fringe benefits (such as the duration of vacations, reimbursement of transport costs for travelling to work, meals etc). According to these agreements, the components of wages are: (a) the basic wage, whose floor level is determined by collective and industry agreements; (b) wage supplements, for example, for difficult working conditions and for seniority; (c) supplements for an individual's successfulness; and (d) an 'income-sharing' component paid on the basis of a firm's business success.

The largest component of a worker's pay is the basic wage (usually determined as a multiple, say 1.35, of the minimum basic wage as determined by collective agreements). To determine the basic wage, collective agreements classify workers in nine categories, prescribing for each category its own minimum, basic wage (precise inflation-escalation clauses determine the basic wage for each category for each month). The classification of workers is based on the levels of education and – formal and on-the-job – training, or 'professional qualification.' The basic wage for the highest category has been repeatedly set at three times that of the lowest category (some industry agreements set slightly higher ratios). Up until 1997, firms in poor financial standing (a term that was not precisely defined) had the right to reduce the basic wage levels (by up to 20 percent till 1995, and by 10 percent during 1995-97). As an illustration, below we present the basic wage scale mandated by the supplement to the 1997 general collective agreement (Official Gazette of the Republic of Slovenia, No. 40, June 1997):

	Class	Coefficient	Basic monthly gross wage for full-time work (in SIT)
1	Simple work (no training, unfinished primary school education)	1	47,978
2	Less demanding work (short training, completed primary school education)	1.1	52,776
3	Medium demanding work (up to two years' professional/vocational education)	1.23	59,013
4	Demanding work (up to two-and-a-half years' professional/vocational education)	1.37	65,730
5	More demanding work (3 years of professional/vocational education, with a foreman's exam, or 4-5 years of such education)	1.55	74,366
6	Very demanding work (2 years of college-level education)	1.85	88,759
7	Extremely demanding work (4-5 years of college-level education)	2.10	100,745
8	Most demanding work (master's degree)	2.50	119,945
9	Exceptionally important and most demanding work (doctorate)	3.00	143,934

Bargaining agreements also specify many other conditions of pay. One of the most important ones is a seniority supplement that determines the minimum rate of returns to seniority (work experience). For example, Article 47 of the 1997 general collective agreement (Official Gazette of the Republic of Slovenia, No. 40) prescribes that a worker's pay is to be increased by at least 0.5 percent of their basic wage for each year of work experience (the same stipulation was in effect throughout the 1990s).

Parallel to the structure of basic wages imposed by collective agreements, a 1995 social agreement also introduced an inflation-adjusted minimum wage (Official Gazette of Slovenia No. 22/95). The minimum wage exceeds the basic wage of the lowest paid workers as stipulated by collective agreements valid for the same period because the minimum wage provision relates to the total payment received by the worker (including various supplements), and the basic wage is only one –

albeit the main – component of pay. For example, the minimum monthly wage in April 1997 (at the time the 1997 collective agreement was introduced) was SIT 56,781, compared to the basic wage of SIT 47,978 stipulated by the general collective agreement (see the Table above).[2]

Until 1997, incomes policies (which were a staple of the self-management system) continued to be an important component of the wage-setting system. The government repeatedly accepted laws which together limited the growth of the overall wage bill of enterprises. Since 1997, there has been no incomes policy general limit on the overall wage bill, and the only limitation on wage growth has been the requirement that the annual growth of managerial pay (the pay of highly-paid workers under so-called individual contracts) should be matched by growth of the payroll of those workers covered by collective agreements.

From the above description it is clear that Slovenian wage setting is a very structured, formally determined system. To what extent is this system responsive to market forces? In particular, one could hypothesise that wage policies which set minimum pay, index wages to inflation and fix the allowable range of pay within firms tend to compress wages. In what follows, we will investigate how the system works.

3. The Transition's Expected Impact on Wages

In transition economies one can hypothesise that the wage structure has been influenced by a whole series of forces. First, and arguably the most important, there are forces associated with the correction of distortions created by systemic constraints on the labour market – and the wage structure in particular – under socialism. Second, there are both short- and long-term changes in the structure of production that may affect the structure of wages. Third, there are short-term forces associated with disequilibrium and uncertainty created by the transition itself. Because these forces all came into play simultaneously, it is difficult to isolate the impact of any single factor.

Correction of distortions created by systemic constraints in the labour market. Under socialism, labour markets were characterised by 'over-full employment'. Citizens were obliged to work as a social responsibility, while social/state sector establishments were encouraged or pressured to create jobs beyond their production needs. In return, firms were insured by the state against losses. Egalitarian wage structures were imposed through so-called tariff systems and classified jobs in skill grades with centrally assigned wage rates. In Slovenia, the same outcome of wage egalitarianism was produced by the workers' collective decision-making on relative wages, coupled by government control of firms' payrolls (see above). These egalitarian pay policies tended to limit pay to skilled labour relative to the pay of unskilled labour, reducing gains from schooling, particularly university education.

Given the low returns to education, did the socialist systems under-invest in education? In principle, the answer is ambiguous: even though returns to skill acquisition were constrained by the system so too were the costs of skill acquisition. Education through the university level was provided free, and stipends were often granted to students while at school. This meant that the direct and opportunity costs of education were much lower than in the West. Data on tertiary enrolments in transition countries, however, overwhelmingly show that the demand for skilled labour grew tremendously – in the 1990s, the increase in the number of students ranged from 50 percent in Lithuania to a record 290 percent in Poland, with Hungary, Latvia, Romania and Slovenia, among others, more than doubling their student populations (Kraft and Vodopivec, 2002).

Partly due to society's pressure to work and partly due to child-care subsidies, women in socialist economies enjoyed higher labour force participation rates than women in Western economies. Relative wages for women were similar and in Slovenia they were even higher than in the West. Egalitarian wage policies tended to limit differences between all groups so that it might be expected women would have been treated relatively well in socialist systems.

Does the removal of these systemic constraints on labour market adjustments result in a move towards labour market outcomes more typical of Western economies? By definition, egalitarian wage policies involve implicit or explicit transfers from

[1] In addition to basic and minimum wages, Slovenia has also introduced the so-called 'guaranteed wage' used as a basis for the payment of certain cash benefits (such as social assistance). At its inception in 1982, the guaranteed wage applied to workers in illiquid enterprises, to be paid from special government reserves. Its level was partly based on the minimum basket of commodities, but it also included elements that had nothing to do with poverty (like the average number of family members per wage earner in the family). Currently, no wages or earnings are based on the guaranteed wage – all that has been preserved is the role of the guaranteed wage in defining cash benefits. However, the less-than-COLA adjustments in its level since 1982 further eroded the connection of the guaranteed wage to the subsistence level.

high-wage to low-wage workers. The removal of these egalitarian policies would be expected to increase wage inequality. Workers with skills in relatively stronger demand in the transition will have rising wages relative to those workers whose skills have become less necessary. The removal of state subsidies for failing firms meant that workers in profitable firms could gain relative to workers in unprofitable firms. Another consequence of the transition relates to the labour market position of women. Because women fared relatively well under socialism, one might presume that they would lose in the transition. If the formalised wage system under self-management limited forms' ability to discriminate, then the removal of these institutions might be expected to reduce the relative earnings of women.

Effects of changes in the structure of production. The transition caused both short- and long-term changes in the composition of final demand for products in Slovenia and these changes may have different effects on workers with different skills. Because socialist economies placed a particular emphasis on manufacturing and, within manufacturing, on heavy industries such as metallurgy, the abandonment of subsidies for these industries caused a permanent reduction of labour demand in those sectors. At the same time, service (for example, finance, insurance and real-estate, consulting, information services, catering and tourism) and retail sectors were underdeveloped under socialism and would be expected to have expanded in transition. In Slovenia, shifts seen in the final demand for products also represent a move away from relatively low-skill-intensive sectors (manufacturing, mining) towards more high-skill-intensive services.[3] The sectors adversely affected by such changes in production were also predominantly male, whereas the expanding sectors were relatively female intensive. Thus shifts in the composition of final demand tended to favour more educated workers and women.

The main short-term shift in final demand was associated with the breakdown of traditional trade links between Central and Eastern European countries associated with currency inconvertibility and the break up of the former Soviet Union. These problems were compounded by war which virtually stopped trade between Slovenia and most of the other former republics of Yugoslavia. The traded goods sectors and transportation also tended to be low-skill-intensive, exacerbating the shift in relative labour demand away from those less educated.

Forces associated with disequilibrium and uncertainty created by the transition. Additional short-term shifts in relative labour demand toward more educated workers are due to the process of transition itself. Disequilibrium and uncertainty create a greater need for entrepreneurial skills that would have been less in demand under the socialist system. Schultz (1975) argued forcefully that stationary states do not require entrepreneurial skill. Economic systems characterised by constancy 'place no premium for the human ability to deal with secular economic change.' The socialist education system, geared towards producing skills needed by 'steady state' enterprises, would not have been geared toward producing entrepreneurial skills that were unnecessary under the old system. Because entrepreneurial skills would be in short supply relative to their enhanced usefulness in transition, these skills should be rewarded with higher relative employment and wages. If entrepreneurial ability is complementary to education and skills in general, then the relative wages and employment of the most educated groups should rise in the newly emerging market economies relative to pre-transition returns when entrepreneurial skills were not in such demand. Schultz stressed that the presumed gains for entrepreneurial ability during periods of change are relative gains, meaning that it is unnecessary that entrepreneurs be better off than they were before the disequilibrium for the gains to be realised. 'For people to have gains from their resource allocations does not imply that they are necessarily better off than they were prior to the disequilibrium, but it does imply that their economic position has been improved relative to what it would be if they had stayed in equilibrium' (Schultz 1975, p. 834).

Other forces associated with the transition. There may also be other forces at work that influence labour market outcomes. For example, early retirement programmes affected the supply of experienced labour in Poland and Slovenia, among others. In Slovenia, returns to retirement were particularly attractive since pensions were fully indexed to inflation, whereas wages were not. As a consequence, retirements exploded in the early transition when the economy experienced bouts of hyperinflation. By making experienced workers artificially scarce, pension policies tended to push up wages for workers of a pensionable age.

To summarise: several factors may have caused the premium associated with skilled labour

[3] At the beginning of the transition, manufacturing, agriculture, and construction were those sectors with the share of low skilled labour (those with a primary school education or less) of about 50 percent.

(education and, to a lesser degree, experience) to rise during the transition. Corrections of previous distortions, and particularly changes in the composition of final demand and the existence of disequilibrium, all point to shifts in relative demand for skilled workers. Returns to experience, to the extent experience reflects the accumulation of skills, may also increase but in a market environment one can hypothesise an inverse U-shape of returns (that is, a reduction of returns for a certain year before retirement). There may also be a temporary increase of returns to education caused by the heavy withdrawals from the labour market seen in the early 1990s to escape the pension reform, to the extent that this process was more intense for lower-paid workers whose retirement was relatively more attractive. Women might have been disadvantaged due to the dismantling of egalitarian policies which allowed them to fare relatively well under socialism – but the favourable relative demands for female-intensive sectors may have countered these forces.

4. Data Sources

The empirical analysis rests on three unusually rich administrative databases covering all of Slovenian workforce participants and all business subjects. Common identifiers allow us to combine records from the different bases. Below we briefly describe the databases.

1. *Work history database* (maintained by the Statistical Office of Slovenia). This database was established by a census of workers in 1987 and initially included information on all formal sector jobs in progress as of 31 December 1986. Information collected about the individuals involved in these jobs included age, educational attainment, gender, years of labour market experience counted towards eligibility for the state-sponsored pension plan, and years with the current employer. The dataset also included information on the type of appointment held (fixed-term versus permanent) and on certain other aspects of the terms of employment. The database has been updated to include information on job terminations and job commencements, as well as some information on changes to the terms of employment. All information used to update the base was derived from forms employers were required to file in connection with the maintenance of social insurance records (the so-called M1, M2, and M3 forms). They contain information on the starting and ending date of an employment spell, the type of appointment, occupation, and employer's identification code, and personal characteristics (gender, age, education). The dataset covers the 1992-2001 period.
2. *Workers' earnings database* (maintained by the Pension and Disability Fund). The database contains information on earnings associated with each employment spell of workers employed in the formal sector. For each year (or part of an employment spell within a year) the information collected includes, among others, the amount of earnings, the number of hours worked in regular time and overtime, and the starting and ending dates of the earnings period. The dataset covers the 1992-2001 period.
3. *Accounting data on enterprises* (maintained by the Agency for Payments). Data consist of yearly profit and loss statements and balance sheets for all businesses incorporated in Slovenia (data for 1997-98 were available).
4. *Business registry of firms* (maintained by the Statistical Office of Slovenia). The registry records, among other items, the following information about each firm: the starting date (and, if it exists, the ending date), organisational type, ownership type, whether the firm has domestic or foreign owners, and what is the size of the firm. The dataset covers the 1992-2001 period.

5. Results of the Empirical Analysis

Below we describe our analysis of wages for the 1992-2001 period. We first analyse the determinants of wages via the earnings function approach, and then investigate the evolution of wage inequality. The regression analysis for the 1992-2001 period does not reveal any dramatic changes in the structure of wages, in contrast to the large changes seen in the wage structure for the 1987-91 period reported by Orazem and Vodopivec (1995). Similarly, the analysis below suggests that, after the strong rise in wage inequality at the onset of the transition to a market economy, wage inequality stopped increasing in the second half of the 1990s.

Results of the earnings function estimation

To analyse how the earnings structure in Slovenia changed during 1992-98, we apply the standard Mincerian earnings function approach to the Slovenian data described above. The dependent variable is W_t, the natural logarithm of the average monthly wage over a portion of the employment spell which takes place in a certain year. The vector

of independent variables, X_t, includes several sets of dummy variables, indicating (a) gender, (b) level of formal education; (c) years of tenure (that is, employment with the same firm); (d) work experience (a cumulative period of employment, which may be spent with different employers); (e) type of appointment (permanent, temporary or internship position); (f) number of shifts in the work place; and (g) a set of monthly dummy variables indicating the months of the year in which the individual worked.[4]

The wage function in year t can be written as:

$$(1) \qquad W_{it} = X_{it}ß_{it} + e_{it}$$

where e_{it} is an error term. Changes in the earnings structure over time are measured by changes in the coefficient, $ß_{it}$. The joint restriction, that over two periods t and t', $ß_{it} = ß_{it'}$ can be tested to establish whether changes in the earnings structure are statistically significant.

Below we discuss the results of the estimated earnings functions for 1992-98. Of interest are both the effects of the abovementioned independent variables, as well as their changes over the period under investigation.[5]

Male-female wage gap. Controlling for skill and job characteristics, during 1992-2001 Slovenian women earned 9 to10 percent less than otherwise identical men. The dramatic fall of the wage gap reported by Orazem and Vodopivec (1995) for the very first years of transition stopped and was very slightly reversed in 1992-2000 so that in 2001 the gap amounted to 10 percent (see Table 1, Panel A). The narrowing of the wage gap at the onset of transition was produced, above all, predominantly by women's industries being hit less hard than predominantly male industries and, viewed from that aspect, the slight reversal of the trend comes as no surprise. That the gap did not widen more substantially in the late 1990s and that it is very low by international standards is certainly a positive development.

Education. The coefficients for the education dummy variables in the earnings function are remarkably stable throughout the 1990s. In fact, relative to the least educated group (those who did not finish primary school), the two most educated groups slightly increased their advantage, whereas the two groups at the bottom (those who finished primary school and have a vocational education) slightly lost their advantage (see Table 1, Panel B).[6] Converted to yearly rates, returns to education in 2001 amounted to 1.7 percent with those with a primary school education, 3.4 percent for those with a vocational education, 8.3 percent for those with a high school education, 14.7 percent for those with a two-year college degree and an astoundingly high 19.6 percent for those with a four-year college degree.[7]

Returns to work experience. In the 1990s there were no dramatic changes in returns to experience and tenure (Table 1, Panel C). The premiums showed a slight tendency of shrinking throughout the 1990s, with workers having low work service increasing their premiums and those with a long service decreasing theirs. Still, in 2001 each year of work experience brought a roughly one percentage point increase in wages. For example, there was a 9 percent premium for experience from 6 to 10 years, a 27 percent premium for experience from 26 to 30 years, and a 31 percent premium for experience of 30 to 35 years. This pattern differs from international experience (see below) and is consistent with the regulations described above of collective agreements which call for at least a one percent increase in the basic wage for two years of work experience. The identified pattern of wages thus suggests the heavy influence of the institutional set-up on wages.

Returns to job characteristics and type of ownership. The results given in Table 1 (panel D) show that in 2001 workers with fixed-term appointments (also interns under probation) were earning 12 percent less than otherwise identical workers, and interns with a permanent appointment were paid 5 percent less. Moreover,

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[4] Earnings reported to the Pension and Disability Fund were obtained from employment spells of different lengths and in earned in different months of the year. To control for wage inflation over the reported spell, monthly dummy variables are used. This problem was more acute in the early 1990s.

[5] Orazem and Vodopivec (1995) provided a similar investigation of the 1987-1991 period.

[6] This contrasts sharply with the pre-transition results. Bevc (1993) reported that during 1976 and 1986 private returns to education in Slovenia increased dramatically for workers with a primary school education (from 13.6 to 18.5 percent) and only slightly for those with a tertiary education (from 4.3 to 5 percent), and that they decreased for those with a high school education (from 6.9 to 5.2 percent).

[7] The computations assume that these groups spent 11,12,14, and 16 years to obtain their education, respectively, and that the base category, those with an unfinished primary school, spent 5 years at school. The coefficients β_i, reported in Table 1, are converted to returns as $100*(\exp(\beta_i)-1)$.

while interns improved their position in comparison to the early 1990s, fixed-term workers received slightly worse relative pay. Interesting differences in pay are also associated with the type of shift work (Table 1, Panel E). While in general the differences seen in pay among workers with different shifts were reduced in the 1990s, in 2001 workers employed in three-shift establishments earned 18 percent more than those in one-shift establishments; block-time work and work in more than three-shift establishments brought about a 10 to11 percent premium. Interestingly, returns to type of ownership do not reveal any strong differences. In particular, in some years workers in private firms were paid a 8 to10 percent premium over workers in state-owned enterprises, but in some other years they were paid worse. The evidence thus suggests that wages do not differ greatly across firms of different ownership types.

Firm/sector determinants of pay. Our data for 1997 and 1998 also allow us to investigate how different types of firms, and the business results of firms, affect a worker's pay. The results offer several interesting insights. First, both industry and geographical variables matter (see Table 2). For example, in comparison to manufacturing, utilities, trade and transportation and communications pay higher wages to otherwise identical individuals. Moreover, employers in some major cities (including the capital of Ljubljana and particularly in Nova Gorica, a city on the Italian border) pay higher wages than employers in rural areas. Second, in comparison to private employers, firms in state and social ownership pay higher wages, with other things being equal. Particularly surprising is the premium in state enterprises, which in 1998 amounted to 19 percent. Third, wages in large enterprises are also associated with extra pay – in 1998, the wage in an enterprise with over 1000 workers exceeded by 34 percent the wage of otherwise identical worker in a firm with less than 5 workers.

Some other firm characteristics were also associated with wage gains or losses. Interestingly, in 1998 those firms whose revenues from sales abroad exceeded domestic revenues paid, on average, 6 percent lower wages than domestically-oriented firms. Moreover, the pay in profitable firms was, other things being equal, 9 to11 percent higher than in loss-making firms. Finally, the wages of workers who worked for foreign owners were 6 to 10 percent higher than those of otherwise identical workers employed by domestic owners.

International comparison. How do the above results on the determinants of the wage structure compare to those of other economies? First, as alluded to above the female wage gap in Slovenia seen in the 1990s is deemed very low by international standards. For example, in the late 1990s the gap was 29 percent in Bulgaria, 24 percent in Hungary, 25 percent in Macedonia, and 31 percent in Poland (Rutkowski, 2001). Second, virtually all studies of transition economies find that returns to education have increased and that higher increases are recorded by more educated groups (Rutkowski, 2001, Orazem and Vodopivec, 1997). Third, our results on the returns to experience, however, are in contrast with those of most other studies. Both by the pattern (the fact that the premium continues to *increase* for workers with over 30 years of experience), as well as by its size, the established pattern of the experience premium in Slovenia deviates from that observed in most other transition economies (see Rutkowski, 2001). Some other findings (for example, that larger firms pay higher wages) also conform to the international experience.

Wage inequality. Orazem and Vodopivec (1995) reported that during 1987-91 the dismantling of government controls produced a strong rise in wage inequality: wage variation increases between and within skill groups, within groups with identical industry and human capital characteristics, and across firms within an industry. Our results show that later in the 1990s wage inequality only modestly increased: the Gini coefficient increased from 28.9 in 1992 to 30.0 at the end of 1994, it fell to 29.1 following introduction of the minimum wage in 1995, and rose again to 30.6 in 2001. Interestingly, the coefficient of the determination of the earnings function steadily increased during 1992-2001, suggesting that the reward for observable skills became more equal.

To obtain further insights into the effects of the minimum wage, we analyse the distribution of wages for 1992, 1995 and 1998 (Figure 1). To correct for wage inflation, the 1995 and 1998 wages were deflated by the ratio of median wages in 1995 and 1998, respectively, to the median wages in 1992 (note that this forces the median of the three distributions to be equal, making it easier to visualise changes in the wage distribution). While the three distributions are not strikingly different, three features are however noteworthy. First, the mode of the 1998 distribution is the highest, followed by the mode of the 1995 distribution. Second, both later distributions are less skewed to the left. These two observations suggest that differences in pay narrowed later in the 1990s. Third, there seems to be a bunching of the 1998 distribution at SIT 19,000 (noting that these are 1992 prices), an indication that the minimum wage regulations introduced in 1995 are binding.

Quite intriguing results are also offered by inspecting the gap between the richest and poorest. Figure 2 shows the percentage change in real wages from 1992 to 1995, and again from 1995 to 1998, for various points of the wage distribution. Both periods brought about a rise in real wages but not at the same rate for different points in the wage distribution. While the largest gains in the first period are concentrated in the middle and very top of the wage distribution, the largest gains in the second period belong to the lower tail (similar are the combined gains of the two periods – the upper and lower tails both gained). The forces behind these changes need further investigation, but it is conceivable that introduction of the 1995 minimum wage helped to improve the relative position of those in the lowest percentiles.

How can one square the results about the rising returns to education established above with the relatively stable wage distribution? One possible explanation lies in the radical changes to the composition of the Slovenian workforce: during the 1990s, the workforce became dramatically older. While in 1990 32.1 percent of the workforce was younger than 30, by 2001 the comparable figure was only 24.9. At the same time, the number of students enrolled in tertiary education increased dramatically, from 34,000 in 1990 to 88,000 in 2001. The reduced share of young, low paid workers must have contributed to the greater wage equality. Presumably also working in the same direction is the fact that first-time job entrants in the late 1990s were more educated than those in the early 1990s. Further, the minimum wage introduced in 1995 may have helped to reduce wage inequality.

6. Concluding Remarks

The key findings of the study may be summarised as follows. During the 1990s, the returns to education and work experience further increased, continuing their trend seen from the early transition. Controlling for skill and job characteristics, during 1992-2001 Slovenian women earned 9 to10 percent less than men, which constitutes a very low wage gap level by international standards. Wage inequality grew strongly in 1990-91, but the latter 1990s – a period when real wages rose for all points in the wage distribution – arrested this trend due to the disproportionate wage gains of workers in the lower tail of the wage distribution; however, those at the very top of the wage distribution also gained in relative terms. The gains of workers at the very bottom of the distribution were realised particularly in the 1995-98 period, which can be partly attributed to the 1995 imposition of the minimum wage (in 1998, for example, there is a notable bunching effect at the very bottom of the wage distribution). Various firm characteristics also mattered, ranging from the type of ownership (surprisingly, wages in state firms exceeded wages in other firms, other things being equal, as did wages in foreign-owned firms), to the profitability and size of a firm.

Some developments in the evolution of wages are certainly positive. A clear example is the fact that the gender wage gap has stabilised at an internationally low level. Another positive development is the stabilisation of wage inequality, coinciding with imposition of the minimum wage. It remains to be seen, however, whether the minimum wage – which, as shown in the paper, has a binding effect – has also reduced the employment prospects of some workers (consistent with the drastically reduced shares of young workers in employment). Among worrying signs, one has to mention the distorted work experience structure of wages clearly produced by the stipulations of collective bargaining agreements requiring an automatic increase of the basic wage in line with seniority. Because this requirement contradicts the trends of an individual's productivity, it may prevent the (re)employment of older workers, an outcome particularly likely because of the rise in the pensionable age brought by the recent pension reform. The premium in pay attached to jobs in state-owned enterprises is also puzzling.

This study has also identified several areas that call for further research. One is the effects of the 1995 introduction of the minimum wage, which seems to have strong effects on the wage formation at the bottom of the wage distribution – and may also have produced negative employment effects. Another area worth further investigation is the possible negative effects of the wage structure as imposed by the collective bargaining process on labour mobility. Third, the effects of the mandated automatic increase of the basic wage with seniority also need greater scrutiny. Fourth, the factors underlying the premium in pay attached to jobs in state-owned firms need to be explained – they may be connected to their monopoly market position.

References

Bevc, Milena (1993): 'Rates of Return of Investment in Education in Former Yugoslavia in the 1970s and 1980s by Region,' Economics of Education*, Vol. 12, No.4, pp. 325-43.*

Kraft, E. and M. Vodopivec (2002): 'The New Kids on the Block: The Entry of Private Business Schools

in Transition Economies,' Education Economics, *forthcoming.*

Schultz, Theodore W. (1975): 'The Value of the Ability to Deal with Disequilibria.' Journal of Economic Literature *Vol. 13, pp. 827-846.*

Orazem, Peter and Milan Vodopivec (1995): 'Winners and Losers in Transition: Returns to Education, Experience, and Gender,' World Bank Economic Review, *May 1995, pp. 210-230.*

Orazem, Peter and Milan Vodopivec (1997): 'Value of Human Capital in Transition to Market: Evidence from Slovenia,' European Economic Review , *Vol. 41, pp. 893-903, 1997*

Rutkowski, Jan (2001): 'Wage Inequality in Transition Economies of Central Europe.

Trends and Patterns in the Late 1990s.' The World Bank, SP Discussion Paper Series (forthcoming).

Vodopivec, Milan (1993): 'Determination of Earnings in Yugoslav Firms: Can It Be Squared with Labor Management?'. Economic Development and Cultural Change, *Vol. 41, No.3, pp. 623-632.*

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Ključne besede: *struktura plač, plačna funkcija, minimalna plača*

Table 1: Earnings function estimation, Slovenia, 1992-2001

	1992		1995		1998		1999		2000		2001	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
A. Gender												
Female	-0.089	-76.3	-0.091	-76.2	-0.094	-87.6	-0.097	-89.1	-0.102	-86.2	-0.101	-82.1
B. Education (compared to unfinished elementary education)												
Elementary	0.093	45.9	0.083	36.5	0.070	30.8	0.066	28.0	0.069	26.8	0.066	24.9
Vocational	0.243	127.3	0.224	104.2	0.226	104.5	0.222	98.1	0.221	89.3	0.215	84.1
High school	0.514	254.0	0.520	231.4	0.519	232.2	0.516	221.2	0.525	205.5	0.514	194.9
University (2y)	0.854	309.2	0.888	304.9	0.886	319.4	0.887	308.7	0.906	287.7	0.908	277.8
University (4y)	1.118	403.6	1.186	407.8	1.185	432.4	1.179	419.4	1.238	405.2	1.213	385.4
Education missing	-0.031	-2.7	-0.001	-0.1	0.157	12.6			0.227	13.4	0.061	2.6
C. Work experience (compared to less than 6 years of experience)												
6-10 years of experience	0.064	27.7	0.062	26.1	0.084	39.1	0.085	38.7	0.092	38.4	0.089	35.5
11-15 years of experience	0.138	58.9	0.122	51.3	0.135	62.5	0.138	62.8	0.159	66.0	0.163	64.4
16-20 years of experience	0.209	89.1	0.181	74.1	0.169	77.0	0.172	77.8	0.187	77.7	0.187	73.9
21-25 years of experience	0.271	114.4	0.242	98.4	0.218	97.9	0.215	95.1	0.223	90.5	0.214	82.7
26-30 years of experience	0.313	125.8	0.293	115.4	0.259	113.3	0.251	108.9	0.258	103.0	0.242	92.5
31-35 years of experience	0.322	116.6	0.335	119.0	0.307	120.8	0.296	116.9	0.297	110.1	0.273	98.1
More than 35 years of experience	0.298	89.5	0.361	105.4	0.330	101.1	0.321	99.1	0.325	94.9	0.306	90.6
Work experience missing							0.165	11.8				
D. Type of appointment (compared to permanent appointment)												
Fixed-term appointment	-0.104	-37.0	-0.113	-62.7	-0.116	-83.8	-0.122	-90.0	-0.121	-83.1	-0.118	-81.1
Intern - permanent appointment	-0.129	-13.6	-0.115	-11.5	-0.073	-9.0	-0.058	-7.0	-0.058	-6.6	-0.052	-5.2
Intern - fixed-term appointment	-0.313	-72.1	-0.199	-54.0	-0.132	-44.8	-0.121	-41.6	-0.118	-38.4	-0.112	-35.8
Type of appointment missing	-0.060	-0.3	-0.071	-0.5	0.032	0.2	-0.173	-0.8	0.003	0.0	-0.417	-1.2

Table 1: Earnings function estimation, Slovenia, 1992-2001 (continued)

	1992		1995		1998		1999		2000		2001	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
E. Type of shift work (compared to one-shift work)												
Two-shift work	0.039	26.9	0.044	29.7	0.028	20.4	0.013	9.0	0.005	3.5	-0.009	-5.7
Three-shift work	0.196	76.4	0.253	95.6	0.206	86.0	0.193	78.2	0.186	72.9	0.175	68.0
More than three shifts	0.123	24.1	0.091	15.8	0.105	21.0	0.109	21.8	0.107	21.0	0.112	19.8
Block-time work	0.240	61.6	0.133	31.5	0.141	34.1	0.131	30.6	0.072	15.5	0.100	20.3
Shift missing	0.040	0.2	0.222	1.6	0.027	0.2	0.192	0.9	0.006	0.0	0.407	1.1
F. Type of ownership (compared to state ownership)												
Social	0.157	12.5	0.067	5.4	-0.072	-6.0	0.076	6.2	0.086	6.9	-0.029	-2.3
Private	0.168	16.1	-0.006	-0.6	-0.088	-9.9	0.084	9.6	0.080	9.1	-0.024	-2.8
Cooperative	0.146	6.1	0.090	4.0	-0.013	-0.6	0.137	6.6	0.092	4.4	-0.067	-3.2
Mixed	0.263	18.0	0.040	2.7	-0.096	-7.5	0.084	6.5	0.093	7.3	0.014	1.1
Type of ownership missing	0.218	21.0	0.014	1.4	-0.090	-10.2	0.094	10.7	0.102	11.7	0.010	1.2
Number of observations	559431		529294		501815		500418		429485		401168	
R^2	0.38		0.40		0.47		0.47		0.50		0.50	

Table 2: Earnings function estimation, 1997 and 1998 (including firm and sector variables)

Variable	1997		1998	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**
A. Size of Firm (compared to firms with 1-5 workers)				
6-20 workers	0.170	10.4	0.168	6.7
21-50 workers	0.204	11.7	0.225	9.4
51-100 workers	0.167	10.4	0.199	8.9
101-500 workers	0.221	16.4	0.220	10.9
501-1000 workers	0.259	15.7	0.294	12.9
More than 1000 workers	0.344	22.6	0.336	15.2
B. Industry (compared to firms in manufacturing industry)				
Agriculture	0.034	1.4	0.027	1.0
Utilities	0.129	5.5	0.072	2.9
Construction	-0.047	-3.1	-0.063	-3.6
Trade	0.054	5.0	0.011	0.8
Hotels and Restaurants	0.085	3.5	0.075	2.9
Transportation and Communications	0.096	6.5	0.074	4.0
Government, Health, Education and FIRE	-0.018	-0.8	-0.066	-2.9
Other	-0.028	-2.1	0.033	1.9
C. Commune (compared to rural communes)				
Celje	-0.036	-1.8	0.009	0.4
Koper	0.019	0.9	0.031	1.3
Kranj	0.042	2.1	0.088	4.5
Ljubljan	0.085	9.5	0.123	11.4
Maribor	-0.028	-2.1	-0.007	-0.4
Murska Sobota	-0.108	-5.1	-0.094	-4.5
Nova Gorica	0.164	7.4	0.268	10.3
Novo Mesto	0.005	0.2	-0.009	-0.3
Commune missing	0.343	22.0	n.a.	
D. Ownership (compared to private ownership)				
Foreign owned (fully or partially)	0.061	4.8	0.105	7.5
Foreign missing	n.a.		-0.073	-1.2
F. Exporting firms				
Firms in which foreign revenue exceeds domestic revenue	-0.039	-4.3	-0.062	-6.0
G. Profitable firms (compared to loss-making firms)				
Profitable	0.111	13.3	0.092	9.6
Profitability missing	n.a.		n.a.	
Number of observations	16086		11154	
R^2	0.56		0.58	

Notes: Estimates of the parameters for gender, education, work experience, tenure, and type of shift variables are reported in Table 1 and are thus omitted in this table.

Table 3: Employment by age structure, Slovenia, 1990-99 (beginning of the year)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Age under 20	3.0	2.2	2.3	1.8	2.0	2.2	1.8	1.5	1.5	1.4	1.4	1.2
Age 20 to 30	29.1	28.5	27.1	26.1	25.2	25.3	24.8	24.8	24.8	24.6	24.1	23.7
Age 30 to 40	32.5	33.7	35.1	35.7	34.9	34.1	33.8	33.7	33.7	33.5	33.1	32.6
Age 40 to 50	23.2	25.1	26.1	27.4	28.2	28.5	29.7	30.1	30.2	30.3	30.5	30.5
Age 50 plus	12.2	10.5	7.6	7.2	7.8	8.1	8.4	7.9	7.8	8.3	8.8	9.7
Memorandum item:												
Number of students (in thousand)	33.6	38.2	39.3	42.1	43.2	46.0	53.5	64.7	74.6	77.6	82.8	88.1

Source: Statistical office of Slovenia.

Figure 1: Real wage distribution, 1992, 1995 and 1998

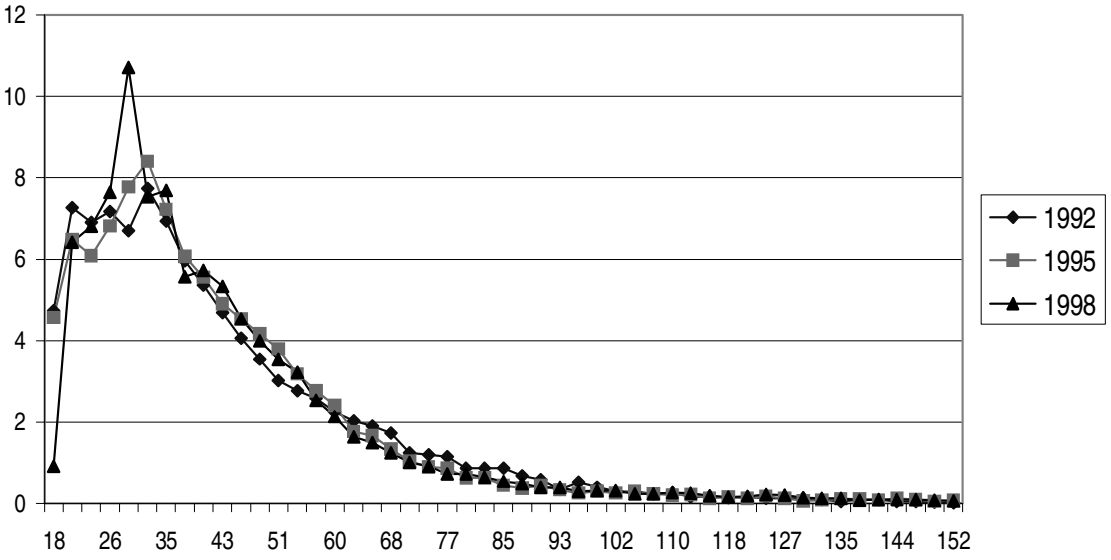
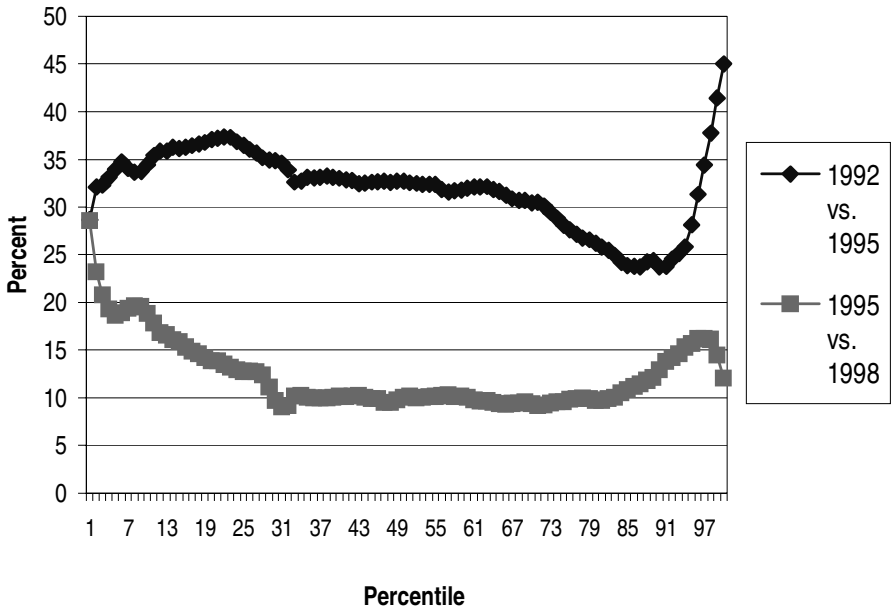


Figure 2: Percentage change in real wage, 1992-95, and 1995-98



UDK: 330.341.1

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Vpliv zunanjih prelivanj znanja na inovativnost in produktivnost slovenskih podjetij

Povzetek

V prispevku ugotavljamo, v kolikšni meri inovacijsko dejavnost podjetja spodbuja lastna R&R dejavnost in koliko nanjo vplivajo zunanji dejavniki ter kateri so najpomembnejši kanali prelivanja znanja od zunaj. V okviru integriranega dinamičnega modela inovacijske dejavnosti podjetij analiziramo vpliv in določamo relativni pomen neposrednega in posrednega prenosa znanja skozi vhodne NTI in zunanjo trgovino glede na vpliv R&R subvencij in lastno R&R dejavnost na inovacijsko dejavnost podjetij. V drugem koraku ocenjujemo vpliv inovacijske aktivnosti na rast produktivnosti podjetij. Z uporabo individualnih podjetniških podatkov o inovacijski dejavnosti (ki temeljijo na inovacijskih pregledih) in v kombinaciji s podatki iz zaključnih računov velikega vzorca slovenskih podjetij v obdobju 1996-2002 izhajajo tri glavne ugotovitve. Prvič, lastni R&R izdatki podjetij in zunanja prelivanja znanja, kakor so domače in mednarodne javne R&R subvencije, tuje lastništvo in intrapanožna prelivanja inovacij, krepijo inovacijsko sposobnost podjetij. Drugič, inovacije kot rezultat R&R dejavnosti podjetij bistveno prispevajo k rasti skupne faktorske produktivnosti podjetij. In tretjič, tuje lastništvo ima dvojni vpliv na rast skupne faktorske produktivnosti v podjetju - krepi inovacijsko sposobnost podjetja, nato pa z boljšimi organizacijskimi tehnikami dodatno prispeva še k rasti skupne faktorske produktivnosti v podjetju.

Summary

The paper analyses whether, and to what extent, a firm's ability to innovate is determined by the firm's own R&D activity, and to what extent by factors external to firm. We first estimate the impact of firms' internal R&D capital and external R&D spillovers on firms' innovation activity within an integrated dynamic model. In the second step, we then estimate the impact of firms' innovations on firms' productivity growth. Using the firm-level data on innovation activity combined with firms' financial data for a large sample of Slovenian firms in the period 1996-2002, the paper makes three main findings. First, a firm's own R&D expenditures as well as external knowledge spillovers, such as national and international public R&D subsidies, foreign ownership and intra-sector innovation spillovers do enhance the firm's ability to innovate. Second, innovations as a result of a firm's R&D do contribute substantially to the firm's total factor productivity growth. And third, foreign ownership has a double impact on a firm's total factor productivity growth - it first enhances firm's ability to innovate and then it additionally contributes to the firm's total factor productivity growth via superior organization techniques and other channels of knowledge diffusion.

1. Uvod

Po endogeni teoriji rasti je tehnološki napredek endogene vrste, spodbuja pa ga namerna investicijska dejavnost podjetij (Smolny 2000). Vendar so inovacijske dejavnosti v podjetjih večinoma močno odvisne od zunanjih virov. Empirične dokaze v prid rastočega pomena zunanjih dejavnikov inovacijske dejavnosti podjetij podajajo Eaton in Kortum (1999) ter Keller (2002a), ki trdijo, da so tuji viri tehnologije odločilnega pomena za večino držav, saj nanje odpade 90 % ali več vse tehnologije. Mednarodni tokovi znanja (skozi neposredne tuje naložbe - NTI, trgovino, licence in mednarodno tehnološko

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sodelovanje) so torej pomembna determinanta razvoja in razširjanje inovacij. S tem v zvezi se kot osrednji pojavlja pojem prelivanja tehnologije in znanja od zunaj (angleško *external knowledge spillovers*). Ta pojem temelji na teorijah endogenega tehničnega spreminjanja iz zgodnjih devetdesetih let (Aghion in Howitt 1992, Grossman in Helpman 1991, Romer 1990, Segerstrőm, Anant in Dinopoulus 1990), ki pravijo, da je donos od tehnoloških investicij delno zaseben in delno javen (Keller 2004). Zaradi nerivalskosti tehnologije, lahko inovacijo nekega podjetja brez zelo velikih dodatnih stroškov uporabijo tudi druga podjetja (Smolny 2000). To so prelivanja tehnologije oziroma znanja.

Osrednji cilj prispevka je ugotoviti, v kolikšni meri inovacijsko sposobnost/dejavnost podjetja spodbuja lastna raziskovalno-razvojna (R&R) dejavnost in v kolikšni meri zunanji dejavniki ter prepoznati najpomembnejše kanale prelivanja znanja od zunaj. Znanje se lahko preliva od zunaj v obliki neposrednega prenosa tehnologije (skozi NTI, licenčne sporazume, uvoz kapitalnih dobrin in vmesnih proizvodov itd.), z učinki učenja (prelivanje inovacij in učenje z izvažanjem), kakor tudi v obliki javnega subvencioniranja R&R dela. Obstoječa literatura te kanale v glavnem proučuje ločeno. Pri našem pristopu uporabljamo integrirani okvir. V okviru integriranega dinamičnega modela inovacijske dejavnosti podjetij analiziramo vpliv in določamo relativni pomen neposrednega in posrednega prenosa znanja skozi vhodne NTI in zunanjo trgovino glede na vpliv R&R subvencij in lastne R&R dejavnosti podjetij na inovacije. Poleg tega posebno pozornost namenjamo absorbcijski sposobnosti podjetij ter drugim determinantam zunanjega prelivanja znanja in inovacijske dejavnosti podjetij, kakor jih opredeljuje literatura.

Pri gradnji konceptualnega pristopa za ugotavljanje relevantnosti zunanjega prelivanja znanja zavzemajo osrednje mesto kanali zunanjega prelivanja znanja. Ker ugotavljamo relevantnost zunanjega prelivanja znanja v integriranem okviru, nas zanimajo tudi endogeni dejavniki inovacijske dejavnosti podjetij, pri čemer so na prvem mestu lastne R&R podjetij. Ti endogeni dejavniki tudi sodoločajo sposobnost podjetij za absorbcijo zunanjega prelivanja znanja.

Večina obstoječih empiričnih študij ocenjuje bodisi stopnjo donosa lastnih R&R izdatkov podjetij bodisi vpliv zunanjega prelivanja znanja na rast produktivnosti podjetij. Namesto tega mi ocenjujemo vpliv notranjega R&R kapitala podjetij in zunanjih R&R prelivanj na rast produktivnosti podjetij s postopkom, ki vsebuje dva koraka. V prvem koraku določamo vpliv lastnega R&R kapitala podjetja in zunanjega prelivanja znanja na inovacijsko dejavnost podjetij. V drugem koraku ocenjujemo učinkovitost inovacijske dejavnost podjetij oziroma vpliv inovacijske dejavnosti na rast produktivnosti podjetij.

Z uporabo individualnih podjetniških podatkov o inovacijski dejavnosti (ki temeljijo na inovacijskih pregledih) in v kombinaciji s podatki iz zaključnih računov velikega vzorca slovenskih podjetij v obdobju 1996-2002 smo prišli do več zanimivih ugotovitev. Prvič, lastni R&R izdatki podjetij in zunanja prelivanja znanja, kakor so domače in mednarodne javne R&R subvencije, tuje lastništvo in intrapanožna prelivanja inovacij, krepijo inovacijsko sposobnost podjetij. Drugič, inovacije kot rezultat R&R dejavnosti podjetij bistveno prispevajo k rasti skupne faktorske produktivnosti podjetij. In tretjič, tuje lastništvo ima dvojni vpliv na rast skupne faktorske produktivnosti v podjetju – krepi inovacijsko sposobnost podjetja, nato pa z boljšimi organizacijskimi tehnikami dodatno prispeva še k rasti skupne faktorske produktivnosti v podjetju.

Vloga inovacijske dejavnosti podjetij za rast produktivnosti, ki jo obravnavamo v drugem delu prispevka, utemeljuje naš konceptualni pristop in izbrani postopek v dveh korakih. V tretjem delu podajamo pregled literature o R&R kot determinanti inovacijske dejavnosti podjetja in determinanti, ki določa sposobnost absorbiranja zunanjega prelivanja znanja, v četrtem delu pa podrobneje analiziramo kanale zunanjega prelivanja znanja. Peti del vsebuje empirične dokaze; po kratki deskriptivni analizi opredeljujemo determinante inovacijske dejavnosti, temu pa sledi ocena učinkov inovacijske dejavnosti na rast produktivnosti podjetij. Šesti del prinaša zaključke.

2. Inovacijska dejavnost podjetij in rast produktivnosti

V našem modelu uporabljamo dve regresiji. Najprej regresiramo inovacijsko dejavnost na zunanje prelivanje znanja in na dejavnike, ki so za podjetje endogeni. V drugem koraku regresiramo rast produktivnosti (skupne faktorske produktivnosti - SFP) na inovacijsko dejavnost podjetij. To je različno od običajno uporabljenega pristopa, ki regresira rast produktivnosti na zunanje prelivanje znanja. Poglejmo prednosti našega pristopa.

Glavni cilj naše raziskave je analizirati, ali, in če, zunanje prelivanje znanja vpliva na inovacijsko dejavnost podjetij. Temelječ na splošno sprejeti tezi, da ima tehnologija ključno vlogo v določanju produktivnosti (glej tretji del tega prispevka) in

ker raziskovalci praviloma nimajo neposrednih podatkov o inovacijski dejavnosti podjetij, empirične študije o vplivu zunanjega prelivanja znanja na inovacijsko dejavnost podjetij praviloma regresirajo rast produktivnosti na zunanje prelivanje znanja, običajno na prelivanje z NTI. Rezultat nato razlagajo kot vpliv zunanjega prelivanja znanja na inovacijsko dejavnost podjetij. To je seveda le posredno merilo vpliva zunanjega prelivanja znanja na inovacijsko dejavnost podjetij, le druga najboljša rešitev, ki prinaša nekatere probleme. Problem merjenja tehnoloških eksternalij s prelivanji produktivnosti (angleško *productivity spillovers*), ki ga prepoznava več avtorjev (glej na primer Alvarez in Robertson 2004, Chen 1997), izhaja iz dejstva, da poleg tehnoloških eksternalij obstajajo še drugi dejavniki, ki vplivajo na prelivanje produktivnosti in za katere modeli ne kontrolirajo. Z drugimi besedami, tehnološke eksternalije so morda najvažnejši dejavnik prelivanja produktivnosti, niso pa edini. V tistem obsegu, v katerem je prelivanje produktivnosti tudi rezultat drugih dejavnikov poleg tehnoloških eksternalij, prelivanje pruduktivnosti dejansko ni dober kazalec tehnoloških eksternalij. Tu so tudi dejavniki, ki lahko preprečijo transformacijo tehnoloških eksternalij v prelivanje produktivnosti, kakor so propad domačih podjetij zaradi močne tuje konkurence, nezadostna sposobnost domačih podjetij za absorbiranje tehnoloških eksternalij, sistemske/institucionalne pomanjkljivosti itd. Da bi se izognili tem problemom, predlagamo neposredno merjenje vpliva zunanjega prelivanja znanja na inovacijsko dejavnost podjetij. V skladu s tem regresiramo inovacijsko dejavnost podjetij na zunanje prelivanje znanja in javne R&R subvencije, na lastne R&R v podjetjih, na absorbcijsko sposobnost podjetij in na niz kontrolnih spremenljivk, ki sodoločajo inovacijsko dejavnost podjetij in zunanje prelivanje znanja.

3. Lastne R&R kot determinanta inovacijske dejavnosti podjetij in sposobnosti podjetij za absorbiranje zunanjega prelivanja znanja

Lastne R&R so ključna determinanta inovacijske dejavnosti/sposobnosti podjetij in njihove sposobnosti, da absorbirajo zunanje znanje. Zaradi tega imajo lastne R&R dva komplementarna učinka na inovacijsko dejavnost in rast produktivnosti podjetij (Cohen in Levinthal 1989). Po eni strani R&R z inovacijami neposredno širijo tehnološko raven podjetja. To lahko imenujemo inovacijski učinek. Po drugi strani pa lastne R&R povečujejo absorbcijsko spsosobnost podjetij - to je sposobnost identificirati, asimilirati in izkoriščati zunanje znanje. To se običajno imenuje učinek učenja ali absorbcije. Oba ta pomembna učinka vključujemo v naš model.

Teoretične temelje inovacijskega učinka daje literatura o endogenih inovacijah in rasti (glej na primer Aghion in Howitt 1992, 1997, Grossman in Helpman 1991, Romer 1990). Cameron, Proudman in Redding (2003) navajajo cel sklop empirične literature v prid pozitivnega vpliva lastnih R&R na rast produktivnosti. Pomembne reference vključujejo Griliches (1980), Griliches in Lichtenberg (1984), Mansfield (1980), Hall in Mairesse (1995), Griffith, Redding in Simpson (2004). Model R&R kapitala je prevladujoča raziskovalna paradigma za proučevanje odnosa med inovacijsko dejavnostjo in rastjo produktivnosti podjetij. Ta pristop siceršnjim vnosom, ki vstopajo v produkcijsko funkcijo, dodaja nekaj kapitala znanja. Po Ornaghiju (2004) je temeljna razlikovalna značilnost te vrste kapitala ta, da ni odvisen le od lastnih raziskovalnih naporov podjetja, temveč tudi od količine splošnega znanja, do katerega ima podjetje dostop; kar pomeni, da se podjetje lahko uči tudi iz inovacij drugih podjetij. Na ta način v model vstopajo tehnološke eksternalije oziroma zunanje prelivanje znanja.

Sposobnost podjetij, da vsrkajo zunanje prelivanje znanja, z NTI in drugimi oblikami prenosa tehnologije, je v literaturi pritegnila precejšnjo pozornost. Na splošno empirija (Kokko 1994, Borensztein, De Gregorio in Lee 1998, Kinoshita 2000) kaže, da NTI lahko prispevajo k splošni rasti produktivnosti v državi prejemnici le, kadar tehnološka vrzel med domačimi in tujimi podjetji ni prevelika in kadar imajo domača podjetja zadostno absorbcijsko sposobnost. Lastna R&R dejavnost podjetij ni edina determinanta sposobnosti podjetja za vpijanje zunanjega prelivanja znanja. Za Hoppeja (2005) so vsi kanali prenosa tehnologije močno odvisni od tehnološke sposobnosti države ali podjetja, to pa je dejavnik, na katerega močno vpliva obseg človeškega kapitala, ki obstaja in se uporablja v gospodarstvu (Hoppe 2005). Z drugimi besedami, človeški kapital in še posebej terciarna izobrazba sta najpomembnejša pri prenosu tehnologije. Druge determinante absorbcijske sposobnosti, ki so identificiranbe v literaturi, vključujejo velikost podjetja, zunanjo trgovino, investicijske in poslovne razmere v državi prejemnici itd.

4. Kanali zunanjega prelivanja znanja

Mednarodni tokovi znanja potekajo skozi NTI, trgovino, licenciranje, navzkrižno patentiranje in skozi mednarodno znanstveno in tehnično

sodelovanje. Literatura opredeljuje tri glavne kanale mednarodnega prelivanja R&R. Prvi kanal je neposredni prenos tehnologije z mednarodnimi licenčnimi sporazumi (Eaton in Kortum 1996); ti v zadnjem času predstavljajo manj pomemben vir, saj najnovejša in najbolj dragocena tehnologija ni na razpolago z licencami (UNCTAD 2000). Drugi kanal so NTI, ki predstavljajo verjetno najpomembnejši in najcenejši kanal za neposredni prenos tehnologije, kakor tudi za posredno prelivanje znanja v manj razvite države. Tretji kanal prenosa tehnologije je mednarodna trgovina, še posebej uvoz kapitalne opreme in vmesnih proizvodov, pa tudi učenje z izvažanjem (angleško *learning-by-exporting*) v industrijske države. Medtem ko obstaja precej literature o individualnih kanalih mednarodnega prenosa tehnologije, še posebej skozi NTI, so analize, ki neposredno primerjajo različne kanale, tako da podajajo relativen pomen vsakega od njih, redke (glej na primer Alvarez in Robertson 2004, Keller in Yeapl 2003, Damijan, Knell, Majcen in Rojec 2003a, Keller 2004).

4.1. Neposredni učinki NTI (tuje proti domačemu lastništvu)

Ko govorimo o NTI kot viru tehnologije in rasti produktivnosti, je treba razlikovati med neposrednimi učinki NTI in prelivanji z NTI (angleško: *FDI spillovers*). Neposredni učinki NTI se nanašajo na neposredni učinek tujega lastništva na prenos tehnologije in produktivnost tujih podružnic; nanašajo se na vprašanje, zakaj so tuje podružnice (ali MNP na splošno) učinkovitejše od domačih podjetij (ali ne-MNP na splošno). Skratka, pri merjenju prispevka NTI k tehnološkemu razvoju države prejemnice je treba predvsem upoštevati tehnološko zmogljivost podružnic tujih podjetij. Pričakujemo lahko, da je ta zmogljivost višja od tehnološke zmogljivosti domačih proizvajalcev.

NTI predstavljajo verjetno najpomembnejši in najcenejši kanal neposrednega prenosa tehnologije. Številne študije navajajo empirične dokaze o pomenu tokov NTI za gospodarsko rast manj razvitih držav (glej Aitken in Harrison 1999, Borensztein, De Gregori in Lee 1998, Blomström in Sjöholm 1999). Obstaja precej empiričnih analiz, ki uporabljajo podatke na ravni podjetij, ki so v prid pozitivnega neposrednega prenosa tehnologije od MNP k njihovim tujim podružnicam, ki se odraža v višjih ravneh in hitrejši rasti produktivnosti (na primer Haddad in Harrison 1993, Blomström in Wolff 1994, Blomström in Sjöholm 1999, Aitken in Harrison 1999, Girma, Greenaway in Wakelin 2001, Barry, Görg in Strobl 2002, Alverez, Damijan in Knell 2002, Blalock 2001, Damijan, Knell, Majcen, Rojec 2003b). NTI kot vir tuje tehnologije in rasti produktivnosti je (bil) še posebej pomemben za podjetja iz tranzicijskih gospodarstev zaradi njihove nujne potrebe po hitrem prestrukturiranju (Blanchard 1997). Z NTI se načeloma hitreje prenaša nova tehnologija kakor pa z licenčnimi sporazumi ali z mednarodno trgovino (Mansfield in Romero 1980).

4.2. Prelivanja z NTI

Vprašanje prelivanj z NTI (angleško: *FDI spillovers*) je daleč najekstenzivneje obdelan kanal zunanjega prelivanja znanja v literaturi. Do prelivanja znanja (angleško: *knowledge spillovers*) prihaja kot posledica uvajanja novih tehnologij in organizacijskih strokovnih znanj v tujih podružnicah, ki so značilno boljša kakor v domačih podjetjih (Damijan, Knell, Majcen in Rojec 2003a). Do prelivanja znanja z NTI pride, ko vstop ali navzočnost MNP poveča znanje domačih podjetij v državi prejemnici, MNP pa ne morejo polno internalizirati vrednost koristi od superiornega znanja (Smarzynska 2003). Navzočnost tuje podružnice lahko torej posredno, s prelivanjem znanja domačim podjetjem, poveča stopnjo tehnološkega spreminjanja in tehnološkega učenja v gospodarstvu države prejemnice.

Kokko (1992) in Blomströ̊m in Kokko (1998) opredeljujejo vsaj štiri načine, kako se lahko širi tehnologija od tujih podružnic k drugim podjetjem v gospodarstvu. To so: (i) učinek predstavitve-posnemanja, ko se domača podjetja skozi nelastniške povezave z MNP od njih naučijo boljših proizvodnih tehnologij; (ii) učinek konkurence, ko vstop MNP prisili domače tekmece v posodabljanje proizvodnih tehnologij in tehnik, da bi postali bolj produktivni; (iii) učinek tujih povezav, ko tuje podružnice pritegnejo domače dobavitelje (glej na primer Markusen in Venables 1999, Gőrg in Strobl 2004, Griffith, Redding in Simpson 2004 itd.), ko MNP tudi domačim podjetjem omogočijo dostop do novih specializiranih vmesnih proizvodov (Rodriguez-Clare 1996), ali ko domača podjetja uporabljajo vmesne proizvode tistih domačih dobaviteljev, katerih produktivnost se je povečala z znanjem in izkušnjami MNP (Keller in Yeaple 2003); (iv) učinek učenja, do katerega pride s selitvijo visoko strokovnega kadra iz tujih podružnic v domača podjetja; ti ljudje lahko v domačih podjetjih koristno uporabijo znanje, ki so ga pridobili v tujih podružnicah (glej na primer Gőrg in Strobl 2004, Griffith, Redding in Simpson 2004, Keller in Yeapl 2003, Lim 2001 itd.). Seveda pa niso vsa prelivanja pozitivna, saj lahko NTI združujejo tudi negativne eksternalije. To se zgodi, če tuja podjetja, ki imajo boljšo tehnologijo, s prevzemom večjega ali manjšega dela trga prisilijo domača podjetja k izstopu. Te negativne eksternalije učinka konkurence se pogosto imenujejo tudi učinek izrinjanja, ali

učinek kraje posla (glej na primer Aitken in Harrison 1999, Haddad in Harrison 1993, Djankov in Hoekman 2000 itd.).

Literatura o prelivanju z NTI razlikuje med tehnološkimi prelivanji z NTI, do katerih prihaja med podjetji, ki so vertikalno povezana z MNP (vertikalna, medindustrijska prelivanja domačih podjetij v nižje in višje ležečih panogah), ali pa so v neposredni konkurenci z njimi (horizontalna, medindustrijska prelivanja). Ker imajo MNP močno spodbudo, da preprečijo odtekanje informacij, ki bi krepile uspešnost njihovih lokalnih konkurentov, hkrati pa morda želijo prenesti znanje svojim lokalnim dobaviteljem, je bolj verjetno, da bodo prelivanja z NTI prej vertikalna kakor horizontalna (Smarzynska 2003). Kljub temu pa empirična literatura zajema predvsem prelivanja, ki se dogajajo med podjetji znotraj posamezne panoge. Razlog je v tem, da je konkurenčne učinke znotraj neke panoge dosti laže meriti kakor pa navzkrižne učinke povezovanja med panogami. Avtorji, ki so izrecno vnesli pojma vertikalnih in horizontalnih prelivanj v literaturo, so Blalock (2001), Schoors in van der Tol (2001), Smarzynska (2001), Smarzynska (2003) Smarzynska in Spatareanu, (2002), ter Damijan, Knell, Majcen in Rojec (2003a, 2003b). Rezultati njihovih študij kažejo pozitivna prelivanja z NTI z vključitvijo domačih dobaviteljev, to je z vzvratnimi vertikalnimi prelivanji po verigi dodane vrednosti).

Obsežna literatura o prelivanjih z NTI, ki se je razvila v zadnjih skoraj 30 letih, kaže mešane empirične rezultate. Empirične analize su pokazale pozitivne, nevtralne in negativne učinke prelivanja z NTI. Analize kažejo, da lahko prihaja do prelivanj z NTI, vendar ne vedno v enakem obsegu (Keller 2004), prav tako ni enotnega mnenja o učinku prelivanj, povezanih z NTI (Blomstrőm, Globerman and Kokko 2000), niti o smeri vzročno-posledične povezanosti (Lim 2001). Pri tem je pomembno, da v nasprotju s prejšnjo literaturo (glej na primer Haddad in Harrison 1993, Aitken in Harrison 1999, Harrison 1996, Djankov in Hoekman 2000, Konings 2001) rezultati nedavnih študij, ki temeljijo na individualnih podjetniških podatkih, težijo k ocenam o pozitvnih, v nekaterih primerih tudi ekonomsko pomembnih prelivanjih, povezanih z NTI (glej na primer Keller in Yeapl 2003, Smarzynska 2003, Damijan, Knell, Majcen in Rojec 2003b).

4.3. Uvoz in učenje z izvozom

Mednarodna trgovina deluje kot kanal za prenos tehnologije, bodisi z uvozom vmesnih proizvodov in kapitalne opreme (Feenstra, Markusen in Zeile 1992), bodisi z učenjem z izvozom v industrijske države (Clerides, Lach in Tybout 1998). Več avtorjev je v zadnjem času proučevalo vprašanje s trgovino povezanih tehnoloških eksternalij. Prva skupina študij se ukvarja z mednarodnimi prelivanji R&R, do katerih prihaja z uvozom. Te študije večinoma podpirajo tezo, da je uvažanje povezano s prelivanji tehnologije, vendar pa ne vemo, kako močna so prelivanja s tehnologijo, ki je opredmetena v vmesnih proizvodih, glede na druga z uvozom povezana prelivanja (glej na primer Keller 2004, Keller in Yeapl 2003, Eaton in Kortum 2001, Coe in Helpman 1995). Novejše raziskave poskušajo podati močnejši empirični okvir, s tem da uporabljajo bolj dezagregirane podatke in da v modele poleg uvoza vključujejo tudi alternativne kanale prelivanj. Te študije so zaenkrat prišle do mešanih rezultatov (glej na primer Keller 2002b, Kraay, Isoalaga in Tybout 2001).

V primerjavi z uvozom obstaja še precej manj dokazov v prid prelivanjem znanja z učenjem z izvozom. Konvencionalna modrost je, da učinki učenja z izvozom ne obstajajo. Taka ugotovitev je v skladu z ugotovitvami novejših empiričnih analiz. Kakor pravi Keller (2004) v svojem pregledu relevantne literature, so učinke učenja z izvozom našli v literaturi, ki temelji na študijah primerov, medtem ko so avtorji ekonometričnih študi precej bolj skeptični (glej na primer Clerides, Lach in Tybout 1998, Bernard in Jensen 1999, Hallward-Driemeier, Iarossi in Sokoloff 2002).

4.4. Javne R&R subvencije

V zvezi z raziskovalnimi vprašanji, ki jih obravnavamo v tem prispevku, je ključno vprašanje, povezano z javnimi R&R subvencijami, ali obstajajo pozitivna prelivanja od javnih k zasebnim R&R izdatkom; to je, ali R&R subvencije spodbujajo ali nadomeščajo podjetniško financiranje R&R v podjetjih samih, ali so tovrstni javni izdatki dopolnilni in tako dodatek zasebnim R&R izdatkom, ali pa jih le nadomeščajo in dejansko "izrivajo" zasebne R&R izdatke (David, Hall in Toole 1999). Uveljavljena utemeljitev v prid vladne podpore R&R temelji na prepričanju, da obstaja neke vrste nepopolnost trga, ki vodi zasebni sektor v podravnotežno investiranje v R&R (Arrow 1962, Nelson 1959). V dobršni meri do podinvestiranja v R&R prihaja, ker si zasebna podjetja, ki nosijo stroške odkritij, težko prisvojijo družbene koristi od novih tehnologij (problem "nepopolne zasebne prisvojljivosti") (Griliches 1998, Romer 1990).

Rezultati R&R dejavnosti so torej javna dobrina, kar pomeni, da ekonomske spodbude na splošno ne vodijo podjetja v ustrezno raven R&R investicij. Zato mora javno podprti R&R povečati ali dopolniti zasebne R&R napore. Vendar empirične

študije kažejo, da prihaja do nadomestila med zasebnimi in javno financiranimi R&R oziroma da podjetja pogosto zmanjšajo svoje lastne izdatke za R&R, ko dobijo R&R subvencije (glej na primer Wallsten 2000, Busom 2000, Klette in Moen 1997, Lach 2000). Glavni razlogi za substitucijski učinek R&R subvencij na zasebne R&R izdatke so: (i) subvencioniranje projektov, ki bi jih podjetja uresničila tudi, če ne bi dobila subvencij; (ii) podjetja prilagodijo svoj portfelj R&R projektov tako, da po prejemu subvencije ustavijo ali upočasnijo uresničitev projektov, za katere ne dobijo subvencij; (iii) povečanje cen R&R vnosov zaradi povečanega povpraševanja, ki je posledica R&R subvencij (Lach 2000, David, Hall in Toole 1999).

David, Hall in Toole (1999) so pregledali obstoječo empirično literaturo o učinkih javnih R&R subvencij našli nasprotujoče ugotovitve. Tako pregled ne daje dokončnega empiričnega odgovora glede predznaka in obsega povezave med javnimi in zasebnimi R&R izdatki. Ena tretjina študij, ki so jih analizirali, poroča, da so R&R subvencije nadomestilo za zasebne R&R investicije. Učinek nadomestila je pogostejši med študijami, ki so bile izvedene na podjetniški ali poslovni ravni, kakor med študijami na panožni ali višji ravni združenja. Od 19 analiz na ravni podjetja ali niže jih 9 poroča o nadomestilu, vendar gre v glavnem za analize ameriškega gospodarstva: od 12 podjetniških študij, ki temeljijo na podatkih za ZDA, jih kar 7 poroča o nadomestilu, medtem ko od 7 študij za druge države le 2 poročata o nadomestilu. Dopolnjevanje je tako precej močnejše pri študijah za druge države in obratno pri študijah ameriškega gospodarstva. Ti rezultati kažejo na metodološke probleme, ki vplivajo na rezultate ekonometričnih študij.

5. Opredelitve inovativnosti podjetij in vpliv inovativnosti na rast produktivnosti slovenskih podjetij

5.1. Inovacijska dejavnost slovenskih podjetij

V tem delu na podlagi uradnih inovacijskih pregledov Slovenije, ki temeljijo na metodologiji OECD, opredeljujemo inovacijske dejavnosti slovenskih podjetij. Inovacijske preglede v Sloveniji vsako drugo leto pripravlja Statistični urad Republike Slovenije. Prvi obsežni inovacijski pregled smo dobili leta 1996, nato pa še v letih 1998, 2000 in 2002. Inovacijski pregledi zajemajo širok vzorec industrijskih in neindustrijskih podjetij; vključitev v vzorec ni vezan na dejansko R&R dejavnost podjetij. Inovacijski pregledi izčrpno prikazujejo inovacijske dejavnosti podjetij in njenega vpliva na uspešnost/produktivnost slovenskih podjetij.

5.1.1. Opisna statistika inovacijske dejavnosti slovenskih podjetij

V tem delu prikazujemo opisno statistiko inovacijske dejavnosti slovenskih podjetij. Inovacijsko dejavnost slovenskih podjetij analiziramo glede na lastništvo, velikost podjetij in tehnološke intenzivnosti sektorjev. Tabela 1 kaže, da je inovacijska dejavnost v Sloveniji, ki zajema inovacije proizvodov in storitev ter inovacije procesov[1], precej nizka. Le okrog 20 % slovenskih podjetij je inovativnih, kar pomeni, da so v zadnjem dveletnem razdobju izvedle vsaj eno produktno ali procesno inovacijo. Kar je še posebej opazno, je negativni trend v inovacijski dejavnosti slovenskih podjetij, ki kaže, da se je delež inovativnih podjetij v obdobju 1998-2002 zmanjšal[2]. Ta trend je predvsem posledica nizke inovacijske dejavnosti domačih podjetij; le 17 % podjetij v domači lasti je inovativnih. Med podjetji v tuji lasti (podjetja z 10 % ali višjim tujim deležem v lastniškem kapitalu) je delež inovativnih podjetij dvakrat višji kakor med domačimi podjetji. To kaže na bolj konkurenčno in inovacijam prijazno okolje v podjetjih v tuji lasti.

Primerjava med podjetji glede na njihovo velikost (mala: manj kakor 50 zaposlenih, srednja: 50-250 zaposlenih in velika: več kakor 250 zaposlenih) kaže, da je med srednjimi podjetji tri- do štirikrat več, med velikimi podjetji pa pet- do šestkrat več inovativnih podjetij kakor med malimi podjetji. Tabela 2 kaže pomembne razlike med domačimi in tujimi podjetji. Podjetja v tuji lasti, še posebej če so srednja ali velika, so pogosteje inovativna kakor podjetja v domači lasti, ali natančneje povedano: v povprečju je 30 % -35 % srednjevelikih podjetij v tuji lasti inovativnih, medtem ko je ustrezni delež za podjetja v domači lasti le okrog 25 %. Pri velikih podjetjih je razlika manjša, saj je inovativnih 60 % podjetij v tuji lasti in 55 % podetij v domači lasti.

Poglejmo razlike v inovacijski dejavnosti med podjetji iz različnih tehnološko intenzivnih skupin industrij[3]. Tabela 3 kaže, da so v Sloveniji najbolj

[1] V nadaljni analizi ne razlikujemo med produktnimi in procesnimi inovacijami. Analiza determinant obeh tipov inovacijske aktivnosti (glej točko 5.1.2.) ne kaže pomembnejših razlik med njima, zato ju obravnavamo skupaj v eni sami spremenljivki.

[2] Delež inovativnih podjetij se zmanjšuje, čeprav celotni izdatki za inovacije rastejo.

[3] Posamezne panoge predelovalne dejavnosti so po metodologiji OECD glede na tehnološko intenzivnost razvrščene v štiri skupine: nizko tehnološke, srednje nizko tehnološke, srednje visoko tehnološke in visoko tehnološke inbdustrije.

Tabela 1: R&R izdatki in inovacijska dejavnost slovenskih podjetij glede na vrsto lastništvo, 1996-2002 (v %)

	N	R&R/Prodaja (Inovativna podjetja)	R&R/Prodaja (Neinovativna podjetja)	Delež inovativnih podjetij
Vsa podjetja				
1996	1.454	1,5	0,026	21,7
1998	1.777	1,6	0,003	23,0
2000	2.518	6,0	0,021	21,2
2002	2.564	6,5	0,015	20,6
Domača				
1996	1.148	1,4	0,027	18,6
1998	1.371	1,5	0,003	19,5
2000	1.923	7,1	0,023	17,5
2002	1.935	6,4	0,004	17,3
Tuja				
1996	306	1,8	0,023	33,3
1998	406	1,9	0,003	34,7
2000	595	4,1	0,012	32,9
2002	629	6,6	0,055	30,5

Vir: Statistični urad Republike Slovenija; lastni izračuni.

Tabela 2: R&R izdatki in inovacijska dejavnost slovenskih podjetij po velikosti podjetja in vrsti lastništva, 1996-2002 (v %)

	N		R&R/Prodaja (Inovativna podjetja)		R&R/Prodaja (Neinovativna podjetja)		Delež inovativnih podjetij	
	Domača	Tuja	Domača	Tuja	Domača	Tuja	Domača	Tuja
Mala								
1996	578	67	1,6	2,2	0,011	0,000	8,8	13,4
1998	790	121	1,0	2,2	0,000	0,000	10,5	11,6
2000	1.358	265	9,4	5,4	0,021	0,000	11,4	14,7
2002	1.424	281	9,0	16,1	0,000	0,016	12,4	11,7
Srednja								
1996	438	146	1,4	1,9	0,017	0,011	22,6	27,4
1998	447	183	2,1	1,8	0,008	0,000	25,5	35,5
2000	445	215	5,5	4,5	0,030	0,005	26,3	40,9
2002	406	222	4,1	4,9	0,019	0,144	24,9	36,9
Velika								
1996	132	93	1,2	1,8	0,198	0,087	48,5	57,0
1998	126	102	1,0	1,9	0,003	0,022	56,3	60,8
2000	120	115	4,7	2,9	0,025	0,092	54,2	60,0
2002	105	126	2,6	4,3	0,010	0,000	54,3	61,1

Vir: Statistični urad Republike Slovenija; lastni izračuni.

inovativna podjetja v srednje visokih tehnoloških panogah, kakor so elektro, avtomobilska, strojna in kemična industrija. Tudi tu podjetja v tuji lasti izkazujejo do 20 odstotnih točk višje številke glede inovacijske dejavnosti. Tudi podjetja v visoko tehnoloških panogah kažejo nadpovprečno

Tabela 3: R&R izdatki in inovacijska dejavnost slovenskih podjetij po tehnološko opredeljenih skupinah panog in po tipu lastništva, 1996-2002 (v %)

	N		R&R/Prodaja (Inovativna podjetja)		R&R/Prodaja (Neinovativna podjetja)		Delež inovativnih podjetij	
	Domača	Tuja	Domača	Tuja	Domača	Tuja	Domača	Tuja
Nizko teh.								
1996	314	98	0,7	0,6	0,026	0,003	17,8	31,6
1998	333	110	0,8	0,9	0,004	0,000	20,1	39,1
2000	423	138	4,2	3,1	0,004	0,002	15,6	39,1
2002	413	147	3,5	4,8	0,004	0,015	14,8	40,1
Srednje nizko teh.								
1996	451	96	0,7	0,5	0,005	0,015	12,0	18,8
1998	548	149	0,8	1,0	0,001	0,000	11,1	23,5
2000	867	256	5,4	3,7	0,007	0,020	11,0	20,7
2002	923	266	5,6	4,5	0,005	0,000	10,7	18,8
Srednje visoko teh.								
1996	154	61	2,3	2,6	0,011	0,062	31,2	50,8
1998	203	71	2,0	2,3	0,000	0,025	35,0	49,3
2000	245	103	5,4	4,1	0,000	0,012	30,6	47,6
2002	243	101	4,1	3,4	0,000	0,101	34,2	39,6
Visoko teh.								
1996	229	51	2,0	3,6	0,087	0,047	24,5	43,1
1998	287	76	2,2	4,0	0,007	0,000	24,0	36,8
2000	339	90	9,6	5,9	0,117	0,000	25,4	42,2
2002	329	107	11,3	7,2	0,002	0,240	26,1	35,5

Vir: Statistični urad Republike Slovenija; lastni izračuni.

inovacijsko dejavnost, ki pa je bistveno nižja kakor pri podjetjih v srednje visokih tehnoloških panogah (25 % proti 35 %). Pri podjetjih v tuji lasti so razlike v inovacijski dejavnosti med tehnološko opredeljenimi skupinami panog manj izrazite, saj so z izjemo srednje nizkih tehnoloških panog podjetja v tuji lasti precej podobno usmerjena v inovacijsko dejavnost; delež inovativnih podjetij je med 40 % -50 %.

Kar je v tabelah od 1 do 3 še posebej zanimivo, je, da višja inovacijska dejavnost podjetij v tuji lasti ni nujno podprta tudi z višjimi R&R izdatki (relativno glede na prodajo). Dejstvo je, da v zadnjih dveh inovacijskih pregledih (2000, 2002) podjetja v tuji lasti izkazujejo relativno manjše R&R izdatke v primerjavi s podjetji v domači lasti. Njihova višja sposobnost inoviranja torej očitno izhaja iz drugih dejavnikov, kakor so stalen prenos tehnologije in druga prelivanja znanja od njihovih tujih matičnih podjetij. V naslednjem delu natančneje obravnavamo to vprašanje.

5.1.2. Opredelitve inovativnosti slovenskih podjetij

V tem delu raziskujemo vprašanje, kaj povzroča inovativno dejavnost slovenskih podjetij. Integrirani pristop k analizi vpliva zunanjih prelivanj znanja na inovacijsko dejavnost podjetij, kakor ga prikazuje slika 1, nakazuje najpomembnejše opredelitve inovacijske dejavnosti podjetij.[4] Seznam tistih, ki so na razpolago za empirično raziskavo, je naslednji:

- V skladu z endogeno teorijo inovacij in rasti so lastne R&R ključne tako za inovacijsko dejavnost podjetij kakor tudi za njihovo sposobnost vsrkati zunanja prelivanja znanja. Čim višji so lastni izdatki za R&R, višja je

[4] Seveda na inovativnost podjetij pomembno vpliva tudi vrsta dejavnikov širšega inovacijskega okolja, kot je razvojno raziskovalna in inovacijska politika države, dober oziroma slab dostop do rizičnega kapitala itd. (glej na primer Bučar in Stare 2002, 2003). V modelu dejavnikov širšega inovacijskega okolja ne upoštevamo, saj predpostavljamo, da so bolj ali manj enaki za vsa podjetja.

inovacijska dejavnost podjetja in večje je vpijanje (absorpcija) zunanjega znanja.

- Zunanja prelivanja znanja postajajo vse pomembnejša za inovacijsko dejavnost podjetij. Vendar pa je pomen različnih kanalov zunanjega prelivanja znanja precej različen. Neposreden učinek NTI, ki je opredmeten v tuji tehnologiji in organizacijskem znanju, ki jih tuja matična podjetja prenašajo svojim tujim podružnicam, je morda daleč najpomembnejši kanal zunanjega prelivanja znanja. Glede prelivanja znanja z zunanjo trgovino učinek učenja z izvozom ni gotov oziroma očiten.[5]
- Tudi učinek prelivanja, ki izhaja iz javnih R&R subvencij, ki povečujejo zasebne R&R izdatke prejemnikov subvencij, ni gotov oziroma prepričljiv. Pričakujemo lahko rezultate nekje med šibko komplementarnostjo in šibko substitutivnostjo.
- Absorpcijska sposobnost podjetij (in držav) je zelo pomembna za obseg zunanjega prelivanja znanja. Obseg zunanjega prelivanja znanja se povečuje z obsegom lastnih R&R izdatkov, s tujim lastništvom podjetij, s tehnološko intenzivnostjo panoge (razlikovanje med visoko, srednje visoko, srednje nizko in nizko tehnološkimi panogami), z obsegom človeškega kapitala, z izvozno usmerjenostjo in z velikostjo podjetja. Obseg vertikalnih prelivanj je morda pozitivno povezan s stopnjo usmerjenosti podjetij na domači trg.
- Zunanja prelivanja znanja imajo zaradi različnih kanalov prelivanja lahko različen učinek na proizvodne in produktne inovacije. Ornaghi (2004) pravi, da je lažje absorbirati produktne inovacije.

Tabela 4 prikazuje pomen zgoraj opisanih opredelitev inovacijske dejavnosti slovenskih podjetij. Tabela kaže stanovitnost inovacijske dejavnosti podjetij glede na dejavnik časa; verjetnost, da so podjetja danes inovativna, je večja pri tistih podjetiji, ki so bila taka tudi pred dvema letoma. Tabela tudi kaže, da bodo inovativna podjetja verjetno večja (merjeno z zaposlenostjo), da bodo precej več investirala v R&R in da bodo pritegnila tudi večji delež subvencij, tako domačih kakor tujih[6]. Hkrati so inovativna podjetja tudi bolj usmerjena v izvoz in je večja verjetnost, da bodo v tuji lasti. Presenetjivo pa je, da inovativna podjetja niso bolj produktivna, merjeno z dodano vrednostjo na zaposlenega in glede na povprečje panoge.

Da bi ugotovili pomen posameznih dejavnikov za inovacijsko dejavnost podjetij, smo ocenili verjetnost $INOV_{it}$ [0, 1], da bo podjetje i v obdobju t izvedlo inovacije:

$$(1) \qquad \Pr(INOV_{it}=1 \mid \mathrm{M}_{it}) = \mathrm{G}(\omega \mathrm{M}_{it}),$$

kjer je M_{it} matrika operativnih značilnosti podjetij. Predpostavljamo, da so napake IID porazdeljene in da imajo ekstremne vrednosti neodvisno porazdelitev. Odvisna spremenljivka $INOV_{it}$ je enaka 1, če je podjetje v razdobju t izvedlo kakršno koli inovacijo proizvoda (storitve) ali proizvodnega procesa, in 0, če tega ni naredilo. Kontrolne spremenljivke, ki so vsebovane v M_{it}, so tiste, ki so naštete v tabeli 4, to je *dummy* za preteklo inovacijsko dejavnost (odložen za eno obdobje, to je za dve leti), velikost podjetja (število zaposlenih), relativna produktivnost podjetja (dodana vrednost podjetja na zaposlenega relativno glede na povprečno produktivnost konkretne panoge), delež izdatkov za R&R v celotni prodaji, izvozna usmerjenost, *dummy* za tuje lastništvo in tri spremenljivke za pomen R&R subvencij (celotne R&R subvencije, javne R&R subvencije in tuje R&R subvencije, oboje prikazane v razmerju do celotnih R&R izdatkov podjetja). V model so vključena tudi horizontalna in vertikalna prelivanja od inovacijske dejavnosti drugih podjetij. Horizontalna prelivanja merimo s številom inovacij v isti panogi. Vertikalna prelivanja računamo kot število inovacij, do katerih je prišlo v povezanih panogah, pomnoženo z ustreznimi *input-output* koeficienti, ki odražajo jakost *input–output* povezanosti med panogami. Skratka, čim bolj sta dve panogi medsebojno povezani z dvostranskimi vezmi ponudbe in povpraševanja in čim višja je inovacijska dejavnost v obeh panogah, več je prostora za pozitivna vertikalna prelivanja znanja med obema panogama. Model upošteva tudi tehnološko intenzivnost panog, v katerih podjetja delujejo. Menimo, da je verjetnost za inovativnost podjetij, da bi ostala konkurenčna, ali da bi krepila svojo tehnološko konkurenčno prednost pred konkurenti, višja v tehnološko bolj zahtevnih panogah. Zaradi kratkega in neuravnoteženega panela v model niso vključeni časovni *dummyi*.

Ocenjujemo model probit z uporabo dveletnih podatkov za vzorec slovenskih podjetij v predelovalni in nepredelovalni dejavnosti v obdobju 1996-2002. Rezultati za dve ločeni oceni modelov probit so v tabeli 5. Obe oceni kažeta, da

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[5] Učinki prelivanja znanja, ki izhajajo iz uvoza kapitalne opreme in vmesnih proizvodov so po vsej verjetnosti pozitivni – na žalost ne razpolagamo z ustreznimi podatki, da bi ta učinek lahko vključili v model – medtem ko je to precej manj gotovo, če sploh, za učinke učenja z izvozom.

[6] Vendar pa subvencije v povprečju ne predstavljajo pomembnejšega deleža izdatkov za R&R. Inovacijski pregledi kažejo, da se izdatki za inovacije v glavnem pokrijejo z lastnimi sredstvi.

Slika 1: Medsebojne povezave virov in opredelitev inovacijske dejavnosti podjetij, ki jih uporabljamo v modelu, kakor izhajajo iz ugotovitev empirične literature; upoštevani so le viri in opredelitve, za katere imamo podatke.

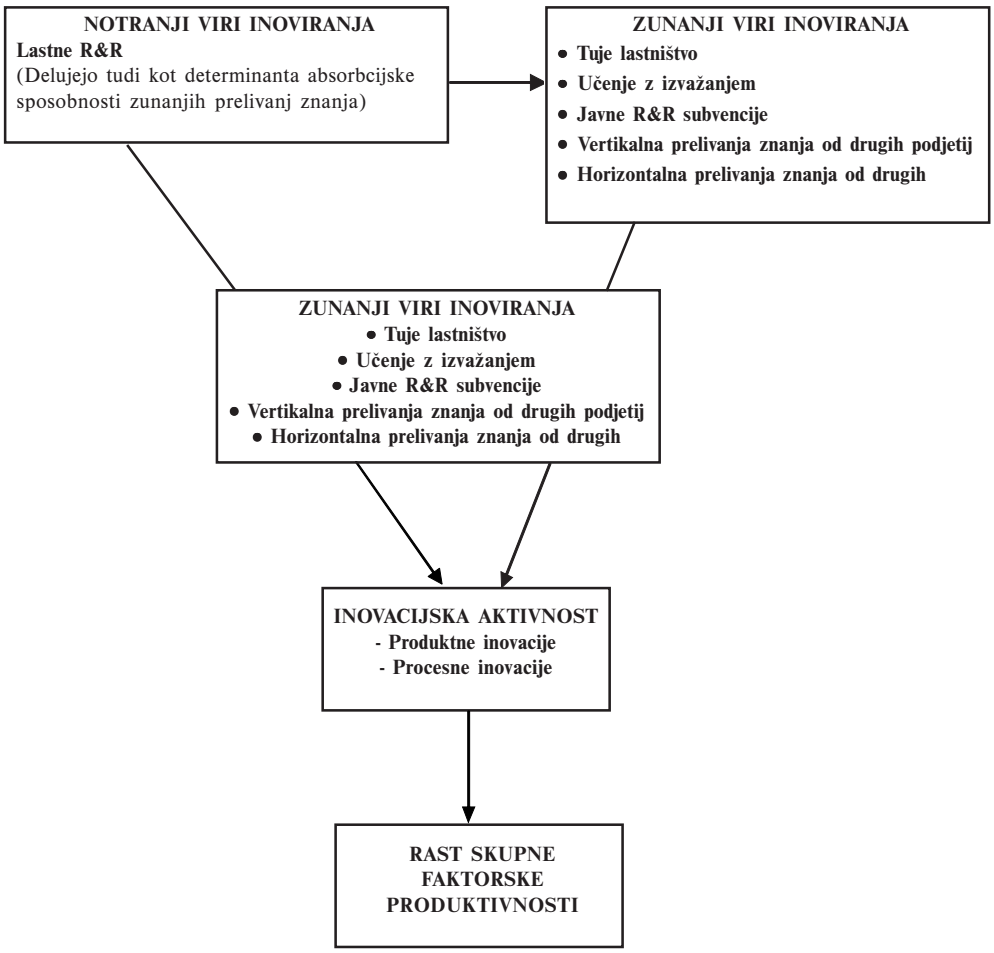

Tabela 4: Opredelitve inovativnosti podjetij v Sloveniji, 1996-2002 (v %)

	N	INOV_t-2	rDV/ Zaposl.	Zaposl.	R&R/ Prodaja	R&R/DV	Skupaj subv./ R&R	Javne subv./ R&R	Tuje subv./ R&R	Izvoz/ Prodaja	Vhodne NTI
Inovativna podjetja											
1996	316	-	1,26	346,7	1,55	5,39	5,39	3,12	0,27	43,9	0,388
1998	409	0,643	0,84	312,9	1,62	5,96	4,07	2,42	0,85	43,1	0,397
2000	533	0,554	1,11	278,5	6,02	19,22	4,33	3,42	0,59	38,1	0,368
2002	527	0,694	1,09	283,6	6,47	18,42	4,98	3,14	1,08	43,7	0,364
Neinovativna podjetja											
1996	1138	-	1,19	122,8	0,026	0,101	0,180	0,066	0,054	25,7	0,254
1998	1368	0,095	1,11	96,5	0,003	0,006	0,004	0,004	0,000	27,3	0,237
2000	1985	0,122	1,01	68,5	0,021	0,047	0,013	0,013	0,000	21,6	0,201
2002	2037	0,113	0,99	67,5	0,015	0,038	0,016	0,000	0,001	22,8	0,215

Vir: Statistični urad Republike Slovenije, lastni izračuni.

je sedanja inovacijska dejavnost podjetij močno odvisna od njihove pretekle inovacijske dejavnosti. Obstaja 82 % verjetnost, da bo podjetje izvedlo inovacijo proizvoda (storitev) ali procesa, če je bilo v prejšnjem razdobju inovativno. Velikost podjetja pozitivno vpliva na njegovo inovacijsko sposobnost, najverjetneje zaradi učinka obsega; večji obseg prodaje namreč omogoča podejetju, da zbere dovolj sredstev za večje R&R izdatke. To potrjuje tudi zelo pomemben in pozitiven vpliv lastnih R&R izdatkov na inovacijsko dejavnost podjetij. Medtem ko literatura ne daje povsem jasnega odgovora glede pomena R&R subvencij, naši rezultati kažejo, da so tako javne R&R subvencije kakor subvencije, ki so jih podjetja prejela iz tujine (obe merjene z deležem v celotnih R&R subvencijah, ki jih je prejelo podjetje), bistveno pomagale slovenskim podjetjem pri povečanju njihove inovacijske sposobnosti.

Tuje lastništvo spodbuja podjetja k inovativnosti, medtem ko izvoz ne kaže bistvenega vpliva na inovacijsko dejavnost podjetij. Za horizontalna prelivanja znanja model kaže, da spodbujajo inovacijsko dejavnost podjetij, medtem ko vertikalna prelivanja niso pomembna. To si lahko razložimo s tem, da visoko konkurenčno okolje z veliko inovacijsko dejavnostjo konkurentov spsodbuja posamezna podjetja, da sodelujejo v R&R in pri inovacijski dejavnosti. Po drugi strani pa se zdi, da so tehnološke zveze z drugimi panogami precej šibke.

Zanimivi in zelo presenetljivi sta dejstvi, da individualna produktivnost podjetja in tehnološka intenzivnost panoge, v kateri podjetje deluje, ne določata njegove inovacijske dejavnosti. Sklepali bi namreč, da podjetja gradijo svojo rast produktivnosti na stalni inovacijski dejavnosti. Podobno je nekoliko nenavadno tudi to, da podjetja, ki delujejo v srednje visoko in visoko tehnološko intenzivnih panogah niso nič bolj inovativna kakor podjetja v tehnološko manj zahtevnih panogah. Še posebej glede na to, da je delež inovacijskih izdatkov v prodaji v visoko tehnoloških panogah precej višji.[7]

Tabela 5: Ocene verjetnosti, da je podjetje inovativno*, 1996-2002 (Rezultati modela probit)

	Model 1		Model 2	
	Koef.	**z-stat**	**Koef.**	**z-stat**
$INOV_{t-2}$	0,821	***11,5	0,822	***11,5
Velikost	0,495	***10,0	0,497	***10,0
rDV/Zaposl	0,003	0,4	0,003	0,4
R&R/Prodaja	117,259	***25,2	118,173	***25,2
Skupaj subv./R&R	7,217	***5,1		
Javne subv./R&R			8,497	***4,3
Tuje subv./R&R			17,678	*1,7
Vhodne NTI	0,119	*1,7	0,117	*1,7
IZV/Prodaja	0,112	1,1	0,103	1,0
HP_INOV	0,008	***3,3	0,009	***3,4
VP_INOV	-0,003	-0,4	-0,002	-0,4
SN teh	-0,043	-0,4	-0,056	-0,5
SV teh	-0,035	-0,3	-0,045	-0,4
V teh	-0,133	-1,0	-0,162	-1,2
Const.	-2,602	***-18,7	-2,603	***-18,7
Število opazovanj	4167		4167	
LR chi2(12)	2888,5		2897,6	
Prob > chi2	0,00		0,00	
Pseudo R2	0,616		0,618	

Dep.var.: $INOV_t$
* Produktne in procesne inovacije so obravnavane enako.

[7] 8,5 % v visoko tehnoloških panogah v primerjavi z 2,5 % v srednje visoko, 2,7 % v srednje nizko in 1,4 % v nizko tehnološko intenzivnih panogah.

Poleg gornjih ocen, v katerih smo produktne in procesne inovacije obravnavali enako, smo tudi ločeno ocenjevali obe vrsti inovacijske dejavnosti. Vendar so dobljeni rezultati za obe vrsti inovacijske dejavnosti skoraj enaki, kar upravičuje našo odločitev, da obe vrsti inovacij obravnavamo v eni skupni spremenljivki. V obeh ločenih ocenah so le nekatere minimalne razlike, da procesne inovacije zahtevajo nekoliko večja podjetja, medtem ko je v podjetjih v tuji lasti večji poudarek na produktnih inovacijah, in da prinašajo nekoliko višji donos za javne subvencije.

5.2 Učinek inovativnosti na rast produktivnosti slovenskih podjetij

Medtem ko so rezultati ocen v prejšnjem delu pokazali precejšnjo učinkovitost lastnih R&R izdatkov in R&R subvencij za inovacijsko dejavnost podjetij, je namen tega dela oceniti pomen inovativnosti za rast skupne faktorske produktivnosti (SFP) podjetij.

V empiričnem delu sledimo obširni literaturi o prispevku R&R k rasti SFP podjetij. Praviloma se v takšni analizi uporablja pristop računovodstva rasti v obliki standardne Cobb–Douglasove produkcijske funkcije (glej Griliches 1998 za obsežen pregled empiričnih študij o prispevku R&R k rasti). Izhajamo iz naslednje produkcijske funkcije:

$$(2) \qquad Y_{it} = Ae^{\lambda t} K_{it}^{\alpha} L_{it}^{\beta} R_{it}^{\gamma} e^{\varepsilon_{it}} ,$$

kjer je Y_{it} dodana vrednost v podjetju i v času t, K, L, in R pa predstavljajo kapital, zaposlenost in raziskovalni kapital, ki se uporabljajo v proizvodnji. A je konstanta, λ pa predstavlja stopnjo neopredmetene tehnične spremembe; e označuje napake in zajema vse podjetniško specifične motnje, napake pri merjenju itd. Produkcijska funkcija je homogena stopnja r v K, L in M, tako da je $g = \alpha+\beta+\gamma \neq 1$, kar pomeni, da ima Y lahko nekonstantne donose na obseg. α, β in γ so elastičnosti proizvodnje glede na kapital, delo in R&R kapital. Naša glavna pozornost je usmerjena v oceno elastičnosti γ, ki odraža marginalno produktivnost, ali stopnjo donosa donosa glede na R&R kapital.

Z logaritemsko transformacijo in lineariziranjem lahko (2) enostavno napišemo v obliki prvih razlik:

$$(3) \quad \Delta y_{it} = \lambda + \alpha \Delta k_{it} + \beta \Delta l_{it} + \gamma \Delta r_{it} + \Delta \varepsilon_{it} .$$

Po kontroli standardnih vnosov (delo in kapital), nam ocena γ odraža prispevek R&R kapitala k rasti skupne faktorske produktivnosti (SFP). Predpostavljamo, da R&R kapital vsebuje sklop dejavnikov, ki spodbujajo inovacijsko dejavnost in so z vidika podjetja bodisi notranji ali zunanji. Torej lahko napišemo R kot funkcijo notranjega R&R kapitala $\mathbf{F}_{it}$ in različnih učinkov prelivanja $\mathbf{Z}_{it}$:

$$(4) \qquad R_{it} = f^{i}(\mathrm{F}_{it}, \mathrm{Z}_{it}),$$

kjer $\mathbf{F}_{it}$ vsebuje lastne R&R izdatke podjetja, merjene relativno z deležem R&R izdatkov v celotni prodaji podjetja. $\mathbf{Z}_{it}$ zajema vse učinke prelivanj, ki krepijo inovacijsko sposobnost podjetja, kakor so tuje lastništvo, učenje z izvažanjem (delež izvoza v prodaji), javne R&R subvencije, ki jih podjetje dobi iz domačih ali mednarodnih virov, kakor tudi inovacijska prelivanja, ki jih podjetje prejme od drugih podjetij znotraj iste panoge ali iz drugih panog.

Na panelnih podatkih je enačba (2) praviloma predmet podjetniško specifičnih časovno neodvisnih motenj, ki jih je možno kontrolirati z uporabo ene od standardnih ekonometričnih tehnik za panelne podatke (znotraj ali med cenilkami). Druga možnost za odpravo podjetniško specifičnih učinkov je, da ocenimo enačbo (3), kjer z izračunom prvih razlik enostavno izbrišemo časovno neodvisne podjetniško specifične učinke. Še en problem pri časovnih vrstah in presečnih podatkih, kakor je (2), je potencialna endogenost med vnosi in donosi, ki lahko vodi v pristransko oceno koeficientov za vnose. Vendar pa pri tako kratkih in neuravnoteženih panelnih zbirkah podatkov s skoraj dvema do tremi opazovanji na podjetje, kakor je naša, tega ni mogoče uspešno odpraviti. Popravek te endogenosti z uporabo metode Olley-Pakes ali z metodo momentov (GMM) zahteva daljše časovne serije podatkov, da bi jih lahko učinkovito uporabili kot odložene instrumente sedanje uspešnosti podjetja.

V prvi specifikaciji sledimo drugim empiričnim študijam in ocenjujemo (3) tako, da vključimo le R&R izdatke (relativno glede na prodajo) kot mero R&R kapitala. Ta ocena nam da zgornjo mejo možnega povečanja donosa glede na R&R kapital. Kakor kaže tabela 6 (glej model 1) je ocenjena elastičnost R&R kapitala glede na rast donosa slovenskih podjetij v obdobju od 1996-2002 približno 0,24. Ta ocena je znotraj meja donosov - med 0,04 in 0,56 - ki so jih ugotovile druge empirične študije s podobno specifikacijo modela (glej tabelo 7).

V naši drugi specifikaciji (glej model 2 v tabeli 6) smo naredili korak naprej, s tem da ocenjujemo vpliv inovacij, ki so efektivni rezultat R&R, na rast SFP podjetja. To je naša preferenčna ocena, ki ocenjuje stopnjo donosa inovacij k SFP na 0,069.

Tabela 6: Vpliv R&R in inovativnosti na rast SFP slovenskih podjetij, 1996-2002

	Model 1		Model 2		Model 3	
	Koef.	**t-stat**	**Koef.**	**t-stat**	**Koef.**	**t-stat**
Δ Kapital	0,029	***4,5	0,025	*3,4	0,021	***3,0
Δ Delo	0,446	***13,4	0,446	***13,2	0,451	***13,4
Δ R&R/prodaja	0,238	*1,9				
INOV			0,069	*1,8		
p[INOV]					0,083	**2,2
VNTI			0,062	*1,8	0,051	*1,8
INOV * VNTI			-0,051	-0,8		
IZV/Prodaja			0,052	1,3		
HP_INOV			0,001	1,5		
VP_INOV			0,002	1,4		
SN teh			-0,055	-1,2		
SV teh			0,036	0,7		
V teh			0,054	0,5		
Const.	-0,205	***-3,0	-0,302	***-3,6	-0,185	***-2,6
Časovni *dummyji*	Ne		Da		Da	
Število opazovanj	3144		3073		3073	
F-test	72,81		21,63		45,65	
Adj R-sq.	0,064		0,069		0,068	

Dep.var.: ΔDV
*, ** in *** označuje pomembnih koeficientov na 10 %, 5 % in 1 %.

Tabela 7: Ocenjena stopnja donosa na R&R kapital v nekaterih prejšnjih študijah

	Vzorec podjetij	Stopnja donosa na R&R
Mansfield (1980)	Ameriška kemična in naftna podjetja (1960-76)	0,27
Griliches in Mairesse (1983)	Ameriška in francoska podjetja (1973-78)	0,28
Clark in Griliches (1984)	Ameriške poslovne enote (1971-80)	0,20
Sassenou (1988)	Japonska podjetja (1973-81)	0,22
Lichtenberg in Siegel (1989)	Ameriška podjetja (1972-85)	0,13
Fecher (1989)	Belgijska podjetja (1981-83)	0,04
Griliches in Mairesse (1990)	Ameriška podjetja (1973-80)	0,41
	Japonska podjetja (1973-80)	0,56

Vir: Griliches 1998.

Kaže, da v povprečnem slovenskem podjetju inovativnost prispeva 6,9 % k rasti SFP. Poleg tega tuje lastništvo prispeva še nadaljnjih 6,2 % k rasti SFP podjetij. Vendar naši rezultati prav tako kažejo, da imajo inovacije enak vpliv na rast SFP tako v podjetjih v tuji kakor v domači lasti (glej interakcijski izraz INOV*VNTI). Torej ima tuje lastništvo dvojni vpliv na rast podjetniške SFP. Najprej krepi inovacijsko sposobnost podjetja, kar smo pokazali že v prejšnjem delu, nato pa še dodatno prispeva k rasti SFP podjetja z boljšimi organizacijskimi tehnikami itd.

Druge spremenljivke zunanjega prelivanja znanja, ki so vključene v našo specifikacijo modela 2, kakor so izvozna usmerjenost in vertikalna prelivanja inovacij, ne kažejo nekega dodatnega vpliva na rast SFP v podjetjih. Kakor smo prikazali v prejšnjem delu, je zelo verjetno, da ta zunanja prelivanja znanja spodbujajo inovacijsko sposobnost podjetij, ne vplivajo pa na rast SFP v podjetjih *per se*. To smo preverili s tem, da smo vključili (z modelom) ocenjeno vrednost inovacij, ki smo jo ocenili v modelu probit "proizvodnje inovacij" (uporabili smo napovedane vrednosti modela 1 v tabeli 5). Rezultati

vključitve te ocenjene inovacijske spremenljivke (glej model 3 v tabeli 6) privedejo do nekoliko višje ocene prispevka inovacij k rasti SFP (ocena γ se poveča na 0,83). Ponovno je opaziti, da tuje lastništvo prispeva dodatnih 5,1 % k rasti SFP v podjetjih.

V skladu z gornjimi ugotovitvami izhajajo trije pomembni zaključki za slovenska podjetja. Prvič, lastni R&R izdatki podjetij in zunanja prelivanja znanja, kakor so domače in mednarodne javne R&R subvencije, tuje lastništvo in medpanožna prelivanja inovacij, krepijo inovacijsko sposobnost podjetij. Drugič, inovacije kot rezultat R&R dejavnosti podjetij bistveno prispevajo k rasti skupne faktorske produktivnosti podjetij. In tretjič, tuje lastništvo ima dvojni vpliv na rast SFP v podjetju – krepi inovacijsko sposobnost podjetja, nato pa z boljšimi organizacijskimi tehnikami itd. Še dodatno prispeva k rasti SFP v podjetju.

6. Zaključki

Kljub vse več študijam o inovacijah ostajajo številna vprašanja, povezana s procesom inovativnosti, odprta. Empirične študije v glavnem raziskujejo številne opredelitve in učinke inovacijske dejavnosti. Skupaj z rastočim številom in zapletenostjo identificiranih pomembnih opredelitev inovacijske dejavnosti in kanalov razširjanja znanja, ostaja proučevanje njihovega relativnega pomena in simultanosti učinkov pomemben raziskovalni izziv.

Analiza za Slovenijo temelji na hkratni oceni pomena notranjih in zunanjih virov inovativnosti ter njihovega vpliva na rast produktivnosti. Lastni R&R izdatki in prejšnja inovacijska dejavnost, ki ju uporabljamo kot spremenljivki notranjih virov inovativnosti, se dosledno potrjujeta kot značilnosti inovacijske dejavnosti. Vendar pa sta precej bolj učinkoviti, ko ju spremlja širjenje znanja iz zunanjih virov. Zunanja prelivanja znanja, tako domača kakor tuja, se torej kažejo kot pomembna in spodbudna za inovativnost. Domače in mednarodne R&R subvencije ter medpanožna prelivanja inovacij dopolnjujejo notranje vire in pomembno povečujejo inovacijsko sposobnost slovenskih podjetij. Vhodne NTI prav tako bistveno povečujejo inovacijsko sposobnost podjetij. V primerjavi z domačimi podjetji podjetja v tuji lasti kažejo celo nižji povprečno raven R&R izdatkov, kar nakazuje, da pri njih inovacijsko dejavnost večinoma povzročajo drugi dejavniki, kakor so prelivanja znanja in tehnologije. Po drugi strani pa kaže, da izvoz ni pomemben kanal širjenja znanja ali spodbujevalec inovativnosti. Tudi produktivnost in tehnološka intenzivnost panoge nmata velikega vpliva na inovacijsko dejavnost.

Pomen zunanjih dejavnikov nakazuje, da so podjetja, čeprav so produktivna, tehnološko intenzivna in so bila tudi do sedaj inovativna ter navkljub njihovi lastni R&R dejavnosti, vse manj samozadostna pri njihovi tekoči in prihodnji inovacijski dejavnosti. Ker je R&R dejavnost pogosto rezultat nekooperacijske strategije, tehnologija in inovacije pa nerivalske, so prelivanja še posebej pomembna. Zunanje spodbude inovativnosti, ki izhajajo iz (domačih in tujih) R&R subvencij, NTI, in konkurenčno okolje (horizontalna prelivanja inovacij) moramo tako upoštevati kot pomembne dopolnilne vire. Izkoriščanje zunanjih prelivanj prav tako dopolnjuje glavni učinek R&R virov, ki se odraža v bistvenem povečanju skupne faktorske produktivnosti. Za Slovenijo stopnja donosa R&R kapitala, ocenjena z *growth accounting approach,* znaša 0,24, in se uvršča znotraj meja ocen iz drugih študij s podobnimi modelskimi ocenjevanji. Tuje lastništvo ima tako, podobno kakor R&R, dvojni učinek na rast SFP v podjetju – krepi sposobnost podjetij, da vpijajo znanje in so inovativna, še dodatno pa k rasti SFP v podjetju prispevajo boljše organizacijske tehnike in drugih kanali širjenja znanja.

Pri naslednjen raziskovanju inovacijske dejavnosti bi lahko razširili število možnih zunanjih opredelitev in natančneje proučevali domača in mednarodna prelivanja oziroma eksternalije v znanju iz domačih in tujih virov (vertikalna in horizontalna prelivanja z NTI, prelivanja z uvozom in asimetrijo prelivanj). S tem bi dodatno opredelili njihovo relativno težo. Prav tako je treba morebitne spremembe pomena opredelitev in učinkov inovacijske dejavnosti proučevati v dinamičnem kontekstu.

Literatura

Aghion, P. and P. Howitt. 1992. "A Model of Growth through Creative Destruction". Econometrica, 60: 323-351.

Aghion, P. and P. Howitt. 1997. Endogenous Growth Theory. Cambridge, MA: MIT Press.

Aitken, B.J. and A.E. Harrison. 1999. "Do Domestic Firms Benefit from Direct Foreign Investments? Evidence from Venezuela." American Economic Review, 89: 605-618.

Alvarez, R. and R. Robertson. 2004. "Exposure to foreign markets and plant level innovation: evidence from Chile and Mexico". Journal of International Trade and Economic Development, 13(1): 57-87.

Alverez, I., J.P. Damijan, and M. Knell. 2002. "Do Spanish Firms Get Technology through FDI and Trade? " Mimeo. Madrid: University of Madrid.

Arrow, K. 1962. "Economic welfare and the allocation of resources to invention". In R. Nelson (ed.), The

Rate and Direction of Inventive Activity. Princeton University Press. Pp.: 609-625.

Barry, F., H. Görg, and E. Strobl. 2002. "Productivity spillovers and labour-market crowding out: interactions between foreign and domestic firms in Irish manufacturing". Mimeo. Dublin: University College Dublin.

Bernard, A. and B. Jensen. 1999. "Exceptional exporter performance: cause, effect, or both?" Journal of International economics, 47: 1-25.

Blalock, G. 2001. "Technology from Foreign Direct Investment: Strategic Transfer through Supply Chains." Mimeo. Berkeley, University of California.

Blanchard, O. 1997. The Economics of Post-Communist Transition. Oxford: Oxford University Press.

Blomström, M., S. Globerman and A. Kokko. 2000. "The Determinants of Host Country Spillovers from Foreign Direct Investment. CEPR Discussion Paper 2350. London: Centre for Economic Policy Research.

Blomström, M. and A. Kokko. 1998. "Multinational corporations and spillovers". Journal of Economic Surveys, 12: 247-277.

Blomström, M. F. and F. Sjöholm. 1999. "Technology Transfer and Spillovers: Does Local Participation with Multinationals Matter?" European Economic Review, 43: 915-923.

Blomström, M. and E. Wolff. 1994. "Multinational Corporations and Productivity Convergence in Mexico," In: W. Baumol, R. Nelson, and E. Wolff (eds.), Convergence of Productivity: Cross-National Studies and Historical Evidence. Oxford: Oxford University Press.

Borensztein, E., J. De Gregorio, and J.W. Lee. 1998. "How Does Foreign Direct Investment Affect Economic Growth?" Journal of International Economics, 45: 115-135.

Bučar, M. and M. Stare. 2002. "Slovenian innovation policy: underexploited potential for growth". Journal of International Relations and Development, 5 (4): 427-448.

Bučar, M. in M. Stare. 2003. "Inovacijska politika male tranzicijske države", (Knjižna zbirka Pravo in gospodarstvo). Ljubljana: Fakulteta za družbene vede.

Busom, I. 2000. "An Empirical Evaluation of the Effects of R&D Subsidies". Economics of Innovation and New Technology.

Cameron, G., J. Proudman and S. Redding. 2003. "Technological convergence, R&D, trade and productivity growth". European Economic Review.

Chen, E.K. 1997. "The total factor productivity debate: determinants of economic growth in East Asia". Asian-Pacific Economic Literature, 11(1): 18-38.

Clerides, S., S. Lach, and J. Tybout. 1998. "Is Learning-by-Exporting Important? Micro-Dynamic Evidence from Colombia, Mexico and Morocco." Quarterly Journal of Economics, 113: 903-947.

Coe, D. and E. Helpman. 1995. "International R&D Spillovers." European Economic Review, 39: 859-887.

Cohen, W. and D. Levinthal. 1989. "Innovation and learning: The two faces of R&D". Economic Journal, 99: 569:596.

Damijan, J.P., M. Knell, B. Majcen and M. Rojec, Matija. 2003a. "The role of FDI, R&D accumulation and trade in transferring technology to transition countries: evidence from firm panel data for eight transition countries". Economic Systems, 27: 189-204.

Damijan, J.P., M. Knell, B. Majcen and M. Rojec, Matija. 2003b. "Technology Transfer through FDI in Top-10 Transition Countries: How Important are Direct effects, Horizontal and Vertical Spillovers". William Davidson Working Paper Number 549. Ann Arbor: The William Davidson Institute at the University of Michigan Business School.

David, P.A., B.H. Hall and A.A. Toole. 1999. "Is Public R&D a Complement or a Substitute from private R&D? A Review of the Econometric Evidence". NBER Working Paper Series, Working Paper 7373. Cambridge: National Bureau of Economic Research.

Djankov, S. and B. Hoekman. 2000. "Foreign Investment and Productivity Growth in Czech Enterprises." World Bank Economic Review, 14(1): 49-64.

Eaton, J. and S. Kortum. 2001. "Trade in capital goods ". European Economic Review, 45: 1195-1235.

Eaton, J. and S. Kortum. 1999. "International Patenting and Technology Diffusion: Theory and Measurement". International Economic Review, 40: 537-570.

Eaton, J. and S. Kortum. 1996. "Trade in Ideas: Patenting and Productivity in the OECD." Journal of International Economics, 40: 251-271.

Feenstra, R., J. Markusen, and W. Zeile. 1992. "Accounting for Growth with New Inputs: Theory and Evidence." American Economic Review, 82: 415-421.

Girma, S., D. Greenaway, and K. Wakelin. 2001. "Who Benefits from Foreign Direct Investment in the UK?" Scottish Journal of Political Economy, 48: 119-133.

Gőrg, Holger and Strobl, Eric. 2001. "Multinational Companies and Productivity Spillovers: A Meta Analysis". The Economic Journal, 111: 723-739.

Gőrg, Holger and Strobl, Eric. 2004. "Foreign Direct Investment and Local Economic Development: Beyond Productivity Spillovers". GEP Research Papers 04/11.

Griffith, R., S. Redding and H. Simpson. 2004. "Foreign Ownership and Productivity: New Evidence from the Service Sector and the R&D Lab". CEP Discussion Paper No 649. London: Centre for Economic

Performance, London School of Economics and Political Science.

Griliches, Z. 1998. R&D and Productivity. Chicago: University of Chicago Press.

Griliches, Z. 1980. "Returns to R&D expenditures in the private sector". In K. Kendrick and B. Vaccara (eds.), New Developments in Productivity Measurement. Chicago, IL.: Chicago University Press.

Griliches, Z. and F. Lichtenberg. 1984. R&D and productivity growth at the industry level: Is there still a relationship. In Z. Griliches (ed.), R&D, Patents and Productivity. Chicago, IL.: NBER and Chicago University Press.

Grossman, G. and E. Helpman. 1991. Innovation and Growth in the World Economy. Cambridge, MA.: MIT Press.

Haddad, M. and A. Harrison. 1993. "Are There Positive Spillovers from Direct Foreign Investments? Evidence from Panel Data for Morocco." Journal of Development Economics, 42: 51-74.

Hall, B. and J. Mairesse. 1995. "Exploring the relationship between R&D and productivity in French manufacturing firms". Journal of Econometrics, 65: 263-294.

Hallward-Driemeier, M., G. Iarossi and K. Sokoloff. 2002. "Exports and manufacturing Productivity in east Asia: A Comparative Analysis with Firm-level Data". Working paper (December). University of california at Los Angeles.

Harrison, A. 1996. "Determinants and Effects of Direct Foreign Investment in Cote d'Ivoire, Morocco, and Venezuela". In M.J. Roberts and J.R. Tybout (eds.), Industrial Evolution in Developing Countries. Oxford: Oxford University Press.

Hoppe, M. 2005. "Technology Transfer through Trade". Nota di Lavoro 19.2005. Milano: Fondazione Eni Enrico Mattei.

Keller, W. 2002a. "Geographical localization of international technology diffusion". American Economic Review, 92: 120-142.

Keller, W. 2002b. "Trade and the transmission of technology". Journal of Economic Growth, 7: 5-24.

Keller, W. 2004. "International Technology Diffusion". Mimeo. University of Texas, National Bureau of Economic Research, Centre for Economic policy Research.

Keller, W. and S.R. Yeaple. 2003. "Multinational Enterprises, International Trade, and Productivity Growth: Firm Level Evidence from The United States". Working Paper 9504 (February). Cambridge: National Bureau of Economic Research.

Kinoshita, Y. 2000. "R&D and Technology Spillovers via FDI: Innovation and Absorptive Capacity." Mimeo, Prague: CERGE-EI.

Klette, T.J. and J. Moen. 1997. "R&D Investment Respsonses to R&D Subsidies: A Theoretical Analysis and Microeconomic Study". Mimeo.

Kokko, A. 1992. "Foreign Direct Investment, Host Country Characteristics, and Spillovers." Mimeo. Stockholm: The Economic Research Institute.

Kokko, A. 1994. "Technology, Market Characteristics and Spillovers." Journal of Development Economics, 43: 279-293.

Konings, J. 2001. "The Effects of Foreign Direct Investment on Domestic Firms: Evidence from Firm Level Panel Data in Emerging Economies." CEPR Discussion Paper 2586.

Kraay, A., I. Soloaga and J. Tybout. 2001. "Product, quality, productive effciency, and international technology diffusion: Evidence from plant-level panel data". Paper presented at the NBER Summer Institute.

Lach, S. 2000. "Do R&D Subsidies Stimulate or Displace Private R&D? Evidence from Israel". NBER Working Paper Series, Working Paper 7043. Cambridge: National Bureau of Economic Research.

Lim, E.G. 2001. "Determinants of, and the Relation Between Foreign Direct Investment and Growth: A Summary of the Recent Literature". IMF Working Paper WP/01/175. Washington, D.C.: International Monetary Fund.

Lumenga-Neso, O., M. Olarreaga and M. Schiff. 2001. "On 'Indirect' Trade-related R&D Spillovers". Mimeo. Washington, D.C.: The World Bank.

Mansfield, E. 1980. "Basic research and productivity increase in manufacturing". American Economic Review, 70: 863-873.

Mansfield, E. and M. Romero. 1980. "Technology Transfer to Overseas Subsidiaries by U.S. Based Firms." Quarterly Journal of Economics, 95: 737-750.

Markusen, J. and A. Venables. 1999. "Foreign Direct Investment as a Catalyst for Industrial Development". European Economic Review, 43: 335-356.

Nelson, R.R. 1959. "The simple economics of basic scientific research". The Journal of Political Economy, 67: 297-306.

Ornaghi, C. 2004. "From Innovation to Productivity". Ph. D. Dissertation. Madrid: Universidad Carlos III de Madrid, Departamento de Economia.

Rodriguez-Clare, A. 1996. "Multinationals, Linkages, and Economic Development". American Economic Review, 86: 852-873.

Romer, P. 1990. "Endogenous Technological Change". Journal of Political Economy, 98: S71-S102.

Schoors, K. and B. van der Tol. 2001. "The Productivity Effect of Foreign Ownership on Domestic Firms in Hungary." Mimeo, University of Gent.

Segerström, P., T.C.A. Anant and E. Dinopulus. 1990. "A Schumpeterian model of the product life cycle". American Economic Review, 80: 1077-1092.

Smarzynska, B. 2001. "Spillovers from Foreign Direct Investment through Backward Linkages: Does Technology Gap Matter?" Mimeo. Washington, D.C.: The World Bank.

Smarzynska, B.K. 2003. "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages". William Davidson Working Paper Number 548 (March). Ann Arbor, The William Davidson Institute at the University of Michigan Business School.

Smarzynska, B. and M. Spatareanu. 2002. "FDI Spillovers Through Backward Linkages in Romania: Some Determinants." Mimeo. Washington, D.C.: The World Bank.

Smolny, W. 2000. Endogenous Innovations and Knowledge Spillovers. Heidelberg: Physica-Verlag.

UNCTAD. 2000. World Investment Report 2000. New York and Geneva: United Nations.

Wallsten, S.J. 2000. "The Effects of Government-Industry R&D Programs on Private R&D: The Case of the DSmall Business Innovation Research Program". Rand Journal of Economics, Spring.

Ključne besede: *inovacije, zunanje, prelivanje znanja, NTI, inovativnost, Slovenija*

Keywords: *innovation, external knowledge spillovers, FDI, Slovenia*

Special topic

In this volume of IB-revija we would like to continue with a "Special Topic" practice. We therefore proudly present you with several articles on the topic of flat tax rate that were presented and discussed at The International Academic Forum on Flat Tax Rate, The Forum took place on February 3 and February 4, 2006 in Bled, Slovenia. It was organized by the Center of Excellence in Finance (CEF)*, a training institute for public finance in Slovenia as a result of a joint initiative of the International Monetary Fund (IMF) and the CEF.

Flat Tax is an issue at the center of public debate in many countries around the world right now. Given the importance of its social and macroeconomic implications, it confronts the policy makers, practitioners, and academia with challenging questions. Sharing the experience, discussing the results of analytical work and exploring new ideas could, therefore, prove very helpful in tracing the avenues for the future.

Authors and experts that deal with taxation issues or have already published articles on this topic, and representatives from numerous countries participated with their contributions. Current theoretical thinking and practical experience in the area of taxation were presented and discussed. They led to an exchange of information among countries that are now deciding for reforms by learning from the experience of those that have already implemented these reforms. Authors and experts touched on all aspects of this topic and discussed many dilemmas that had been emerging from this, together with various possible solutions.

Morning of the first day was dedicated to theoretical thinking with practical experience being covered in the afternoon. The second day of the Forum was dedicated to the proposed tax reforms in Slovenia.

Several authors prepared their contributions to be published in the IB-revija as background papers to the Forum. We wish you a pleasant and interesting reading.

Alenka Kajzer, the editor
and
Mira Dobovišek, director of Cente of Excellence in Finance

* The Center of Excellence in Finance (CEF) was established in January 2001 by the Slovene Government on the initiative of Slovenian Ministry of Finance and in close cooperation with Ministries of Finance of other countries in South East Europe to address the issue of capacity development in public finance management. Please visit www.cef-see.org to find out more about the Center of Excellence in Finance.

*Vito Tanzi**

The Economic Role of the State in the 21st Century

The last half century has witnessed major developments in the economies of the industrial countries and in the role that the governments of these countries have played especially through the instrument of public spending. This article describes some of these developments and focuses on the role that the governments of these countries should play in the future.[1]

The Growth of Public Spending

The tax levels of many industrial countries are today at an all time high. Only a century ago, the situation was far different. Discussing the optimal level of taxation in 1888, the French economist, Paul Leroy-Beaulieu, concluded that tax revenue of 5-6 percent of GDP could be considered "moderate," revenue of 8-10 percent of GDP would be "normal," while revenue beyond 12 percent of GDP would be "exorbitant" and would damage the growth prospect of countries. Leroy-Beaulieu (1988:127-28). In the context of today's tax burdens on industrial countries, and even of many developing countries, such as Brazil or Argentina, that position seems extreme. However, it was far from extreme at the time Leroy-Beaulieu wrote his book. At that time, most of today's industrial countries had levels of taxation and of public spending of around 12 percent of GDP[2]. For example, in 1870, France and Italy had public spending and tax levels of about 13 percent of GDP and the United States had even lower levels. The economic role of the state at that time was limited and was focused on "core" functions such as defense, protection of individuals and property, administration, justice, and large public works. These core functions were largely those described by Adam Smith in the **Wealth of Nations**. In the period between 1870 and 1913, a period of intense globalization, there was little growth in the relative levels of taxation and public spending.[3] See Table 1.

In later years public attitudes vis-à-vis the economic role of the state started changing. In 1926, John Maynard Keynes called for the 'end of laissez-faire' in a book of the same title and proposed a widening of the role of the state. Keynes (1926). In 1932, in an article in **L'Encyclopedie Italienne**, Mussolini predicted that the 20th century would become the "century of the state." Mussolini had initially been an economic liberal but he changed his views during the Great Depression. Perhaps he saw political advantage in a larger role of the state in the economy. From an economic perspective, his prediction proved to be right.

At the time when Keynes and Mussolini were expressing these views, other pressures were coming from both the political right and the political left for enlarging the role of the state. Countries that adopted fascism and communism or socialism endorsed the view that the state should play a larger role in the economy. Even Roosevelt's New Deal reflected this view.

These pressures, together with developments such as the Russian Revolution, World War One, World War Two, the advent of totalitarian regimes (both fascist and communist) in several important countries, and the Great Depression created a social environment and some of the economic conditions that ultimately were to encourage the phenomenal expansion of the economic role of the state that would take place in the rest of the 20th century. See Table 1. Public spending started to grow in the 1920s but grew slowly until about 1960. The great acceleration came in the period

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[1] For related discussions see Edwards (2004) and Balcerowicz (2004)

[2] Still today there are some developing countries, including Mexico, Guatemala, Haiti and others with these levels of taxation.

[3] See Vito Tanzi and Ludger Schuknecht, *Public Spending in the XX Century: A Global Perspective* (Cambridge University Press, 2000)

Table 1: Growth of General Government Expenditure, 1870-2002 (Percent of GDP)

	Late 19th Century About 1870[a]	Pre Post World War I		Pre World War II	Post World War II				
		1913	1920	1937	1960	1980	1990	1996	2002
General Government for all years									
Australia	18.3	16.5	19.3	14.8	21.2	34.1	34.9	35.9	35.6
Austria	10.5	17.0	14.7[b]	20.6	35.7	48.1	38.6	51.6	51.3
Canada			16.7	25.0	28.6	38.8	46.0	44.7	41.4
France[c]	12.6	17.0	27.6	29.0	34.6	46.1	49.8	55.0	53.6
Germany	10.0	14.8	25.0	34.1	32.4	47.9	45.1	49.1	48.5
Italy	13.7	17.1	30.1	31.1	30.1	42.1	53.4	52.7	48.0
Ireland[d]			18.8	25.5	28.0	48.9	41.2	42.0	33.5
Japan	8.8	8.3	14.8	25.4	17.5	32.0	31.3	35.9	39.8
New Zealand[d]			24.6	25.3	26.9	38.1	41.3	34.7	41.6
Norway	5.9	9.3	16.0	11.8	29.9	43.8	54.9	49.2	47.5
Sweden[c]	5.7[b]	10.4	10.9	16.5	31.0	60.1	59.1	64.2	58.3
Switzerland	16.5	14.0	17.0	24.1	17.2	32.8	33.5	39.4	34.3
United Kingdom	9.4	12.7	26.2	30.0	32.2	43.0	39.9	43.0	41.1
United States	7.3	7.5	12.1	19.7	27.0	31.4	32.8	32.4	34.1
Average	10.8	13.1	19.6	23.8	28.0	41.9	43.0	45.0	43.5
Central governments for 1870-1937, general government thereafter									
Belgium		13.8	22.1	21.8	30.3	57.8	*54.3*	52.9	50.5
Netherlands	9.1	9.0	13.5	19.0	33.7	55.8	*54.1*	49.3	47.5
Spain		11.0	8.3	13.2	18.8	32.2	*42.0*	43.7	39.9
Average	9.1	11.3	14.6	18.0	27.6	48.6	50.1	*48.6*	46.0
Total Average	10.7	12.7	18.7	22.8	27.9	43.1	44.8	45.6	41.5

Sources: Compiled by Tanzi and Schuknecht based on Fernandez Acha (1976); Andic and Veverka (1964); Australia, Bureau of Census and Statistics (1938); Institut National de la Statistique (Belgium) (1952); Brosio and Marchese (1986); United States Bureau of Census (1975); Butlin (1984); Norway, Statistisk Sentralbyra (1969, 1978); Delorme and André (1983); Flora, Kraus, and Pfenning (1983); IMF, Statistical Appendix, New Zealand; IMF, Switzerland: Recent Economic Developments (1996); Historical Statistics of Japan (1987); Mitchel, International Historical Statistics (various years); Neck and Schneider (1988); The Netherlands, Centraal Bureau voor de Statistiek (1956); New Zealand Official (1938); OECD Economic Outlook (1966, 1997); Italy, Istituto Nazionale de Statistica (1951); Österreichisches Statistiches Zentralamt (1935). Please see original for more details.

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[a] Or closest year available for all columns. Pre World War II data are sometimes on the basis of GNP or NNP instead of GDP.

[b] Central government data for this year, New Zealand: 1960 = 1970, and 1994-95 = 1996.

[c] 1996 and 2002 data: calculations are based on the Maastricht definition, and are smaller than those published by the INSEE, the national statistical agency. d 1995 instead of 1996, because of break in data calculation.

between 1960 and the mid-1980 when many countries, and especially the European countries, created mature welfare states that aimed at the economic protection of individuals from the "cradle to the grave". In that period, in several European countries (Austria, Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, and Sweden), public spending approached or exceeded 50 percent of GDP. This level of public spending, and the taxes needed to finance it, would have been considered unthinkable in the earlier part of the 20th Century.

Economists contributed indirectly and perhaps unintentionally to the growth of public spending by developing or popularizing economic concepts that provided convenient theoretical justifications for greater governmental interventions in the economy. Budget experts developed public management tools which, they claimed, would facilitate the scientific or objective analysis and evaluation of government programs. This was supposed to help avoid policy mistakes and to limit government-imposed inefficiencies. Concepts such as public goods, externalities, merit goods, natural

monopolies, built-in stabilizers, multipliers and so on were developed and were often used to justify greater public-sector interventions. Also a perception developed that larger public sectors would make economies more immune to business cycles.

Tools such as **social** cost-benefit analysis, Public Programming and Budgeting Systems (PPBS), zero-based budgeting, capital budgeting, and so forth provided at times a kind of scientific cover for evaluations of governmental programs that, in many cases, in reality continued to be guided largely by political pressures and by political considerations. At times these tools were bent to justify more public spending as, for example, when some economists in the mid-1960s argued that cost-benefit evaluations of public investments and other spending should give more weight to one dollar of benefit that goes to a poorer person than a dollar that goes to a richer person or it should take into account the unemployment rate of a region. The calibrating of benefits and costs often led to the justification of public expenditure with low economic justification. This meant that in practice the economists -and their advice – contributed to driving up public spending.

Spending Levels and Economic Welfare

There is much debate on whether the large increase in public spending, especially in the last 50 years, contributed to a genuine improvement in the welfare of the majority of citizens, or whether the citizens would have been better off with a lower growth in that spending that would have left them with more after tax income but less governmental services. Greater public spending often went towards paying for social services – health, education, and other benefits including pensions. Government often provided such services directly through the public sector. Because public sector intervention often displaces existing institutions or private intervention, it does not necessarily add, on a net basis, to the informal arrangements for social protection that the residents of a country were receiving or could have received through private programmes. For example, in some countries there were extensive networks that informally provided some social protection to those in needs. Ludger Schuknecht and I have challenged the view that the growth in public spending necessarily increased welfare. See Tanzi and Schuknech (1997 and 2000).

If it is assumed that the welfare of citizens is linked to the numerical results of certain socio-economic indicators, such as life expectancy, infant mortality, educational achievements, literacy rates, growth in per capita incomes, inflation, and others, that governments attempt to influence through their public spending the evidence shows that there has been little relationships, if any, **in recent decades** between the changes in the countries' shares of public spending in GDP and the changes, in the desired direction, of these socio-economic indicators. Countries that allowed their public spending to grow significantly more than other countries do not show, on the average, better quantitative results for these indicators than countries that kept their governments smaller and leaner. On the other hand, by reducing the after tax income of the citizens, the countries that allowed their public spending to grow more undoubtedly reduced the economic freedom of their population.

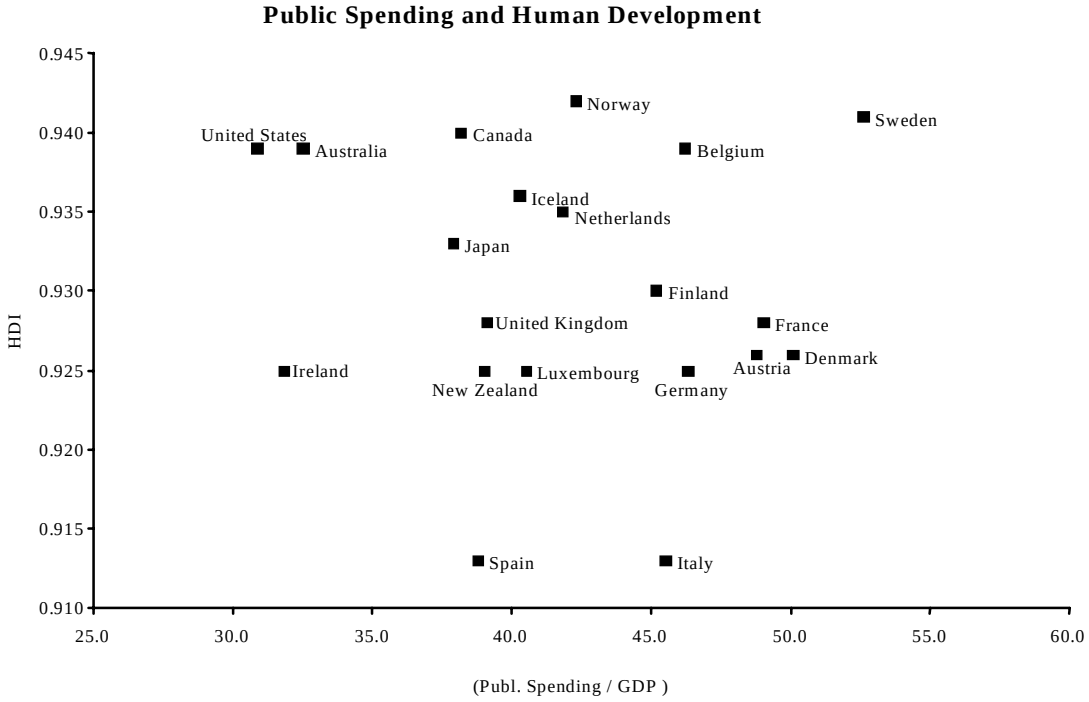
When used as a general reference index for social welfare, the United Nations' Human Development Index (HDI) shows that among the 20 countries

Table 2: Public Spending and Human Development Index (HDI)

Countries	Public Spending % of GDP			HDI
	Year of Highest Level		2002	
Norway	52.0	(1992)	42.3	0.942
Sweden	67.5	(1993)	52.6	0.941
Canada	49.9	(1992)	38.2	0.940
Belgium	57.1	(1985)	46.2	0.939
Australia	37.7	(1985)	32.5	0.939
United States	34.8	(1992)	30.9	0.939
Iceland	40.5	(1992)	40.3	0.936
Netherlands	53.3	(1987)	41.8	0.935
Japan	-		37.9	0.933
Finland	59.1	(1993)	45.2	0.930
France	51.8	(1993)	49.0	0.928
United Kingdom	43.2	(1993)	39.1	0.928
Denmark	58.0	(1996)	50.1	0.926
Austria	53.3	(1993)	48.8	0.926
Luxembourg	44.0	(1992)	40.5	0.925
Germany	47.3	(1996)	46.3	0.925
Ireland	50.7	(1985)	31.8	0.925
New Zealand	51.8	(1986)	39.0	0.917
Italy	55.4	(1993)	45.5	0.913
Spain	47.2	(1993)	38.8	0.913

Sources: OECD, Economic Outlook (Paris: 2002) and UNDP, Human Development Report, 2002.

Figure 1: Scatter Diagram



with the best scores on this index, some have high shares of public spending to GDP – such as Austria, Belgium, Denmark, France, Germany, and Sweden – and some have low shares of public spending – such as the United States, Australia, Ireland, Canada and Japan. See Table 1. The HDI combines indicators of longevity, educational attainment and enrollment ratios, and living standards. Furthermore, some countries not shown in the table, including Singapore, Taiwan, and Hong Kong – with small, but highly efficient governments –have levels for the HDI index and for various socio-economic indicators almost as good as those for the countries with much higher public spending.

Some of the countries with the highest scores in the Human Development Index, and with high levels of public spending, such as Norway, Canada, Sweden, Belgium, the Netherlands, and Finland have in recent years significantly reduced their public spending while retaining their high HDI index. See Table 2 and Schuknecht and Tanzi (2005). Thus, there is life after public spending reduction! These countries have shown that public spending can be significantly reduced without causing the large fall in public welfare that many expect. A scatter diagram shows that there is no identifiable relationship between levels of public spending and HDI. See Fig. 1. This is confirmed by the absence of any correlation between the two variables.

Because the high taxes needed to finance high public spending reduce the post-tax (or disposable) income of taxpayers, thus restricting their economic freedom and, most likely, over the long run, have a negative impact on the efficiency of the economy and on economic growth, the question arises whether the level of public spending and, consequently, of taxation should be reduced if this could be done without reducing public welfare. That is to say, if public welfare is not reduced on any objective criteria by reduced public spending, then public spending and consequently tax revenue, should be cut. This would allow most individuals to have discretion over a larger share of their pre-tax incomes. In other words the citizens would decide how to spend this money, not the government.[4]

All the theoretical reasons advanced by economists to justify the role of the state in the economy, including the need to assist the poor, could be satisfied with a much smaller share of spending in GDP than is now found in most industrial countries

[4] A basic difference between a centrally planned economy and a market economy is the discretion that citizens have on how to dispose of the (pre tax) income that they produce. In market economies citizens have discretion over a larger share but this share is still small in highly taxed countries.

if the governments could be efficient and more focused in the use of their resources.[5] There is a great deal of empirical evidence to indicate that much public spending "benefits" the middle classes broadly defined. At the same time much of the "burden" imposed by the government in the form of taxes falls also on the middle classes. Putting it differently, the government taxes the middle classes with one hand and subsidizes them with the other. The government becomes a classic intermediary. As a consequence of this "fiscal churning" the government creates disincentives and inefficiencies on the side of taxation and on the side of spending. It also reduces the economic freedom of the individual citizens and, probably, the rate of growth of the country over the long run. Countries that have kept their taxes low, or have reduced them over recent years, such as Australia, Ireland and the United States have grown at a faster rate than other countries.

It is not likely that governments need to spend more than, say, around 30 per cent of their GDPs to be able to promote their finance their fundamental social and economic objectives. Some well-functioning countries do not allocate more than 20 per cent of their GDP, for public programs. Even among the highly developed countries shown in Table 1 we find that some (United States, Switzerland, Australia, and Ireland) have public spending levels not too far from 30 per cent. And in some of them, there may be scope for spending reduction. See Edwards (2004) for the United States. Two of these, the United States and Australia, have some of the highest scores on the Human Development Index. Switzerland is also likely to have a high score.

Market Development and the Role of the State

The real difficulties that would be faced by a government in reducing the role of the state in the economy is not that a less dominant state would imply a reduction in economic welfare but, rather, that a reduction in public spending would face strong political opposition on the part of those whose current or expected standards of living have come to depend on the existing public programmes. Such opposition has been evident in countries such as France, Germany, and Italy. This opposition has tied the hands of policymakers. Public programmes create strong constituencies: pensioners, those close to the retirement age, school teachers, public employees, those who receive public subsidies, and others.

Those who have acquired "entitlements" or various claims vis-à-vis the public sector oppose reductions in public spending. Some of these entitlements may be simply in the form of higher salaries or higher pensions or better job guarantees than they could get in the private sector. For this reason, polls show that citizens often support current spending by governments while they oppose the taxes necessary to support that spending. Alternatively they favor cutting **general** public spending but oppose cutting expenditures in programs that help them. These people consider a reduction in public spending as a negative-sum game. Therefore the evidence that some countries with relatively low levels of public spending operate well should not be interpreted as an indication that high-spending countries could easily reduce their public spending. However, as the data in Table 1 show, in recent years several countries have succeeded in doing so without generating major economic or even political difficulties. See also Schuknecht and Tanzi (2005).

Levels of public spending at any one time tend to be set by past political trends and promises, rather than by informed decisions based on the evidence of the day. At any given moment the level of public spending depends substantially on the entitlements and claims on the government created in **past** periods. It does not depend on well thought-out analyses and considerations of what the state could or should do in a modern and sophisticated market economy. It rarely depends on the spending level that the government in power might wish to have.

For the reasons mentioned above, there is often no realistic possibility of a zero-based assessment and implementation of the role of the state. In other words, given the political forces at work, the level of spending that prevails in a country represents the outcome of current **and** past political processes with the past having a major weight. However, it is evident that if **past** mistakes, or misguided actions, have determined the **current** level of public spending, that level cannot be assumed to be optimal in an economic or even political sense even though it may, in some sense, represent a kind of political equilibrium. It is, thus, important to separate, at least analytically, what could be the optimal role of the state in the long run from the current role. Also the current role must not be interpreted as putting a floor on public spending as it seems to be implied by Wagner's

[5] For an attempt at estimating empirically the efficiency of public sectors, see Antonio Afonso, Ludger Schuknecht and Vito Tanzi, (July 2003), forthcoming in **Public Choice**.

Law of the growth of the public sector. As often interpreted, Wagner's Law states that as per capita income grows so must the level of public spending as a share of the country's gross domestic product.[6]

A question to ask, then, is whether the governments of today should simply accept the status quo and, thus, continue with the existing public programs while trying to accommodate as best they can the future pressures on spending coming, for example, from demographic changes, or on public revenue coming from globalization? Alternatively, should they put in motion radical reforms that in the long run – say over a generation – would bring the role of the state more closely in line with an ideal or economically optimal role? Recent experience in several European countries indicates that the second alternative is a politically difficult one because of powerful political opposition to real reform. At the same time some countries, such as Canada, Ireland, Finland and others, have initiated such a process.

Another way of putting the question is: what economic role should the state play, especially in relation to public spending, in advanced industrial countries in the 21st century? This is a difficult question to answer because, inevitably, the answer to it must reflect political biases as well as the importance that one attaches to the transitional costs of getting from where we are today to where we ought to be, say, 20 or 30 years from now. The greater the importance that one attaches to the transitional costs, and especially to the political costs, the greater will be the inclination to support the status quo and the current spending programs. This seems to be what is happening in several European countries at this time. Let me focus on some essential elements to consider when dealing with the above question.

The first of these elements is the recognition that in a market economy there should be a relationship between what the market is capable of doing and what the government should do. After all, in a market economy, the state is supposed **to correct the mistakes made by the market**, or to compensate for its shortcomings, and **not to replace the market**. A more efficient market should require less government. In a society where the market is underdeveloped, so that it is not capable of performing well some important tasks – be these to produce necessary goods and services; to create jobs for most of those who wish to work; to create efficient insurance markets that allow individuals to protect themselves directly against various future economic risks; to provide efficient and relatively safe channels for investing individual savings, and so on – there will be a presumption for the state to step in, thus correcting or complementing the market in some of these functions. This was the main argument that, over the years, led to the expansion in the economic role of the state especially in the period since 1945. It was used not only in countries where the market was not well developed but also in countries where the market might have been able to perform, but was not performing, some of the tasks that were taken over by the government. This, for example, was the argument used by many economists in the 1950s in the United States and in Europe to argue for an expansion of the role of the state.

In this connection it should be mentioned that an important but relatively recent branch of economics, the School of Public Choice, of which the leading exponent, Professor James Buchanan, was awarded the Nobel Prize in economics, questions the need for governmental intervention **even under circumstances in which the market is deficient**. Those who adhere to this school believe that governmental intervention to correct shortcomings of the market often makes things worse rather than better. This may happen because a country in which the private market is not developed is not likely to have a public sector that is efficient. The same factors that make for an underdeveloped market are likely to make for an inefficient public sector. It may also happen because, as the School of Public Choice emphasizes, those who make the decisions in the government public are subject to particular pressure, and incentives that bias their decisions. For whatever reasons, Public Choice followers argue that, when the government intervenes, market shortcomings are often replaced by governmental shortcomings. Or putting it more bluntly, the cure is often worse than the illness. This aspect, though important, will not be addressed here because we wish to focus on a less known or less explored aspect.

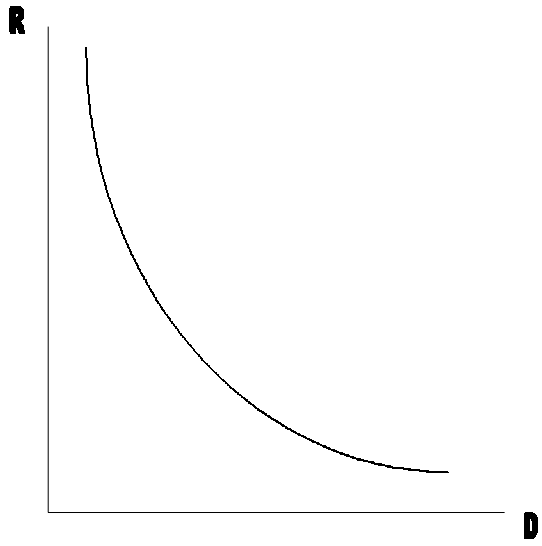
As markets develop and become more efficient in performing various tasks, and in allowing individuals to satisfy **directly** various needs, (including the need to buy protection against particular events that could have economic consequences) the **theoretical** justification for governmental intervention through public spending decreases. This should lead to a fall in public spending. A perfect market would, of course, not require any government role. On the other hand, it could be argued that economic growth might

[6] Adolph Wagner, a German economist, advanced this theory at the beginning of the last century. That theory would imply that, if in the future the per capita income of a country keeps growing, the current level of public spending is always a floor.

bring greater need for public intervention in particular sectors. However this intervention is more likely to require efficient regulations than public spending.[7]

To put it a bit more formally, if R represents the role of the state (identified here with the level of public spending) and D represents the degree of development and sophistication of the private sector, then we can postulate that R should be a negative function of D. Fig. 2 puts this relation in a simple graphical form. We assume that the degree of sophistication, D, of the market is a function of (depends on) time and the income level. As time passes, and as per capita income rises, the private sector becomes more sophisticated. It develops many markets that allow individuals the possibility to acquire directly protection or insurance against many risks that have economic consequences. As a result of this change, governments should progressively be able to reduce their spending, as shown in Fig. 2, letting the individuals satisfy more of their needs directly through the private market. For example, the development of the financial market allows individuals to save more easily in the form that they desire. This makes it possible to substitute public pensions with private pensions. Similar arguments can be made for other categories of public spending.

Figure 2: Market Sophistication and Government Expenditure



A second important element, and one that has not received attention in the literature, is that **when in the past the government entered a sector**, it introduced laws and regulations that facilitated and justified its own intervention in that sector. **It inevitably made it more difficult** or at times even impossible, **for the private sector to develop in that sector** and, thus, to create private alternatives to the government's activity in that sector. In other words, governmental involvement often created public monopolies that crowded out private involvement in those sector. Public monopolies in electricity, communication, transportation, the provision of pensions, health services, education and in several other activities prevented the private sector of many countries from developing efficient alternatives to the government's in these areas. The intrusion of the government in these areas prevented private markets from developing. This created the presumption and the belief, on the part of the public, that the public sector should remain engaged in these areas if the welfare of citizens was to be protected. Often such presumption was promoted by political campaigns. Many citizens came to believe that this was the case. Thus, they opposed reforms that would reduce the role of the state even when the reforms, once made, would, most likely, have benefited the majority. Such opposition was often encouraged by those who worked for or administered the public monopolies.

Government monopolies in the provision of public pensions have, in many countries, prevented the development of private pension funds or other private alternatives such as individual retirement accounts. In several countries the public has come to believe that only public pensions can protect individuals against the economic risks of old age or disability. This belief is maintained even in the face of growing and convincing evidence from several countries that demographic changes will make it almost impossible for governments to maintain the promises made to future pensioners and that rates of return on private pensions would likely be higher over the long run. Government monopolies in the provision of health services have prevented or discouraged the development of truly private health alternatives. The same argument applies to education and infrastructure developments. In many of these areas the involvement of the government drives out competition and reduces the scope for efficient solutions which can only come from the competition that would accompany the development of private markets. In recent years some moves have been made by the governments of some countries to extend the role of the private sector. However, some of these moves have been half hearted. In infrastructure, for example, public

[7] An interesting book has in fact argued that a freer market would require more rules. See Vogel, (1996).

private partnerships (PPP) have started to create a larger role for the private sector but that role is still limited and controversial[8].

A third element is that not only is the concept of the state itself evolving, but rapid technological innovations, the growing sophistication of the market, the development of financial services, and globalization are changing the basis for providing services and even for government. The current role of the state was developed mostly in the period after World War II, when, for a variety of reasons, the markets of many countries were not well developed. This was the period when the concept of a "mixed economy" that assigned a large economic function to the state, was most popular. At the time it must have seemed natural for governments to take over many responsibilities including, at times, even that of producing private goods. At one time, in Italy, the government was even in the business of producing panettoni!

In spite of the obstacles often imposed by the government, markets have become much more sophisticated over the years. Various developments have made it possible for the private sector to replace several previously public activities. Technological developments have destroyed the presumption that there are "natural monopolies" in the generation of electricity, in various forms of transportation (railroads, airlines), in communications (telephones, telegraphs), and in other areas. In earlier years, this presumption had assigned to the public sector major or exclusive responsibility in these areas. In several countries, the government has started to withdraw from some of these activities and relatively well functioning markets have quickly developed in them. This is certainly the case too for private pensions and for transportation and communication. In most cases the economic welfare of the citizens has not been damaged by these developments. On the contrary, and with exceptions that often are much publicized, services have often improved in quality while prices have fallen.[9]

Major developments in financial markets, including greater international capital mobility, have also removed the presumption that governments should be involved in the allocation of private savings and credit as they were in many countries until a couple decades ago. In a modern economy there should be no place for what economists call "policy loans" or "financial repression". Financial repression exists when the government constrains interest rates and decides where private savings must be invested. Policy loans are loans made by banks to particular sectors or enterprises at the request of the government. In financial markets as well as in the areas mentioned above, there is a very important **surveillance** and **regulatory** function that governments must perform. This function cannot, or should not, be left to the private sector and it should be taken seriously by the government. **It should be seen as part of the core activities of the state**.

This regulatory function is necessary to prevent abuses and the creation of private monopolies and to protect individuals against unscrupulous practices. The need for this function has been made obvious in recent years by scandals that have surfaced in large private enterprises such as Enron, Parmalat and others. In 1776 Adam Smith had already warned about these problems. He recognized the private incentive to create monopolies. This surveillance and regulatory function must be directed at (a) promoting and maintaining competition; (b) promoting transparency, and (c) at generating needed information so as to reduce the scope for actions stimulated by the existence of asymmetric information. This surveillance and regulatory function must be market-creating rather than market-controlling. It must be focused and limited because excessive regulation can create problems similar to those created by excessive public spending.

A fourth element is that globalization, in its various aspects, **is bringing major changes to the way markets operate or could operate**. Foreign competition can make domestic markets more efficient by promoting competition for what could have been domestic monopolies. Globalization is also affecting public sector activities in other ways. By eliminating frontiers, or making them less constraining, globalization is creating the potential for more options for both citizens and governments. For example, education and health services can now be obtained more easily than in the past in other countries. In some sense they have become tradable goods. Public sector procurement can now benefit from foreign participation thus reducing government costs. In some areas, this access to foreign markets has created options beside the ones traditionally available domestically and which were mostly available from the public sector.

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[8] See Stephen Harris, (2004) and Hana Polackova Brixi and Allen Schick (2002).

[9] There is a large literature produced by the World Bank and by the OECD that has reported on these developments. Some is summarized in the book of Tanzi and Schuknecht (2000).

A government no longer needs to intervene as a provider of a service when accessible and cheaper foreign options are available to its citizens. Insurance against many risks can now be bought, or in time it will be possible to buy it, from providers in other countries, when it is cheaper or more reliable. Savings and the assets accumulated by private pension funds or by individual retirement accounts can be invested abroad. Educational and health services can be obtained abroad. These developments are reducing the justification for the intervention of the government as a provider and for its role as a monopolist in many areas. In some of these areas the government must still play a role in enforcing transparency, accountability, and easy access to reliable information.[10] Global regulations are helping in this context. These are often coordinated by international institutions such as the BIS, WTO, and so on.

Globalization is also creating "fiscal termites," that is developments that over many years are likely to reduce tax revenue and, thus, the government's ability to finance through taxes high levels of public spending. Globalization has made possible for many taxpayers either to "vote with their feet" or "vote with their portfolio" thus making it much easier than in the past to escape high taxes. Various possibilities or "termites"—electronic commerce, electronic money, transfer prices used by multinational enterprises, tax havens, facility of exporting financial capital, shopping abroad, and so on—are leading to the "disappearance of the taxpayer" and to increasing difficulties for tax administrators to continue raising high tax levels. See Tanzi (2001 and 2002).

If the forecast of increasing difficulties in raising high tax levels proved to be correct, the government of tomorrow could have far less discretion in raising public revenue than those of today; thus their ability to engage in activities that required high levels of public spending would be reduced if macroeconomic difficulties are to be avoided. This development might occur at the same time when demographic changes will be pushing for more spending in health and pensions under current programmes As it is widely known, because of the increasing life expectancy and the fall in birth rates, all industrial countries and some other countries such as China are undergoing a fast process of aging of their populations that will increase the cost of pensions and of medical care. If current policies cannot be changed, and the danger coming from the work of "fiscal termites" meets the time bomb created by the demographic changes, industrial countries will face unsustainable fiscal developments in future years. For this reason, it is important that policymakers address now this fundamental problem and consider how they can reduce, over future years, the high levels of public spending that have prevailed in many industrial countries in recent decades. This reduction in spending should be achieved while preserving, to the extent possible, the basic goals than an efficient and compassionate government would want to promote. Thus, the above discussion has little or no implication for the truly redistributive role of the government in favor of those who, through handicaps, illnesses or other misfortunes that are no fault of their own, find themselves at the bottom of the income distribution. In the view of the author of this paper, the government should continue to have some responsibility towards these people. This responsibility points to more focused government programmes and to government roles that contain less 'fiscal churning' and more attention to the truly basic or legitimate functions of the state.

A fifth and final element that merits to be mentioned is the potential impact that recent technological developments (internet, instantaneous and cheap communication, facility to store large amount of data in computer systems) could have on how governments operates. As of now this impact is still sporadic and limited. In many countries there is more talk than effective action. In some countries public employees may not even be aware that a new era is dawning. In some of them, new and more technologically advanced ways of doing things have not replaced old ways but, rather, have been simply added to them often creating confusion rather than creating more efficiency. Yet, hardware and software for an electronically-based government (an e-government) are available and have become much cheaper and more accessible than in the past. The main issue now is to learn how to use them effectively and to remove the administrative or legal obstacles that prevent their full use. Some of these obstacles may go from the need for an actual signature when a document is sent electronically, to the constraints imposed by union contracts on changing the functions of public employees.

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[10] For example it could play a role in regulating the foreign investments allowed to private pension funds, or the foreign schools whose diplomas would benefit from certification in the countries where the students come from. Today the public monopoly over education that exists in many countries at times implies that a degree from a top foreign university say Harvard, or Oxford does not have the same legal value as a degree from domestic and low quality universities.

It is difficult to assess the extent to which, and how soon, these new developments will penetrate deeply traditional governmental operations and change them. In some countries these developments are proceeding much more quickly than in others. But the potential is enormous provided that the governments facilitate the changes with efficient regulatory and legal reforms.

Over the long run countries that are slow to introduce these changes will pay a price vis-à-vis those that act more quickly and aggressively. Some countries such as Finland, Sweden, Australia and others are rushing to exploit the new opportunities. A leader in these areas, as in other areas, has been Singapore which in recent years launched an initiative, backed by a large budgetary appropriation, to make all public employees computer-literate within a short period of time. The aim was to eliminate the use of paper and the restrictions imposed by physical distances and office hours in dealings between the private and the public sectors and within the public sector. To achieve this objective many governmental functions need to be reengineered or redesigned. Employees that are not able to adjust to the changes would have to move to other jobs or retire. Where labor unions or labor laws prevent these changes, the countries will pay a high price.

A reengineered e-government would create a formidable tool for pursuing legitimate governmental objectives in different and more efficient ways. There is little doubt that by the middle of the 21st century the role of the state will look different from the one at the beginning of the 21st century. Given the new tools available to it, it is important that that role have as much legitimacy as possible.

Given the conditions mentioned above, what role should the public sector play if the legacy of past commitments did not exist?

The Limits of Governmental Action in the 21st Century

First, there is now broad agreement among economists that the state should not be engaged in the production of goods and services that can be produced by the private sector or can be imported. Thus, the state should be completely out of such activities. In many industrial countries the state is still involved in producing steel, running airlines, providing electricity and doing other similar actions. This creates pressures for providing direct or indirect subsidies to enterprises which in turn increases public spending.

Second, given the technological developments of recent years, "natural monopolies" that genuinely justify public ownership and operation have become extremely rare. For many activities that in the past were public monopolies the main role of the state should be a regulatory one. It should promote competition, transparency and consumers' safely.

Third, markets have developed a great deal and, given recent and expected future developments, are likely to continue to develop even more if given the opportunities. There are now even world auctions, as with the Ebay market. Furthermore, foreign markets have become accessible and increasingly transparent due to the use of the Internet and the freedom of capital movements. Information on them has become more readily available than in the past. Foreign markets can provide the citizens of a country options that are not available from the domestic private sector or that are more costly domestically. This includes medical treatment and educational services, but it is not limited to them.

What are the consequences of this development of private markets? First, there is no longer a strong reason for the state to monopolize areas such as pensions. While the provision of a **guaranteed minimum pensions available to anybody reaching a reasonable retirement age** might be considered by some government a legitimate social goal, (and this expenditure could be financed through general revenue, as in the case in Denmark, rather than through payroll taxes), pensions above that minimum level could be left to the private sector to provide. If the state wished to play a larger role, as for example to make sure that individuals are not too myopic in their provisions for their old age, it could require that a given proportion of a person's income must be invested in **private funds** or private assets under some form of governmental supervision to reduce the amount of risk in the portfolios. The funds could be foreign funds if they provided higher returns for an acceptable degree of risk. This so called "Chilean model" has been introduced in several countries and has been acquiring popularity. In time it could revolutionize the provision of pensions and in the process, destroy the monopoly by governments in this area.[11] There

[11]The Chilean pension system consists broadly of three tiers. The first is a minimum pension financed and guaranteed by the government. The second tier is a private pension acquired by investing a fixed proportion of income in regulated investment funds. The proportion to be invested is fixed by the government. The third tier is made up of free investments of savings in

are of course significant problems of transition to deal with by countries that have been relying on public pensions. A major problem is that during the transition to the private system, the government will lose the contribution that would otherwise be made to its revenue by workers who move to the new system while it must pay pensions to the pensioners who are in the old system. This can be costly to the public accounts. It implies that it is good to start on this road with fiscal accounts that are sound. Over the long run this problem solves itself.

Second, though healthcare is complex, the same argument could be advanced for some aspects of health care as for pensions. Private sector arrangements could replace public ones for at least some aspects of public health provision. Also public health accounts, as used in Singapore, could provide an adequate and more efficient alternative. See Schreyogg and Kin (2004). In most countries that have public health systems, parallel private systems have developed implying that health care is no longer equal for everyone, as the provision of public health systems assumes. For some countries there could continue to be public payment for services rendered by private providers but arrangements should be made to ensure competition and to control costs by making the patients bear a reasonable share of the costs.

Third, a larger role in education should be given to the private and voluntary sector, especially for secondary schools and universities. Private schools are a booming industry in various parts of the world and in some of them their quality is very high. The free, public provisions of education can be very costly in terms of economic resources if it encourages many individuals to obtain diplomas or degrees for which they are academically unsuited; or where the degrees are not useful for obtaining productive jobs. When education is (almost) free it is more likely that individuals are less careful in pursuing degrees that are directly useful in the job market. Degrees from private schools are less likely to derive their value from legal certifications, rather than from the intrinsic market evaluation of the human capital acquired with the degree. Special provisions must exist for the talented but poor individual who might not have the means to pursue an education. Scholarships or guaranteed loans can go a long way toward dealing with this potential problem. These arguments are of course much more valid for higher than for basic or primary education which should continue to be provided largely free (or financed through vouchers) by the state.

Conclusion: Less Public Spending and More Market Solutions

Government should now scale down its operation. If it were not for the legacy of past commitments, the private sector that exists now or that could exist in many industrial countries would make it possible for the government to significantly reduce its public spending and its tax burden. In our 2000 book, Schuknecht and I speculated that no country need to spend more than 30 percent of its gross domestic product for public sector activities. This level ought to be enough to finance **all** the legitimate interventions by the state. Of course this percentage cannot be set in stone and some variation across countries, to reflect different circumstances and preferences, could be justified.

A change from the current situation could not and should not be achieved overnight. Too many individuals depend on government programs for their livelihood. For this reason it would be necessary to establish a clear sense of direction in the progressive reduction of the government role in the economy, assuming that, say, over a generation the role of the state could change significantly. Less public spending and more reliance on market solutions should be the guiding principle. **A fundamental role of the state would be to make markets work well by becoming more efficient and more transparent.** This, in fact, should be seen as the most fundamental role of the state in a market economy. The government should be ruthless in the pursuit of this objective. The speed of the change while important would probably be less important than the agreement about the direction of the change. In many European countries, the political leaders have not been capable of articulating the need for this change and to establish how the role of the public sector in their countries could be scaled down. Perhaps they are still not convinced for the need to change.

References

Afonso, Antonio, Schuknech, Ludger and Tanzi, Vito 2003, Public Sector Efficiency: An International Comparison, *European Central Bank: Working Paper No. 242 (July Forthcoming in Public Choice.*

special individual retirement account One concern that has arisen is that the management fees for the pension funds tend to be high. Perhaps greater use of indexed funds could reduce these fees as long as the high costs are not exclusively a consequence of promotion by the investment funds to attract individual investors.

Balcerowicz, Leszek, "Toward a Limited States", Cato Journal, Vol. 24, No. 3 (Fall 2004).

Brixi, Hana Polackova and Allen, Schick editors, Government at Risk (The World Bank: 2002).

Buchanan, James M, 1975, The Limits of Liberty: Between Anarchy and Leviathan (Chicago, University of Chicago Press).

and Richard A. Musgrave, 1999, Public Finance and Public Choice: Two Contrasting Visions of the State (Mass, MIT Press).

Edwards, Chris, 2004, "Downsizing the Federal Government," Policy Analysis, No. 515 (June 2).

Harris, Stephen, 2004, Public Private Partnerships: Delivering Better Infrastructure Services, Working Paper presented to a conference at the Inter-American Development Bank, (February 20).

Keynes, John Maynard, The End of Laissez-Faire (London, Hogarth Press, 1926).

Leroy-Beaulieu, Paul, Traití de la Science des Finances (Paris: Guillaumin, 1888).

Schreyogg, Jonas and Lim Meng Kin, 2004, "Healthcare Reforms in Singapore – Twenty Years of Medical Savings Accounts," (Journal of Institutional Comparison, Volume 2, No. 3 (Autumn).

Schuknecht, Ludger and Vito Tanzi, 2005, "Reforming Public Expenditure in Industrialized Countries; Are There Trade-offs?," European Central Bank: Working Paper No. 435 (February).

Smith, Adam, 1776, The Wealth of Nations (Penguin Classics).

Tanzi Vito and Ludger Schuknecht, 1997, "Reconsidering the Fiscal Role of Government: The International Perspective," The American Economic Review (May).

Tanzi, Vito and Ludger Schuknecht, Public Spending in the 20th Century: A Global Perspective (Cambridge University Press, 2000).

Tanzi, Vito, 2001, "Globalization, Technological Developments, and the Work of Fiscal Termites," Brooklyn Journal of International Law, Vol. XXVI No. 4., 2002, Globalization and the Future of Social Protection, in Scottish Journal of Political Economy, Vol. 49 No. 1, (February).

Vogel, Steven K., 1996, Freer Markets, More Rules, Regulatory Reform in Advanced Industrial Countries (Ithaca and London, Cornell University Press).

*Jože Mencinger**

Can a Flat Rate Tax Contribute to Growth and Welfare

Summary

The paper deals with three empirical aspects of the triple flat rate tax, which is the most notorious and controversial feature of the projected tax reform in Slovenia. The findings of the analysis are straightforward.

Firstly, there is no pressing need for a radical reform of the economic system. Indeed, replacing gradualism with a "new paradigm of development" rooted in neo-liberalism and supply-side economics might adversely affect the economic performance and social cohesion of the country.

Secondly, there is no empirical evidence supporting the argument that changes in the tax system which would increase the share of profits would in turn guarantee a higher expenditure for R&D. There is also no guarantee that an increase in expenditure on R&D would actually increase growth and employment.

Thirdly, there is no evidence that a flat rate income tax would favorably affect the labor market and narrow the existing overall and structural gap between labor supply and labor demand.

1. Introduction

A triple equal flat rate – for VAT, personal income tax, and profit tax - is the most notorious and controversial feature of the tax reform, which is the pillar of the Reform Proposal[1]. Indeed, without the tax reform the rest of the reform package comprising of 70 "actions" can barely be called reform at all. These "actions" consist of empty talks on "competitiveness", "knowledge based society", and similar claptraps; they also include some useful as well as some less-than-useful simplifications and corrections of the existing economic system, and the creation of new institutions.

It is impossible to reasonably justify a triple equal flat tax rate[2], as tax bases differ and so do the effects of taxation. A single rate profit tax is as common as is progressive personal income tax. A single rate of VAT could also be sensible had it been introduced in 1999 when VAT replaced the sales tax though there are two major objections to abolishing the lower rate – unfavorable redistribution and tax competition. It would adversely affect poorer people and some sectors of the economy. Bole (2005a)[3] thus suggests that any changes in the tax system should deal with tax competition and tax evasion possibilities which increased significantly after the loss of sovereignty over the exchange rate policy in 2004 and will further increase when Slovenia joins euro zone and after new directives on taxing services will be passed by the EU.

Finally, flat rate income tax belongs to the beginning of the 19th century[4]; by the second half of 19th century, the progressive personal income tax had become commonplace and remained (with graduated rates) a standard in all "normal" market

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[1] The discussion is based on the version of the Reform Proposal of October 25th 2005 (Odbor za reforme: Usmeritve ekonomskih in socialnih reform za povečanje gospodarske rasti in zaposlenosti).

[2] If one adopts a life-cycle perspective, the difference between a wage tax and a consumption tax amounts to one of timimg in tax collections rather than economic substance. In such a context, flat tax proposal encompasses a wage tax on individuals and a cash flow tax on corporations at the same rate, resulting in an economy-wide single-rate tax on consumption (Zee, 2005,36-37)

[3] Fierce opposition against the abolition of the lower rate in VAT appears to make discussions on it irrelevant.

[4] In the beginning of the 19th century, most taxes (občа užitnina, hišnina, desetina) in the regions of nowadays Slovenia had flat rates. The first progressive income tax "pridobnina" with the rates between 2.5 and 20 percent was introduced in 1829.

economies. Indeed, it did not exist in former communist countries in which everybody was considered equal, which might add to explaining why some former communist countries introduced the flat rate tax and others are seriously considering its implementation.

The idea of progressive income tax is consistent with the vertical equity principle (unequal tax treatment of un-equals), the ability to-pay principle (decreasing marginal utility of money), and it is also in accordance with the benefit principle (assuming that most pure public goods benefit rich people more than they benefit poor people). What, however, is the appropriate degree of progressiveness is a matter of society-specific value judgments. This is manifested in enormous differences in rates, exemption thresholds, income classes, allowances and so forth even among the countries that are at the same level of development.

Initially, the reformers claimed that by adopting the triple equal flat rate tax everybody would be better off; only afterwards did they admit that a flat rate on VAT and personal incomes redistributes wealth, which they would »correct« administratively and by new social transfers. This would make the existing fiscal system even more cumbersome, which is contrary to one of their proclaimed and reasonable goals; to simplify the system. The complexity of the tax systems is namely not caused by multiple tax rates, it is caused by tax bases, exemptions, allowances and so on.

This paper deals with three practical aspects, firstly exploring whether the reform of the economic system, which would go beyond normal adaptation and correction is as pressing as claimed. Secondly, the alleged links between the tax reform, expenditure for R&D, growth, and welfare, which rely on the premises of the supply side economics, are examined. Thirdly, the paper deals with the soundness of the proposition according to which a flat rate income tax would have favorable effects on the labor market.

2. How Pressing is Reform?

The proposed Reform was introduced to carry out the Strategy for Development, a national counterpart of the renewed Lisbon Strategy[5]. In addition, the Reform should put an end to gradualism, which has dominated the transition and development of Slovenia since its independence, and should replace it with a "new paradigm of development" rooted in neo-liberalism and supply side economics.

The most often utilized argument for the Reform, which is accepted also by those who object to most of its content is its urgency. While admitting that Slovenia has been very successful with high and most stable levels of growth accompanied by internal and external balance, low unemployment rate, and decreasing inflation (See Table 1), reformers assert that such development is not sustainable due to the slow restructuring process and bad development policy (Odbor za reforme, p 14).

The hypothesis of slow restructuring[6] can be tested indirectly by comparing structural indicators in Slovenia with corresponding indicators using a benchmark country or benchmark countries[7]. Five benchmark countries are often referred to by reformers: Denmark, Finland, Ireland, Estonia, and Slovakia.

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[5] According to the Lisbon strategy, signed in March 2000, Europe should by 2010 become the most efficient knowledge based society, which could compete in the globalization contest. After some years of mantras and the report of the Wim Kok committee at the end of 2004 EU, it became clear not only that EU is far from the goals for 2010, but also heading in the opposite direction. Despite contrary assertions of EU representatives (Peter Mandelson: **Strengthening the Lisbon Strategy: the Contribution of External Trade to the Growth and Competitivnes in Europe**, Stocholm, February 15, 2005; Janez Potočnik: **The Future of EU Research – chances for the new Member States**, Warsaw, February 4, 2005; Neelie Kroes: **Building a Competitive Europe – Competition Policy and Relaunch of the Lisbon Strategy**, Milan, February 7, 2005) European Commission admitted that the strategy failed. The old strategy was therefore in February 2005 replaced by **"Partnership for Growth and Jobs – New Beginning of the Lisbon Strategy"**. The ending year 2010 was abandoned, number of goals was reduced, and responsibilities were turned to the governments of member states. It should be based on the partnership between the Commission and member states, which should create their own "National Lisbon" and become responsible for efficiency, increase of productivity, and employment. The sum of "National Lisbon" should result in common "EU Lisbon". Though the new strategy was said to be simple, pragmatic, and tangible. (Communication to the Spring European Council, **Working together for Growth and Jobs**, A new start for the Lisbon Strategy, COM (2005) 24, Brussels, 02.02.2005), it easily competes with numerous declarations in former socialist countries. In short, if economic growth depended on rhetoric, it would be high. Because it does not, it is most likely that the new Lisbon strategy will soon turn into a worthless political document.

[6] Indeed, the deliberations about proper structure of an economy, or about what should be exported and what should be imported, belong to the socialist past, while the deliberations about proper social structure are a matter of value judgments.

[7] All indicators used here are those of Eurostat. Cautiousness is, nevertheless, appropriate. First, one can choose indicators supporting his views and neglect those opposing them. Second, it is almost impossible to find a benchmark model, which would last for more than a decade. Thirdly, there are country specific features, which cannot be repeated elsewhere.

Table 1: General Economic Indicators, 2004

	GDP growth in %	Average inflation in %	Current account balance, % GDP	General budget balance % GDP	Unempl. rate %	FDI inflows % GDP	GDP per capita PPS*
Czech R.	4.4	2.8	-6.1	-3.0	8.3	3.7	70
Estonia	7.8	5.0	-13.2	1.7	9.2	6.0	51
Hungary	4.2	5.5	-9.0	-5.4	6.0	3.7	61
Latvia	8.3	7.3	-8.2	-0.9	9.8	4.0	43
Lithuania	7.0	2.8	-6.9	-1.4	10.9	2.9	48
Poland	4.4	4.4	-2.0	-3.9	18.8	2.2	47
Slovakia	5.5	6.0	-0.9	-3.1	18.2	3.1	52
Slovenia	**4.2**	**3.2**	**-0.4**	**-2.1**	**6.0**	**0.1**	**79**
EU-15	1.9	2.1	0.4	-2.6	8.1	-0.1	109

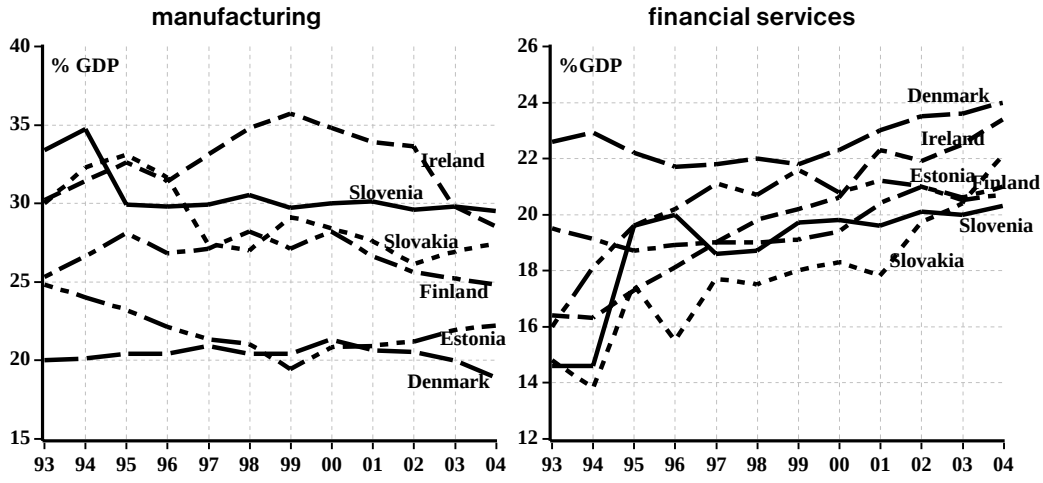
*EU25=100
Source: Eurostat, online support.

A high share of labor intensive manufacturing in GDP and a **low share of financial services in GDP** are proposed as evidence of slow restructuring (Odbor za reforme, 15). However, in the observed period between 1993 and 2004, the share of manufacturing in GDP in all the benchmark countries, though at different levels, remained rather stable. In Slovenia, after a drop at the beginning of the period, the share level stabilized at the level of 30 percent, thus, at the level of Ireland. It is considerably higher than in Denmark and Estonia and it does not differ significantly from the share level in Finland and Slovakia. The reasons for the high share of manufacturing in Slovenia can most likely be found in the relative strength of the sector before transition, privatization model, and constant support by (the non stabilization anchor role of) the exchange rate policy.

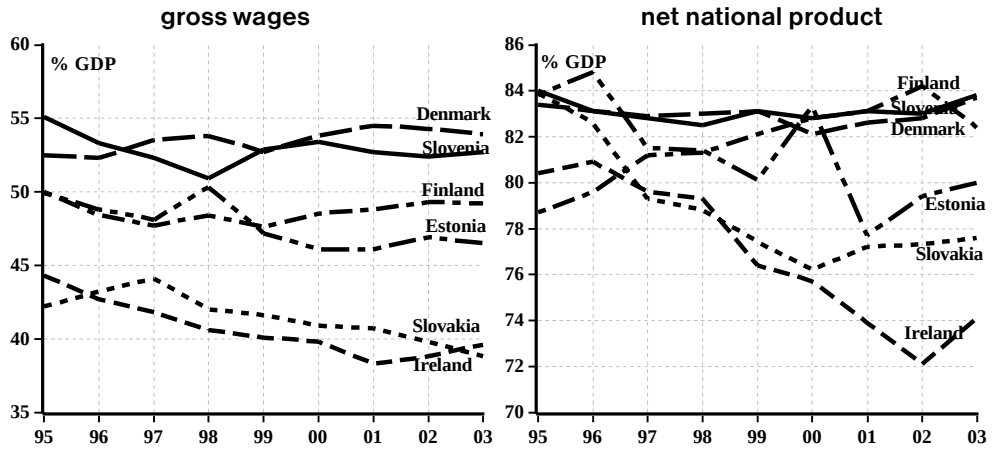
The share of financial services in GDP is claimed to be too low. Again, it does not differ considerably from the corresponding share levels in the benchmark countries, while its expansion resembles the patterns observed in other new EU member countries. A notable difference between Slovenia and the others is its ownership structure. While in Slovenia a relatively high share of the financial sector remained domestically owned, in other former socialist countries the entire financial sector was sold off to foreigners.

An overly **high share of gross wages in GDP** is one of the justifications for the reforms. However, with an initial decline from 60 percent to a rather stable share of 53 percent after 2000, Slovenia resembles Denmark and Finland while the share level is lower and decreasing in Ireland, Slovakia,

Graph 1: The Shares of Manufacturing and Financial Services in GDP



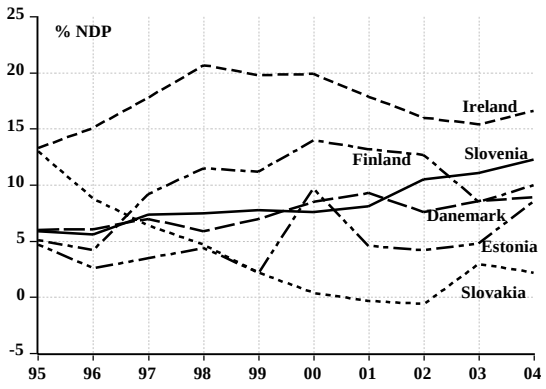
Graph 2: The Shares of Gross Wages and Net National Product in GDP



and Estonia[8]. **The share of net national product in GDP[9]** in Slovenia has been with 83 percent on a par with Denmark and, after 2000, that of Finland. The share level is much lower and decreasing in Ireland, Slovakia, and Estonia. The explanation for the difference can most likely be found in the different shares of inward FDI[10]

In looking at **the share of net savings in the disposable net national product** Slovenia again resembles Denmark and Finland but lags behind Ireland. The share of net savings is much higher than in Slovakia and Estonia. Steady growth in the share level indicates that Slovenia can enhance productive assets without relying on foreign capital.

Graph 3: Net National Savings in Net Disposable Product



Innovativeness can be measured by the **number of patent applications to the EPO (European Patent Office) per million inhabitants**. Slovenia lags considerably behind three old EU member countries but it is well ahead of new EU member countries and certain old EU members at a similar level of development. The figures[11] are the following: Slovenia 52, Denmark 217, Finland 307, Ireland 80, Estonia 7, and Slovakia 8. The values of the **lifelong learning indicator[12]** which is in The Lisbon Strategy considered an important indicator for potential development are: Denmark 27.6, Finland 24.6, Slovenia 17.9, Ireland 7.2, Estonia 6.7, and Slovakia 4.6.

Various equality or inequality coefficients serve for measuring social cohesion. The two most often used are the **income quintile share ratio** and **risk of poverty rate.** The latest values of the income quintile share ratio are 3.0 in Slovenia, 3. 6 in Denmark and Finland, 5.1 in Ireland, 5.4 in Slovakia, and 5.9 in Estonia while the values of the risk of poverty rates after social transfers are 10 in Slovenia, 11 in Finland and Denmark, 18 in Estonia, and 21 in Ireland and Slovakia.

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[8] The assertions that low share of wages and corresponding high shares of profits assure economic growth again belong to the beliefs of 19th century classical and Marxian economics, by which workers consume their wages while capitalists invest their profits.

[9] Net national product (NNP) is most likely a better indicator of welfare than gross domestic product (BDP).

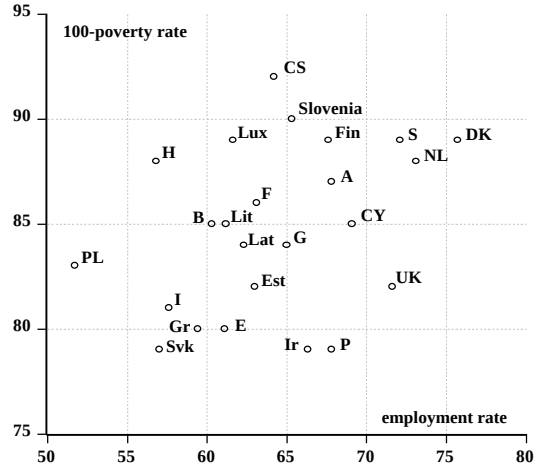
[10] This casts some doubts in the creed of only positive spillover effects of inward FDI for the welfare of the inhabitants (Mencinger, 2003).

[11] Source: Eurostat: The data are for 2002, as data for more recent periods are provisional.

[12] Life-long learning refers to persons aged between 25 and 64 who received education and training in the four weeks preceding the survey among the total population in the same age group.

The data on economic development and structural indicators certainly weaken the claims that restructuring in Slovenia has been slow. Furthermore, they indicate that the existing economic and social structure of Slovenia more closely resembles the corresponding structures in the Scandinavian countries with an above average employment rate and an above over average social cohesion (which is on Graph 4 shown as the difference: 100 – risk of poverty rate) rather than the structures found in other new and old EU member countries. One might therefore doubt whether the replacement of gradualism with the new paradigm of development is really as urgent as claimed. Indeed, the Reform might not only end the era of gradualism but also endanger favorable economic situation and existing social cohesion of the country; the latter being one of the preconditions for economic development.

Graph 4: Employment Rate and Social Cohesion



The belief that tax restructuring will spur "competitiveness" is not supported by empirical data. According to Bole (2005b), most empirical studies show that tax restructuring without tax reduction (not replaced by an increase of deficit) can only marginally affect long run growth. Economists have long recognized that fiscal policy may affect economic growth (Tanzi, 1997) and there has been a broad support for the hypothesis that the high income taxes and size of government are detrimental for growth. Some recent theoretical and empirical studies have however supported even the opposite hypothesis. In short, one could say, at least, that many issues on the relationship between the size of the government and economic growth remain ambiguous (Rivas, L.A. 2003)[13]. Furthermore, there are convincing opinions that in a democratic and financially developed country long run growth cannot be attained by increasing inequality (Rasmussen, P.N. 2005)[14] or by reduction of public spending (Wolf, 2005).[15]

3. How Reliable Are the Links Between Tax Reform and Welfare?

The major feature of the Reform, of the Strategy for Development, and of the Lisbon Strategy is the reliance on the supply side, which implies the production function[16] being their "scientific" pillar. Though the production function can have many different forms, its essence is causality - output being the dependent variable while labor, capital, and technological change are independent variables. Implied causality is certainly most relevant for the determination of potential output; it is, however, not very relevant for the determination of actual output in an economy in which companies are much more concerned with how to sell the products they produce rather than with how to produce them. Nevertheless, aggregate demand is totally neglected by the Reform, which seems to be, together with the assumed perfect adaptation of economic subjects, the Achilles' heel of the Reform and of both strategies. Indeed, one can argue that increased production will decrease the costs per unit of production, so that prices will fall, which will increase demand, and also, that increased supply in itself creates demand for

[13] Indeed, without observing the composition of government spending the claim that taxes and large size of government are detrimental to growth is an ideological statement.

[14] »Our high international ranking is due to virtuous circles where various factors reinforec each other. These include budget surpluses, transparency and honesty in public management, and high investment in education, public health and state-of-the-art infrastructure. Contrary to what the other Mr. Rassmussen believes, there is no evidence that high taxes are adversely affecting the ability to compete effectively in world markets, or to deliver extremely high living standards. .... In short, cutting income tax would do nothing to boost Denmarks' already high competitiveness, whereas cuts in welfare would harm Denmarks' competitiveness. (»Reforms« that will harm Denmarks' competitivneness«, **Financial Times**, November 29, 2005)

[15] »What is then of the idea that higher spending (and so taxes) must also spell a lack of competitiveness? The short answer is that it is nonsense for the reasons elaborated in my book, Why Globalization Works (Yale University Press, 2004)« »More public spending does not lead to slower growth, **Financial Times**, March 23,2005)

[16] If it has a Cobb-Douglas form $\mathbf{Y = A*K^{a}*L^{b}}$, it simply says that one must work (**L**) and have machinery (**K**) to produce (**Y**) with **a** and **b** indicating how changes in **K** and **L** affect **Y**. Growth, which cannot be explained by the increases of **K** and **L** is attributed to technological change or total factor productivity, embodied in **A**.

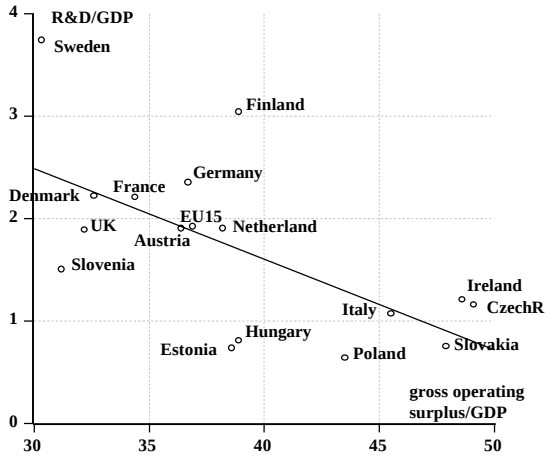
other goods and services. This is true in a "frictionless and timeless" world but far less true in reality.

Technological change, or total factor productivity, is generally acknowledged to be the driving force behind long run growth and welfare, while shallowness of the capital market and inflexibility of the labor market are believed to be their major impediments. Let us disregard the issue of aggregate demand and focus only on the links between flat rate income tax and welfare. The reformers claim that the reduction in labor costs, which will be achieved by the abolition of the tax on wage bill[17] and by the introduction of a flat rate income tax, will increase profits, which in turn will be used for further expenditure in R&D, investments and increased employment. Let us also disregard that the difference between existing tax burden and tax burden with a flat rate income tax is marginal compared to the burden reduced by the abolition of the tax on wage bill, and consider the validity of the assertions that a reduction in the tax burden will increase expenditure in R&D and that the latter will increase output, employment, and welfare.

Firstly, what guarantees that employers benefiting from reduced labor costs and flexible firing laws will use the accrued profits for expenditure in R&D, and not for increasing their own personal incomes, the dividends of owners and often unreasonable mergers and acquisitions? The data do not confirm that an increase in the share of profits in GDP will increase expenditure in R&D. Time series for 16 EU countries for the period 1993-2004 do not indicate that there exists a positive relationship between the share of gross operating surplus and expenditures for R&D. Indeed, negative relationship prevailed in majority of countries. A negative relationship between the share of gross operating surplus and average expenditures for R&D in most of EU countries (time series) or a negative relationship between the averages across countries certainly do not imply that increasing the share of gross operating surplus would lessen expenditures for R&D[18].

They only suggest that one should be rather cautious before accepting the assertions that redistribution in favor of employers will automatically increase expenditures for R&D.

Graph 5: Gross Operating Surplus and Expenditures for R&D 1993-2004 Averages



Secondly, even if accrued profits were used for expenditure in R&D, this does not automatically ensure growth and job creation. For example, in the observed period, Ireland attained by far the fastest average growth in the EU, while its expenditure in R&D was among the lowest, slightly more than 1 percent of GDP, and decreasing. The EU and two countries with rapidly increasing expenditure in R&D, Denmark and Finland attained rather modest and declining growth. Again, a negative relationship can certainly not be considered a proposition that expenditures in R&D hinder economic growth; it only indicates that they do not ensure it.

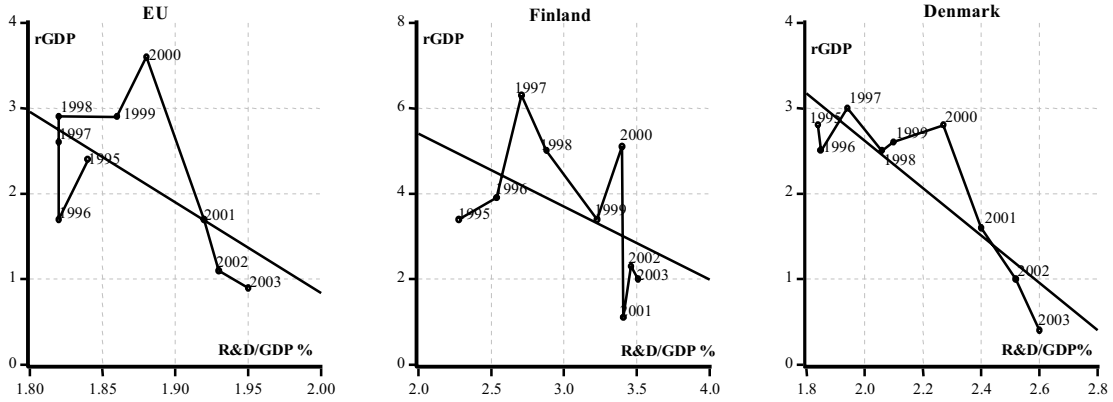
Finally, technological change undoubtedly increases productivity and leads to better jobs; it, however, at least directly, does not create more jobs[19]. Indeed, technological change is in most cases labor-saving and new jobs created by it in an industry where change is taking place, are most likely fewer in number than the jobs which are eliminated. Only some workers who lose their jobs can find new jobs in the same industry or in other related industries producing material goods with a higher value added. Some of them move to the service sectors with the same, higher or lower value added jobs, while some of them move to an activity with zero value added jobs, i.e. unemployment. Technological changes however indirectly enable the creation of new jobs in services, the public or private sector, with the same, higher (public

[17] The tax on wage bill was introduced in 1996 in order to reduce the flat rate contributions to health fund and to ease the tax burden of labor intensive industries with low wages while progressively taxing high wage industries. The abolition of this tax would decrease the existing progresivness substantialy.

[18] The experience of the author is that his doubts in conventional truths are often considered as the confirmative statements.

[19] There is a very old debate, going back to Ricardo, whether technical change and productivity growth has neutral, negative or positive impacts upon employment.

Graph 6: Expenditures for R&D and Economic Growth 1995-2003



servants, lawyers. etc.) or lower (waitresses, garbage collectors etc.) value added. This does not imply that R&D hinders job creation; it only warns that R&D, which increases output and the standard of living, does not inevitably create new jobs and reduce unemployment[20]. The overall outcome is a result of different effects, some reducing, others increasing employment[21].

In short, the assertions that a flat rate income tax will increase expenditure in R&D and that this will increase growth and employment are very close to religious beliefs.

4. Flat Rate Income Tax and the Labor Market

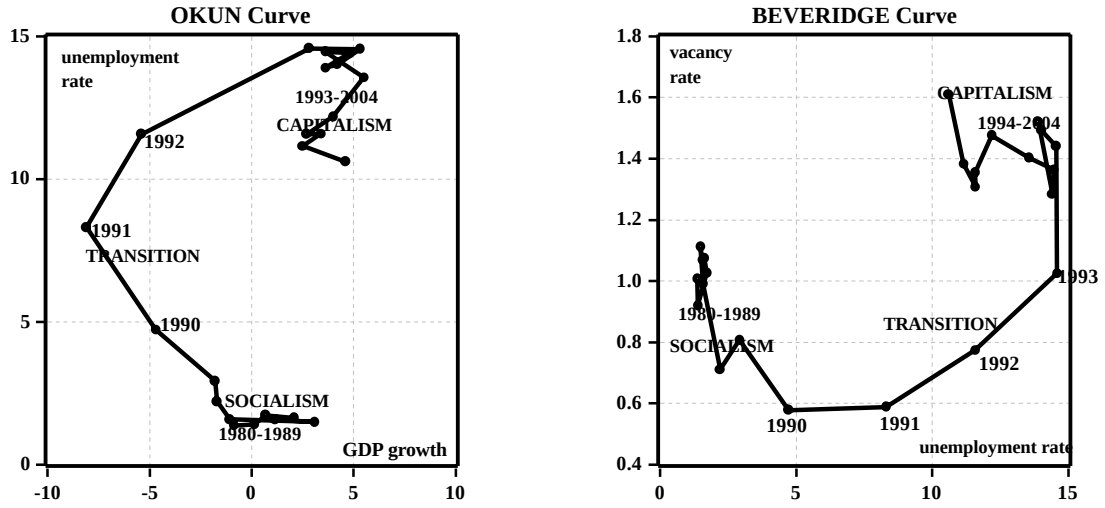
One of the major goals of the flat rate income tax is supposed to be a reduction of labor costs for skilled and educated workers, which would become increasingly attractive for companies along with their innovativeness and capability for producing technologically advanced goods (Odbor, 11).

Let us first observe the supply side of the proposition. At least in theory, changes in personal income tax would affect the work incentive of the income recipients. If jobs are available, the decision to work more or less depends on the wage elasticity of the labor supply. Most empirical studies have shown that the wage elasticity of the labor supply is extremely low (Zee, 2005) because it is a result of two conflicting effects: substitution effect and income effect, which may cancel each other out. Namely, if taxes were lowered and incomes increased, one would be willing to work more and substitute leisure by work (substitution effect) while at the same time feeling richer and therefore willing to work less (income effect). It is impossible to say which effect would prevail at different levels of income, but it is reasonable to assume that income effect might prevail at higher rather than lower levels of income. Indeed, the discussion is not very relevant because the reality is shaped by labor market regulations and persistent unemployment. It is also unclear whether the reformers even considered the adaptation on the supply side, at all. In fact, while they proclaim that their objective is to benefit the higher income groups (implying that the substitution effect prevails over income effect), they would administratively "correct" the effects of the flat rate income tax by keeping net salaries unchanged. This, indeed, is one of the many strange and unrealistic propositions of the reform package, which would

[20] Namely, average R&D expenditures in Finland in the 1993-2004 period were 3.04 percent of GDP, they were 2.22 percent in Denmark and 1.50 percent in Slovenia while standardized unemployment rates in 2003 were 9 percent in Finland, 5.6 percent in Denmark, and.6.5 percent in Slovenia. Though the data on age structures of unemployed are not fully comparable, they however indicate that high expenditures for R&D are not enough to favorably affect age structure of unemployment. In Finland, unemployment in the age group 15-24 increased from 8.9 in 1990 to 21.6 percent in 2003, in the age group 25-54 from 2.1 to 7.3 percent, and the age group 55-64 from 2.7 to 7.7 percent. In Denmark, unemployment rate in the age group 15-24 decreased from 11.5 to 9.8 percent, in the age group 25-54 from 7.9 to 5 percent, and in the age group 55-64 from 6.1 to 3.9. In 2002, in Slovenia the unemployment rate in the age group 15-24 was 15 percent, in the age group 25-49 it was 5.2 percent and in the age group over 50 years 3.6 percent (CESifo DICE).

[21] In the last decade, practically all new jobs in EU-25 were created in services. In the period 1997-2005, 13 millions jobs were created in EU-25, 16 millions jobs were created in services; 2 millions jobs were lost in industry, and 1 million jobs were lost in agriculture. The share of employment in services therefore increased from 66 to 69.7 while the shares of employed in industry lessened from 28.0 to 25.2, and agriculture from 6.0 to 5.1 percent.

Graph 7: Shifts of the Okun's and Beveridge's Curves



bring about a great deal of confusion if actually implemented.

On the demand side, it can be assumed that companies balance the benefits of having good workers with their costs, and that they adapt the skill structure of workers to their product structure. Indeed, an engineer could more than likely successfully manage the job of an unskilled worker. However, it is highly unlikely that a company would hire an engineer for the job, which can be managed by an unskilled worker. Only changes in the product demand and adjustments of production structure to them can lead to changes in labor demand and not vice-versa.

The improvement in the labor market by a change in relative wages implies that the labor supply structure can easily adapt to the labor demand structure. This would immediately imply that most of the existent unemployment is structural rather than cyclical. However, the shifts in the position of the Okun curve show that the "equilibrium" unemployment rate in Slovenia shifted from a very low level, which was in accordance with the "socialist social contract" (a combination of self-

Table 2: The Skill Structure by Economic Activities

Skill sector	PhD Ms/Ma	university	non-univ.	second. school	highly skilled	skilled	semi-skilled	unskilled
A-C	0.20	6.80	6.71	22.60	0.68	40.50	7.76	15.58
D	0.21	7.11	5.34	20.43	0.90	35.06	11.24	19.48
E	0.21	12.74	8.27	29.39	3.11	33.70	3.73	8.27
F	0.04	4.49	5.21	19.00	2.47	39.21	5.55	23.59
G	0.15	8.00	6.93	33.59	1.44	43.11	0.95	5.57
H	0.06	4.46	4.30	24.16	0.61	43.85	5.91	16.37
I	0.15	7.49	7.76	38.44	2.42	36.51	2.08	4.65
J	0.69	23.03	15.00	56.72	0.10	3.08	0.18	0.63
K	2.09	23.84	10.14	30.89	0.25	15.40	2.04	15.00
L	1.17	30.18	12.75	46.79	0.24	5.72	0.39	1.98
M	6.05	54.98	5.26	19.08	0.19	7.15	1.18	6.76
N	1.32	20.10	12.84	40.22	0.21	10.61	5.38	8.73
O	0.57	21.64	10.05	34.78	0.53	19.62	2.73	9.03
Average	0.93	16.16	7.63	29.08	0.93	27.42	5.24	12.25

A-C - agriculture, mining; **D** - manufacturing, **E** - electricity, gas and water supply, **F** - construction, **G** - trade, **H** - hotels and restaurants, **I** - transport, storage and communications, **J** - financial intermediation, **K** - real estate, renting, **L** - public administration, **M** - education, **N** - health and social work, **O** - other services.

management and soft budget constraint) to a new much higher level consistent with a "neo-European social contract". While the former was characterized by low elasticity of employment to economic activity and high asymmetry between hiring and firing (in favor of hiring), the latter is characterized by an increased elasticity and reversed asymmetry (Mencinger, 2000).[22]

The shifts of the Beveridge curve depicting the relationship between the unemployment rate and vacancy rate show that only a small proportion of unemployment can be attributed to structural differences between labor supply and labor demand.

This is indirectly confirmed by recent growth of unemployment among persons with university education and also by the difference between formal and necessary level of education. At the end of 2004, the ratios between professional attainments (formal education) and professional skills (necessary level of education) were: 1.35 (3842:2845) for PhD level, 2.06 (6902:3336) for M.Sc./M.A.level, 0.86 (92533:106570) for university education, 0.96 (48393:50221) for non-university degree, 1.03 (190804:185077) for secondary education, 0.91 (5658:6186) for highly skilled workers, 1. 0.99 (179796:180836) for skilled workers, 0.51 (17798:34556) for semi-skilled, and 2. 1.34 (108010:80803) for unskilled workers. According to these ratios, the largest discrepan-cies are in three labor sub-markets: for top education, semi-skilled and unskilled workers. A large excess supply exists in the top formal education level and among unskilled workers. Excess demand for university degree workers is partly covered by workers of top formal education, while unskilled workers are managing jobs of semi-skilled workers. One might therefore doubt that changes in relative wages would be of any significance for improving the functioning of the labor market. Table 2 indicates that the skill structure is mainly activity specific.

References

Bole, V.(2005a): Davek na dodano vrednost med paradnim konjem in težakom, Gospodarska Gibanja 374, October 2005, 5-12;

Bole V.(2005b): Ali reforma stavi na pravega konja? Gospodarska gibanja 376, December 2005, 5-14;

Mencinger, J. (2003): Does Foreign Direct Investment Always Enhance Economic Growth?, Kyklos, Vol. 56, 491-508;

Mencinger, J. (2000): Restructuring by "Firing and Retiring": The Case of Slovenia in Landesmann, M.A. and Pichelmann, K.: Unemployment in Europe, MacMillan Press, 2000, 374-389;

Rasmussen, P.N. (2005) . »Reforms« that will harm Denmarkś competitivneness« Financial Times, November 29, 2005, 14;

Rivas, L.A.(2003) Income taxes, spending composition and long-run growth, European Economic Review 47, 477-503;

Tanzi, Vito, Zee, Howell, H. (1997) Fiscal Policy and long run growth, IMF Staff Papers, 44, 179-209.

Wolf, M. (2005): More public spending does not lead to slower growth, Financial Times, March 23, 2005;

Zee, Howell, H. (2005) Personal Income Tax Reform: Concepts, Issues, and Comparative Developments, IMF Working Paper, WP/05/87

[22] Different theories which might be divided into two sets (hysteresis and structural explanations) might explain high and persistent unemployment in Slovenia and the EU. The »insider-outsider« hypothesis stressing the inequality of outsiders, the high-unemployment benefits hypothesis emphasizing labor market inflexibility, or the capital-shortage hypothesis stressing the absence of job-creating investments are not mutually exclusive.

*Andreas Peichl**

The Distributional Effects of a Flat Tax Reform in Germany - a Microsimulation Analysis

1. Introduction

The simplification of the tax system is a key objective of many income tax reform proposals. This is not only because complexity leads to high compliance costs for taxpayers. The complexity of the income tax system is also seen as an obstacle to fairness and efficiency. For instance, complexity is thought to be an obstacle to achieving a fair distribution of the tax burden because it might allow taxpayers with high incomes to use tax loopholes and reduce their tax burden.

The present paper quantifies the impact of tax simplification in combination with a flat tax rate on the distribution of after tax income and the marginal income tax rates faced by different types of taxpayers. The change in marginal income tax rates is of interest because marginal tax rates may be considered as rough indicators for the distortions caused by the tax system. Our analysis is based on our simulation model for the German tax and transfer system (FiFoSiM) using income tax microdata and household survey data.[1]

We model tax simplification as the abolition of a set of deductions from the tax base included in the German income tax system. If these measures are combined with a reduction of income tax rates to preserve revenue neutrality, the distributional impact depends on the type of rate schedule adjustment. We also consider the effect of these tax measures on the marginal income tax rate.

In the literature, quantitative studies of the impact of tax simplification on the efficiency of the tax system and the distribution of income exist only for the U.S. In a recent contribution, Gale and Rohaly (2003)[2] study the effect of different tax simplification proposals. Among other things, they consider the introduction of a flat rate income tax, combined with a value added tax reform. They find that such a tax reform would increase the tax burden of the middle class and reduce the tax burden for very high and very low incomes. Gale et al. (1996)[3] analyse the effects of introducing a flat tax in the US according to the concept of Hall and Rabushka (1995)[4] and similar versions. They conclude that high income households profit most while households with low incomes suffer from a flat tax reform.

The set-up of the paper is organised as follows: chapter 2 contains a short description of FiFoSiM, chapter 3 presents the tax simplification scenarios. Chapter 4 illustrates the effects on distribution. Chapter 5 presents the effects on the marginal tax rates as a measure for efficiency, before chapter 6 summarises and concludes this paper.

2. FiFoSiM: Database and Model

Our analysis is based on a microsimulation model for the German tax and transfer system (FiFoSiM) using income tax and household survey microdata. The approach of FiFoSiM is innovative in so far

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This paper is a summary of my presentation held at the CEF - International Academic Forum on Flat-Tax-Rate on February 3rd 2006. A more detailed analysis of the economic effects of tax simplification in combination with tax rate schedule reforms can be found in: Fuest, C., Peichl, A. and T. Schaefer (2006), Does Tax Simplification yield more Equity and Efficiency? An empirical analysis for Germany. University of Cologne, Working Paper.

[1] The model is described in: Fuest, C., Peichl, A. and T. Schaefer (2005): Dokumentation FiFoSiM: Integriertes Steuer-Transfer-Mikrosimulations- und CGE-Modell, Finanzwissenschaftliche Diskussionsbeiträge Nr. 05 – 03. A specific feature of FiFoSiM is the use of a dual database of FAST- and SOEP-data.

[2] Gale, W. and Rohaly, J. (2003). Effects of Tax Simplification Options on Equity, Efficiency, and Simplicity: A Quantitative Analysis.

[3] Gale, W. G., Houser, S. and Scholz, J. K. (1996). Distributional Effects of Fundamental Tax Reform, in H. J. Aaron and W. G. Gale (eds), Economic Effects of Fundamental Tax Reform, The Brookings Institution, Washington, D. C., pp. 281.320.

[4] Hall, R. E. and Rabushka, A. (1995). The Flat Tax, 2nd edn, Hoover Institution Press, Stanford.

as it creates a dual database using two microdata sets for Germany: FAST98 and GSOEP. FAST98 is the income tax scientific use-file 1998 (FAST 98) containing a 10%-sample of the German federal income tax statistics. FAST98 includes the relevant data from income tax files of nearly 3 million households in Germany. Our second data source, the German Socio-Economic Panel (GSOEP), is a representative panel study of private households in Germany. In 2003 GSOEP consists of more than 12,000 households with more than 30,000 individuals. A specific feature of FiFoSiM is the simultaneous use of both databases allowing for the imputation of missing values or variables in the other dataset.

The layout of FiFoSiM follows several steps: First the database is updated using the static ageing technique which allows controlling for changes in global structural variables and a differentiated adjustment for different income components of the households. Second, we simulate the current tax system in 2006 as the benchmark for different reform scenarios which are computed in the third step.

The modelling of the tax and transfer system uses the technique of microsimulation. FiFoSiM computes individual tax payments for each case in the sample considering gross incomes and deductions. The individual results are multiplied by the individual sample weights to extrapolate the fiscal effects of the reform with respect to the whole population. A detailed description of the FiFoSiM model can be found in Fuest et. al (2005).

3. Tax Simplification Scenarios

The basic steps for the calculation of the personal income tax under German tax law are as follows. The first step is to determine the income of a taxpayer from different sources and to allocate it to the seven forms of income defined in the German income tax law. For each type of income, the tax law allows for certain income related expenses. The second step is to sum up these incomes. Third, deductions like contributions to pension plans or charitable donations are taken into account, which gives taxable income as a result. Finally, the income tax is calculated by applying the tax rate schedule to taxable income.

Tax base simplification is modelled as the abolition of a set of specific deductions from the tax base included in the German income tax system. Our choice of simplification measures is influenced by the German policy debate about existing tax breaks and deductions. Naturally, the analysis is restricted by the availability of data. The effects of various tax simplification scenarios are calculated in the microsimulation model FiFoSiM. Tax simplification in terms of tax break abolition generates additional revenue. As we intend to design a potential tax reform without revenue effects, we model a flat tax rate of 30% and a basic tax allowance of 9500 € .

4. Distributional Effects

To analyse the distributional effects of different reform scenarios we compute different distributional measures based on equivalence weighted household net incomes.[5] Furthermore, as an innovative element of our analysis, we estimate the polarisation effects of each alternative. Distributional measures have been widely used in simulation studies, whereas polarisation measures have been seldom respectively never used in microsimulations (for Germany).[6] Generally speaking, polarisation is the occurrence of two antipodes. A rising income polarisation describes the phenomenon of a declining middle class resulting in an increasing gap between rich and poor. The proportion of middle income households is declining while the shares of the poor and the rich are both rising. As a distributional measure we compute the Gini-Index and the measure of Schmidt (2004)[7] as a polarisation index.

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[5] We use the so called "new OECD-scale" which weights the household head with a factor of 1, household members over the age of 15 with 0.5, and under 15 with 0.3. The households net income is divided by the sum of the individual weights of each member (=equivalence factor) to compute the equivalence weighted household income.

[6] The measurement of polarisation was introduced by Wolfson, M. C. (1994). When Inequalities Diverge, American Economic Review 84(2): 353-358, and Esteban, J. and Ray, D. (1994). On the Measurement of Polarization, Econometrica 62(4): 819-851, to analyse the phenomenon of the „declining middle class" in the United States which could not be satisfactorily explained by standard inequality measures (see Schmidt, A. (2004). Statistische Messung der Einkommenspolarisation, Eul-Verlag, Lohmar. for a survey). The distinction between inequality and polarisation can be vividly explained using the extremes: minimal inequality and minimal polarization is given by a uniform distribution of income. Maximal inequality is given if N-1 people realize a zero income and the remaining person receives the whole income. Polarisation is maximal if there are two (almost identically large) groups which are very heterogeneous regarding their incomes (heterogeneity between groups) but very homogeneous inside each group (homogeneity within groups).

[7] Schmidt (2004) creates a polarisation index which in analogy to the gini index (lorenz curve) is based on a polarisation curve for a better comparability of the results and their interpretations.

Table 1: Change of Households Equivalence Weighted Net Income In Percent

	kumAB	E061	Flat-Tax	kumAB1	kumAB2
1. Decile	-0,06	0,00	0,00	-0,06	-0,06
2. Decile	-0,30	0,19	0,08	-0,03	-0,20
3. Decile	-0,75	0,95	0,28	0,38	-0,45
4. Decile	-1,12	1,57	-0,05	0,63	-1,23
5. Decile	1,35	1,87	-0,46	0,67	-1,90
6. Decile	-1,48	2,10	-0,86	0,73	-2,45
7. Decile	-1,62	2,22	-1,11	0,68	-2,81
8. Decile	-1,78	2,18	-1,07	0,49	-2,84
9. Decile	-2,11	2,01	-0,61	-0,01	-2,51
10. Decile	-2,16	1,40	5,87	-0,70	4,27
Gini	-0,55	0,12	2,56	-0,46	2,32
PolS	-0,81	0,72	-0,49	-0,03	-1,33
P 90/10	-2,26	1,97	-0,14	-0,21	-2,03

Source: own calculations based on FiFoSiM.

The main results are presented in table 1. We simulate the percentage changes of the mean income in each decile and the distributional and polarization measures compared to the status-quo for each tax rate schedule adjustment, the simplification bundle (kumAB) and the combinations of rate schedule reforms and tax base simplification.

The first column of table 1 shows the cumulated effects of the simplification bundle. The accumulated measures of tax simplification burden the higher incomes more heavily than the middle and the lower incomes. Inequality and polarisation are both reduced.

The isolated effects of changes in the tax schedule are as follows. The adjustment to the right of the current schedule (E061) increases inequality as well as polarisation. The flat rate tax strongly increases inequality while the polarisation index decreases. The obvious winner of a flat tax rate is the 10th decile due to lower marginal rates and to some extent the first decile while the middle to upper deciles suffer from an increased tax charge due to the flat tax reform. These effects result in an overall increase in the gini index.[8]

The revenue neutral combination of the tax base simplification bundle with a tax schedule adjustment to the right (kumAB1) decreases both the inequality and the polarisation indices, whereas the combination with a flat-tax (kumAB2) increases the inequality but reduces the polarisation. Given these results, we can conclude that revenue neutral tax simplification does not necessarily lead to redistribution from poor to rich. The combination with the adjustment of the current tax schedule even leads to a decrease of inequality, i.e. the simplification of the tax system can lead to a more equal distribution of after tax income. More inequality only arises if tax base simplification is combined with the introduction of a flat rate tax.

5. Tax Simplification and the Efficiency of the Tax System

There are many ways in which the simplification of the tax system affects its efficiency. In this section, we analyse the effect of tax simplification on the marginal income tax rate faced by different groups of taxpayers. The underlying idea is that the marginal income tax rate affects the labour supply and savings incentives. Here, we focus on the marginal labour income tax rate. The results are summarised in table 2.

It turns out that tax base simplification without tax rate adjustments increases the marginal tax rate

[8] The decrease in polarisation is surprising at first glance, but this result can be attributed to the following two effects: The heterogeneity between the two groups decreases because of the higher tax burden for most people above the median income and because of a decrease of the tax liability of some people below the median. The homogeneity within the upper group decreases as well because of the opposite directions of the effects in those deciles. Both effects lead to a decrease in the polarisation index.

Table 2: Marginal Tax Rates and Rate Changes

Dec.	E06	E061	Diff	Flat-Tax	Diff	kumAB1	Diff	kumAB2	Diff
1	0,00	0,00	-0,00	0,00	-0,00	0,00	-0,00	0,00	0,00
2	2,40	0,43	-1,97	0,92	-1,48	0,58	-1,82	1,29	-1,11
3	14,60	11,35	-3,24	16,73	2,13	13,80	-0,80	19,76	5,17
4	20,34	18,39	-1,95	21,95	1,60	19,55	-0,79	22,69	2,35
5	23,25	21,30	-1,95	23,39	0,15	22,42	-0,83	24,19	0,95
6	24,71	22,93	-1,78	25,64	0,93	24,05	-0,65	26,57	1,87
7	26,18	24,81	-1,37	27,06	0,89	25,82	-0,35	27,78	1,61
8	28,04	27,10	-0,94	28,77	0,73	27,90	-0,14	29,13	1,09
9	30,07	29,44	-0,64	29,46	-0,61	30,06	-0,01	29,57	-0,50
10	35,22	34,81	-0,41	29,44	-5,78	35,92	0,70	29,51	-5,71

Source: own calculations based on FiFoSiM.

for all taxpayers. This is not surprising, given the progressive nature of the income tax schedule. Combining these measures with a reduction of tax rates over the entire income tax schedule (kumAB1) reduces the marginal tax rate for almost all taxpayers with the exception of the highest income decile. The combination with a flat rate tax (kumAB2), in contrast, reduces the marginal tax rate considerably (by five percentage points) for the highest income decile. For the middle income deciles, the marginal tax rate increases, especially for the third and the fourth income decile. This suggests that the efficiency gains that can be achieved through tax simplification, combined with the introduction of a flat rate tax, are limited. This is mainly due to the fact that revenue neutrality requires a flat tax rate of 30%. If the broadening of the tax base goes beyond the measures considered here, revenue neutrality can be achieved at a lower statutory tax rate. In this case, the reduction of the marginal tax rate will also be lower.

6. Summary and Conclusion

In this paper, we have examined the effects of tax simplification on the income distribution and marginal income tax rates. Our results suggest that flat tax reforms combining tax base broadening with a single tax rate can increase inequality at the expense of the upper middle class. This might be the reason for the dispute about the political implementation of a flat tax reform despite the incontestable advantages of a flat tax rate regarding tax administration. Thus it might be advisable to separate the tax simplification objective from tax rate schedule issues.

Finally, income distribution is only one relevant aspect of tax reforms. If a higher national income, more efficiency or better incentives can be achieved through an income tax reform, higher inequality of income distribution might be deemed acceptable.

Whether tax simplification leads to more fairness in terms of higher after-tax income equality depends on the simplification method. The tax base simplification package considered here, combined with an adjusted direct progressive tax rate reduces the inequality of income distribution maintaining revenue neutrality. In this regard, more fairness through tax simplification is possible.

*Richard Murphy**

Flat Tax: Not as Simple as They'd Have You Think

I have read much of what Alvin Rabushka, who will speak at the "International Academic Forum on Flat Tax Rate" has to say with regard to flat taxes (Hall and Rabushka 1995, etc.). What he has had to say is interesting. I therefore regret to say that I cannot agree with a great many of his conclusions.

I would like to have time to deal with many of the economic issues and assumptions which underpin Alvin Rabushka's theories. But whilst I trained as an economist I am first and foremost an accountant and upon reflection I decided that it was from that perspective that I wished to talk today.

There is a very good reason for saying that. Accountants have not been heard enough in this debate and if anyone knows about the realities of tax then we should. It is a curious fact that very little has been written by any of the major accounting institutes on the subject of flat tax. The AICPA in the USA devoted just 10 out of 113 pages to the subject when it issued a document on tax reform in September 2005 and it cannot be said to be overly enthusiastic in its comments[1]. In addition no UK accounting institutes has yet issued a major paper on this subject, although I am working on correcting that right now. So what I have to offer will, I hope add new perspective to the debate. In the circumstances I trust you will forgive the rather limited range of footnotes and references within my presentation. Almost everything I have to say is original thinking.

The Claims Made

The proponents of flat taxes do, it seems to me, make a limited but quite substantial range of claims as to the benefits that arise from them. In summary the claims made for flat tax can be grouped under the following headings:

Simplification

simplify the tax code;
reduce the burdens on individuals who have to file tax returns;
simplify business administration;
cut the number of state employees who administer tax;
reduce the number of taxpayers;

Taxation

reduce the tax rate;
reduce the incentive for tax evasion;
cut or eliminate tax avoidance;
close all loopholes for tax abuse;
increase the fairness of the tax system;

Economics

stimulate the economy;
increase tax yields in the long term;
reduce inflationary pressure;
reduce interest rates;
encourage saving;
stimulate investment;
encourage international competition;
improve corporate transparency.

Social

provide an incentive to work;
protect wealth;
support the family;
enhance the status of government.

No doubt I have missed at least one claim in Steve Forbes' book "Flat Tax Revolution" (Forbes, 2005) which, I have to admit I regard as the third edition of Alvin Rabushka's book on the subject with Robert E. Hall, (Hall and Rabushka, 1995) so close is it to the latter in structure and content.

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[1] American Institute of Certified Public Accountants; Understanding Tax Reform: A Guide to 21st Century Alternatives, September 2005

Now, if all these claims were true I have little doubt that more than 20 years after Hall and Rabushka first wrote the whole world would now be operating a flat tax because no politician would be able to resist it.

The simple fact though is that most of the world is not using flat taxes, and more seriously, they could not achieve many of these objectives even if they did. As I said, I will ignore most of the economic issues simply due to lack of time. This does, however, leave plenty of accounting issues that show that all is far from being as simple as Alvin claims.

So let's agree where we can. I did, incidentally indicate where I agree with Hall and Rabushka by italicising claims on which we agree within my slides. So, I do think that a flat tax will simplify the tax code. And I do think that this will reduce the administrative burdens on individual taxpayers. There may be fewer taxpayers under a flat tax, but that is not a foregone conclusion. And it is possible that there may be fewer employees in state tax departments, but again, that could not be guaranteed. And after that we cease to have common ground, which means that out of 22 claims I agree on two and accept it is possible that two more might be right. That leaves 18 where I beg to differ.

In half an hour I cannot cover all that ground, so as I said, let me focus on one or two accounting issues.

Business Administration

I have to be ambiguous. I do not think business administration will be eased in any way by a flat tax. The reasons are obvious:

In every country but the USA the most commonly accounted for tax is a VAT. No country that has introduced a flat tax has abandoned its VAT. The administrative burden of this will continue. Business will continue to suffer it.

Even Hall and Rabushka agree that under a flat tax regime an employer should have a duty to deduct tax at source on payments being made to an employee, and not at a flat rate. That means that full payroll taxation administration systems will have to be maintained, as will be the case for social security contributions, which will continue without alteration in a flat tax world. In other words, there can be no saving in this area.

One of the biggest problems in all tax administration is that of benefits in kind provided be employers to employees and disallowable costs with regard to travel and entertaining for taxation purposes. The problem of accounting for benefits in kind remains in a flat tax system, with every potential expense incurred for this purpose requiring identification within an accounting system so that they can be disallowed as a deduction in a company's accounts. And Hall and Rabushka also say 'the cost of business inputs includes the actual cost, if reasonable, of travel and entertainment expenses for business purposes' which does of course mean that someone has to assess this and agree it. There is little chance of that being a simple process unless the Estonian approach was adopted and a proportionate allowance was made.

Business will, of course, still have to prepare accounts. Most countries require accounts prepared in accordance with accepted national or international financial reporting standards to be prepared, as do the financiers of such concerns. To date these have been the basis for taxation charges. But under a flat tax quite separate accounts will be required for taxation purposes. The cost of preparing these quite separate accounts will be an additional burden upon business. And please be under no pretence that this will be a simple process. Some quite substantial accounting adjustments will be required which I would expect to be considerably more time-consuming than those undertaken by most European corporations for the purposes of company taxation at present.

It is true that corporations and the self employed would not need to submit separate claims for relief for expenditure on capital items. But let us be realistic about this. These items will still need to be identified for accounting purposes and depreciation will have to be charged upon such assets under the rules of international financial reporting standards applicable to small and medium-size enterprises which will shortly be in operation throughout Europe. In that case the opportunity for time saving will be minimal because once that necessary accounting exercise is complete it probably takes a little more than 15 minutes a year to make the adjustments required for the purposes of UK taxation, for example. The burden will not change in other words.

Indeed, far from reducing the burdens, I suspect that a flat tax would increase the burden of taxation administration for almost all small businesses precisely because it will require two forms of accounting which will confuse, and annoy them. Large business may find the process somewhat easier but even they should expect few savings.

I believe the claim Hall and Rabushka that the administrative burdens upon business will fall under a flat tax regime are wrong.

Reduction in the Tax Rate

Hall and Rabushka promoted a flat tax rate of 19%. Forbes reduced the rate to 17%. As we know, rates in Europe are settling at around these levels. In the UK the Adam Smith Institute proposed a rate of 22%. For the 11% of taxpayers in the UK who now pay at 10% that will, of course, be an increase. For the 75% of taxpayers who now pay at basic rate this will be no change at all, because for them tax is already at 22%. That means there will be a guaranteed tax cut for just 14% of taxpayers in the UK who currently pay at higher rates[2]. That is not a persuasive argument. And I stress, from an accountant's point of view it is the marginal rate of tax that counts when planning, not the absolute level, so I am entitled to ignore any changes in allowances when making this suggestion.

Nor will this 22% rate actually affect the rate of tax paid by most companies. 98.5% of the UK's companies pay tax at rates of between 0% and 19%[3]. Whilst large companies are meant to pay tax at 30%, the reality, as I showed in research published last month[4], is that they actually pay about 22.1% on average at present. So they will get no benefit from a flat tax at the rate proposed for the UK.

In other words, the case that tax rates will fall under a flat tax regime is not proven in my opinion.

Reduce the Incentive for Tax Evasion

Tax evasion should not be an accounting issue but, inevitably, one sees it. And when an accountant does see it the evasion almost always relates to suppression of cash income or misrepresentation of an expense so that it would appear to be of business benefit. That this is likely to be the case is obvious. As Hall and Rabushka themselves point out, 90% of tax evasion is on legally earned income. The motive for evasion is not avoiding declaration of an illegal income stream but it is the desire to keep all of a legal income stream whatever the tax rate.

It is also wise to bear in mind the fact that much tax evasion also relates to income not declared for VAT purposes as well. The combination of VAT as a tax on the top line as well as flat tax on the bottom line has to be added together to determine the likelihood of evasion taking place. That probability cannot be assessed in isolation. Since sales (VAT) tax evasion is the more profitable of the two in most cases adoption of a flat tax will not eliminate this risk.

In other words, the argument that a flat tax will reduce tax evasion is not proven.

Cut or Eliminate Tax Avoidance

Steve Forbes says in his book that "the tax code's ambiguity and incomprehensibility invites abuse" (page 8). I have to say that as a law-abiding citizen I do not share that view and I think it reveals an odd approach to the law. But he is right to say that tax avoidance is a massive and wholly unproductive industry. The question is, therefore, whether a flat tax code would eliminate the opportunity for abuse, as he suggests it will.

In essence there are three reasons why Hall and Rabushka say a flat tax will reduce tax avoidance:

- Lower tax rates will reduce the incentive to avoid tax;
- The elimination of allowances and reliefs will remove the opportunity to avoid tax;
- The flat tax base will close loopholes.

I have already suggested that for many people and almost all corporations flat taxes will not represent a reduction in tax rates in my country and I think that true of very many others as well. In fact, my research elsewhere, which I cannot cover in detail today, suggests that flat taxes would require considerably increased tax rates in the UK. This argument does not, therefore, hold true.

What I cannot dispute though is that the elimination of allowances and reliefs will remove some opportunity to avoid tax. But, and I cannot make this point strongly enough, the answer to this problem is to avoid the proliferation of those allowances and reliefs. This does not require the abandonment of income tax. Allowances and

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[2] Table 2.5, Income Tax Liabilities by Income Range 2005-06, Published by HM Revenue & Customs in the UK, December 2005 as part of the 2005 pre-Budget Review

[3] Table 11.8, Corporation tax payable by size category of liability, Published by HM Revenue & Customs in the UK, October 2005

[4] "Mind the Tax Gap", Richard Murphy, The Tax Gap Limited, January 2006, available as a download from www.taxjustice.net

reliefs could just as readily be given under a flat tax regime, and probably will be as such systems mature. It is a completely false argument to say that flat taxes solve this problem. They do not. As such, yet again, the argument for flat taxes is not proven.

The only way to stop avoidance is if the flat tax base is comprehensive and without risk of loopholes.

Unfortunately for Forbes, Hall, Rabushka and everyone else who proposes flat taxes, the flat tax base that they have invented has more holes in it than a Swiss cheese. In summary the gaping chasms that it creates in which tax planning can take place are the consequence of the fact that under a flat tax regime there are:

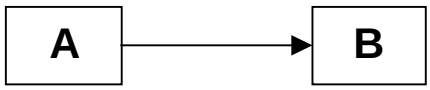
- no taxes on income per se;
- no taxes on capital gains;
- no taxes on investment income;
- no taxes on overseas earnings whether from trade or employment.

To understand the implications of this I must be clear about how tax planning works. First of all an accountant tries to get an income stream out of tax altogether. That is by far the most effective course of action they can adopt. Only if that fails do they look to use reliefs and allowances to mitigate the liability.

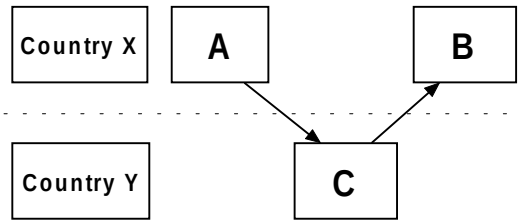
It is a fact that most countries are now pretty good at ensuring that all the income of companies and individuals resident in their territories is subject to tax. That is precisely why they have a range of taxes. Without them tax avoidance is inevitable. It is because this range of taxes is so effective at tackling tax avoidance that accountants have had to look to allowances and reliefs to undertake tax planning. You can understand therefore why they are so pleased at the prospect of a flat tax which might give them so many opportunities to exempt a client's income stream from liability. The tax planning opportunities flat taxes provide are enormous.

Their first cause for celebration is the fact that, if flat taxes were implemented, savings income will be outside the scope of tax because it will not be taxed in the hands of the recipient. Now I am well aware that Hall and Rabushka claim that this is only intended to prevent double taxation of savings and gains, something that I think a good imputation system can do just as well. But I would even lay that misgiving aside if their claim was true. But it is not. Hall and Rabushka's claim that their tax base is comprehensive is wrong precisely because all foreign source income is exempted from tax. This creates opportunities for tax avoidance of almost unlimited extent.

Let me give just one simple example of how this will happen. Let's suppose someone (A) from country X supplies services to another person (B) in country X by way of trade. The services A supplies will be consumed immediately in the course of B's trade. That is an everyday occurrence the whole world over. Under almost all existing tax regimes, and under Hall and Rabushka's proposed flat tax, the income A receives is taxable. The expense B incurs is tax deductible. All seems fair in consequence. The flow of services (with cash returning in the opposite direction) is:



Now suppose A sets up a company (C) in country Y. He contracts his services to that company. Company C contracts to supply the services A previously supplied to B. Now we have a situation where the flow of services is like this:



Cash will, again, flow in the opposite direction. But international boundaries are crossed twice now. And let us suppose that country Y is somewhere like Jersey where a company may be registered and pay no tax on its profits if it does not undertake its trade in that territory, as will be the case here. What are the flat tax consequences? Without doubt individual B can still get a deduction for the expense paid to company C for flat tax purposes. Hall and Rabushka quite specifically say that business inputs include the "market value of business inputs brought into the (United States)". The market value of the purchase by B has not changed here; it is identical to that in the first scenario. B's tax situation is not changed as a result.

A's situation is, however, transformed. He or she now owns company C which has cash in it. In principle he or she can extract that reward either by way of salary or dividend. Since he or she has provided their services to the company to enable it to fulfil its obligations to B logically a salary should be paid. But, as Hall and Rabushka say, compensation for flat tax purposes only excludes "wages, salaries and other payments for services performed outside the (United States)". There must be some doubt in this case whether the services were in fact performed outside country X, even though the payment would be from country Y. Almost inevitably an accountant could disguise where the services were performed if that was necessary. However, they would not need to do so. An offshore company, such as one in Jersey, can pay a dividend. A dividend is savings income. In Hall and Rabushka's flat tax such income is free from tax in the hands of the recipient because it is presumed to have been taxed in the hands of the person paying it. This, however, is clearly untrue in this case. The income of the Jersey company would have never been, and never will be taxed.

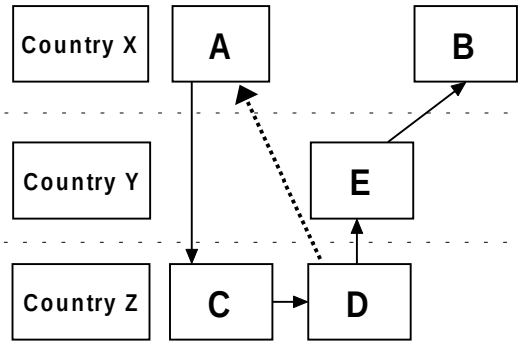
As a result, by setting up this arrangement person A had achieved three objectives. First of all they have moved their trading profits out of charge to the flat tax. Secondly they have recategorised their earnings from employment as investment income. This might have the additional benefit of avoiding any social security charges if the arrangement were to be challenged. Thirdly they have avoided the tax liability arising upon that investment income source. And therefore, as was their objective, they have entirely avoided a charge to flat tax.

Now, I notice that Estonia, at least, has realised the problems this poses. It has, as a result, had to create three anti-avoidance measures:

controlled foreign company rules have been introduced. These require residents to declare and pay tax on the income of any offshore companies under their control. Strict transfer pricing rules are in operation.

Withholding taxes of 24% are required when payments are made to offshore companies for the provision of services.

I have to point out that these completely negate the tax exemption for foreign source income that Hall and Rabushka sought to create but they still do not solve the problem of tax avoidance. If I modify the model slightly I create this structure:



A has now created a discretionary trust in country Z, which might be Jersey. It owns it had actually supplies his or her services, which is D in the diagram. This company is offshore so a withholding arrangement will apply to it in country X. As a result a company, E, is created in somewhere benign, such as the UK where costs are low and inquiries are infrequent. It is used to re-invoice the services from D to B. Now B does not have to withhold tax. And A is not paid by the trust in which he does not, in any event, officially have an interest. Either the trust or company D lends him back the money that has accumulated offshore, and the receipt of a tax free loan is not, of course, a taxable event.

Such arrangements are, I assure you easy to create and the result is that tax avoidance will be undertaken in flat tax states. Having a theoretical structure that encourages the idea that it should be possible will simply encourage it. And Estonia shows to what degree you have to abandon the theory to tackle it.

Most worrying is the fact that such schemes will inevitably be used most commonly by:

- the better educated;
- the best advised
- the well off.

By definition these people are those with the highest level of income. As is well-known, these same people do at present contribute a significant part of the taxation revenues collected under income tax rules in most countries. For example, 21% of all income-tax in the UK is paid by the top 1% of earners, and 51% of all income tax is paid by the top 10% of earners[5]. It is these groups who

[5] Table 2.4, Shares a total income-tax liability published by HM Revenue and Customs in the United Kingdom, December 2005.

will be able to be recategorise their income to avoid tax liabilities using the source basis of taxation inherent in flat tax rules.

The consequences are inevitable. The proportion of untaxed income amongst those able to manage their affairs will rise. The tax base will, inevitably shrink in consequence. That is the precise opposite of what Hall and Rabushka predict.

The Fairness of the Tax System.

Hall and Rabushka's final tax claim for their system is that it is fairer than the alternatives that are available, a claim reiterated by Forbes who deals with the question on page 10 of his book. I will leave the ethics of fairness aside and consider this issue as an accountant.

As an accountant I have massive reservations about removing income from taxation as flat taxes do. Anything that in taxation law provides a loophole, as this does, gives opportunity for abuse. The double taxation of consumption which will, in Europe, inevitably result from such a change also over-stresses one particular source of taxation which is always a mistake as it encourages people to recategorise their income and so avoid the charge if that is possible, as I have shown it will be under a flat tax system.

Looking at Forbes, Halls, and Rabushka's proposals one has to presume that they are being advised with regard to taxation matters because they are intelligent men and most certainly in Forbes' case he can command the necessary resources that would let him seek appropriate advice. In that case one has to presume that they deliberately created the opportunities for tax planning that I have outlined above which would be exceptionally difficult for anyone to tackle in an effective fashion given the source basis of taxation that their system adopts. Those planning opportunities favour particular sections of society including the well-off the self employed. Again, whilst I would like to think otherwise I can only presume that this was deliberate.

The consequence of these factors in combination is, however, that some of the other claims made for the flat tax system are unlikely to hold true. For example, the claim that flat taxes are progressive is entirely dependent upon all income above the exemption level being subject to the flat rate of tax. As I have shown, that is unlikely to be true, and most especially that will not be true as the income of the taxpayer rises. Therefore flat taxes are very likely to be regressive both in comparison to income, and quite probably in comparison to consumption. My own research, to be published shortly with regard to the United Kingdom suggests that this is the case.

However it is viewed, a tax that is largely optional for those with the greatest resources in society is not a fair tax. I regret to say, therefore, that yet again the case for flat taxes has not been proved.

What Is This All About?

Given that of the claims made for a flat tax none make any sense to me as a professional accountant let me offer you my thoughts as to what I think is really going on here.

I would like to think that Hall, Rabushka and Forbes are seeking to promote a new system of taxation. But, given that taxation systems are designed to collect revenue and given that, as I show, theirs appears extraordinarily unlikely to be effective in achieving this objective I have my doubts. I have therefore looked for alternative explanations, and they are not hard to find.

Hall and Rabushka are at the Hoover Institution at Stanford University. Herbert Hoover's 1959 statement on the purpose and scope of the Hoover Institution included the statement:

"Ours is a system where the Federal Government should undertake no governmental, social or economic action, except where local government, or the people, cannot undertake it for themselves."[6]

Steve Forbes, in an editorial in his own magazine in January 2006 said "*As long as Washington spends so much of our money—$2.6 trillion a year at last count—and exercises so much life-and-death power over so many segments of our economy, affected people and interests will find ways to get their points of view across*." He continued "*Our tax code—all 9 million words of it—is the biggest source of lobbying and corruption in Washington. ....Tax bills have become feeding frenzies for special interests, as well as a way for pols (sic) to try to buy votes through manufacturing ever more tax credits. The flat tax would eliminate all of this*."

These comments are in both indicative of another priority for proposing this tax. First of all, neither Hoover, or presumably those who work in the Institution named after him, like government. His

[6] http://www-hoover.stanford.edu/main/mission.html

policy statement is quite explicit. He does not want government to do anything he (and they) think it need not undertake. Of course, the best way to ensure it cannot do something is to deny it revenue. The flat tax would, and I suggest it is deliberately designed to do just that.

Forbes takes things a little further. He does not want politicians to interfere in the tax code. He suggests that very high constitutional barriers to changing the tax code be put in place as part of a flat tax regime. But if you will let me put on my hat as a political economist for a moment, let us explore what this means. Flat tax means tax rates will be fixed and tax allowances will not be allowed to change. And no doubt Forbes would also approve monetary policy being kept out of the government's control. What is left for government to do? Well, there is no serious tax system for a start because it will be bad at collecting revenue.

More importantly though, it is also clear that government itself is undermined, as Hoover clearly desired. In fact, as Prof Joel Slemrod of the University of Michigan said at the annual lecture of the Institute for Fiscal Studies in London 26 September 2005 "You can have democracy, and you can have flat taxes, but you can't have both".[7] And the reason is obvious to see, for under a flat tax system as proposed by Hall, Rabushka and Forbes there is no tax system to argue about and little tax revenue to manage either. But those two things are at the core of democratic government of the nation state as we have known it. Which is precisely why it is clear that countries cannot and have not adopted flat taxes using anything like the model Rabushka recommends. They are simply adopting single rate tax systems, which are something quite different designed to help the well off and large corporations reduce their tax burden.

So let me offer in summary the conclusions I included in my article which gave rise to my initiation to speak to you today. I said "Firstly, (flat tax) is designed to be a means for the rich to avoid their responsibility to society by letting them pay little or no tax. Secondly it is designed to ensure the state gets less income, and so shrinks in size. Thirdly, that means it is in effect an attack on the whole structure of the society we live in. Seen in this light the flat tax is not a serious attempt at taxation at all, but is instead an exercise in social engineering. That is why its innocent appeal is so dangerous."[8]

Thank you.

Bibliography

AICPA (2005) Understanding Tax Reform; a Guide to 21st Century Alternatives.

Forbes, Steve (2005). Flat Tax Revolution. Regnery Publishing Inc, Washington DC.

Hall, Robert E and Rabushka, Alvin (1995). The Flat Tax (Second Edition). Hoover Institution Press.

Teather, Richard (2005). A Flat Tax for the UK – a Practical Reality. Adam Smith Institute, London.

[7] Taxation and Big Brother: Information, Personalization and Privacy in 21st Century Tax Policy, IFS Annual Lecture 2005: Taxation and Big Brother: Information, Personalization and Privacy in 21st Century Tax Policy, 26 September 2005

[8] Flat Tax: It's not as simple as they'd have you think. Richard Murphy. The Guardian, Public. November 2005

*Ivo Vanasaun**

Experience of Flat Income Tax - the Estonian Case

1. Historic background

The first income tax law of the re-independent Estonia entered into force in 1991. Until 1994 Estonia applied a progressive tax rate for individuals (the rates were 16%, 24%, 33% and for a short period even 50%)[1]. Due to the very high inflation in that period, the progression scales had to be changed very often.

In 1994 Estonia introduced the flat tax rate. In general 1994 was the first year for Estonia to have its own tax policy and tax legislation the main principles of which have remained in force until today. Before 1994, the tax legislation was drafted on ad hoc basis without a clear tax policy and it was rather transitional system from Soviet tax rules to Estonia's own system. In 1994 several new tax laws entered into force, including the law for individual and corporate income taxes. Actually the Estonian legislation does not differentiate between corporate and personal income taxes; officially they have the same name- *tulumaks* (income tax).

The *Basic World Tax Code* prepared by Harvard University was used as an example to prepare the new law. There were several reasons for introducing the flat rate:

- It was suggested by the US tax advisers that an easy system with a **broad tax base and low tax rates** is **much easier to administer**. In 1994 the Estonian tax administration as well as entrepreneurs and other taxpayers were still relatively inexperienced in taxation matters, it was necessary to establish a system that would meet their administrative capabilities. It was decided to abolish the different exceptions and set up a relatively low tax rate.
- We should not underestimate the aspect of **the high inflation rate in the beginning of 1990s.** For example in 1992 (the year of replacing Soviet roubles with the Estonian own currency *Eesti kroon*) the consumer price index in Estonia had a growth of 1076%; in 1993 the increase was 89.8% and in 1994 47.7%. In case of a flat rate there is no need of frequent adjustment of tax brackets.
- The flat rate system is **easier to administer if the same tax rate applies both for individuals and legal persons**.
- The system with a broader tax base and one tax rate provides **more transparency.**

The Income Tax Act of 1994 remained in force until the end of 1999. In 2000, the current Income Tax Act entered into force. The reason for drafting a new law was the introduction of the modernised corporate income tax system. According to the new system, taxation of corporate profits is deferred from the time of earning of profit to the time of profit distribution. In other words, only distributed profits and non-deductible expenses are taxed.

In both cases, in 1994 (for personal income tax) and in 2000 (for corporate income tax), Estonia was the first country in Europe to introduce innovative (or unfamiliar as some people may say) tax regulations. Although during 1990s the Estonian flat rate system seemed to be rather weird in the European context, it has been followed by a number of countries by now.

2. Development and Basic Features of the System

Under the Estonian tax system all three types of income – earned income, business income and capital gains – are taxed at the same **flat tax rate of 23%**, irrespective of how much a person earns. Initially the tax rate was 26%, but in order to maintain the Estonia's attractiveness for investors and to create more jobs, the trend in current tax policy decisions is to reduce the taxes applicable

* Ministry of Finance, Estonia

[1] From 1992 until 1994 the corporate tax rate was 35%.

Chart 1: Tax Rate for Individuals and Legal Persons

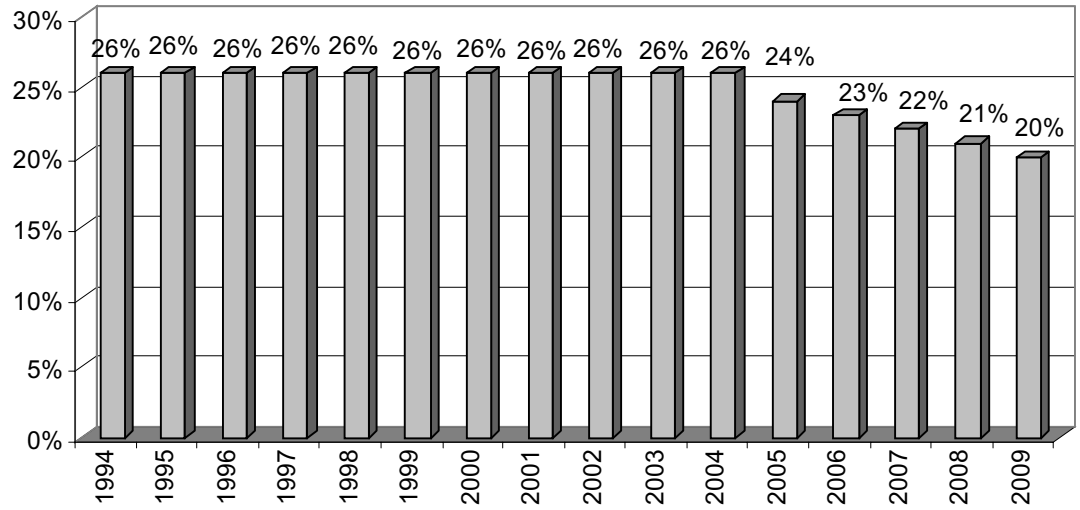
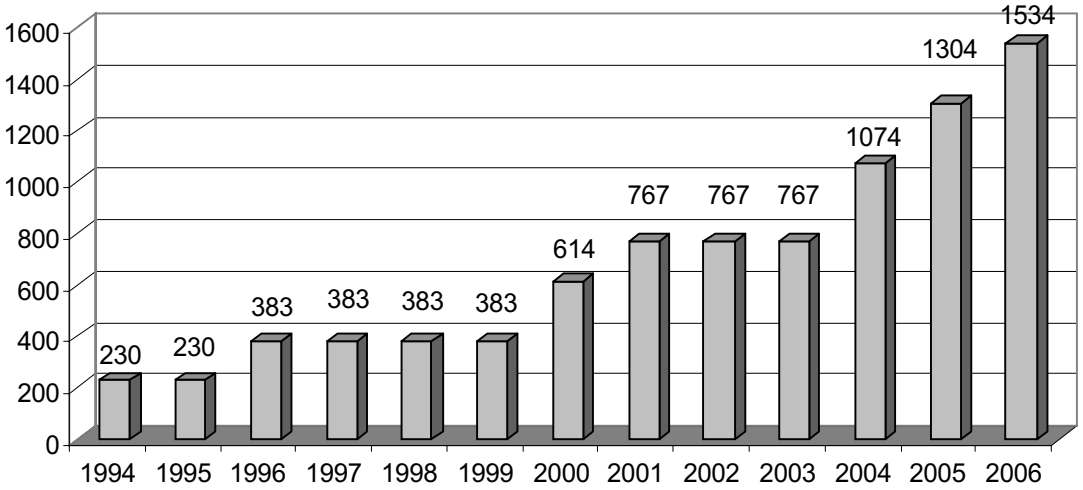


Chart 2: Basic Personal Allowance (EUR per Calendar Year)



Source: Ministry of Finance, Estonia.

on labour. Therefore the Estonian parliament has decided to reduce the income tax rate gradually to 20% by 2009 (see the chart 1).

The current amount of the annual basic tax-exempt income (**personal allowance**) is 24000 Estonian kroons[2] (approx. 1534 euros). Also, a further increase of the basic personal allowance is being discussed in order to provide better conditions for low-paid persons. Simultaneously, the excises on alcohol, tobacco and fuel have been gradually increased. Currently the preparation of a major ecological tax reform is in the pipeline, which will increase taxes on the usage of national resources. The following chart describes the changes of the personal allowance.

In addition to the basic personal allowance, the state pensions and pensions from compulsory pension schemes are subject to an additional personal allowance of 36 000 Estonian kroons per year (2298 euros)[3].

[2] The fixed exchange rate is: 1 EUR=15,6466 EEK

[3] Before 2002 the state pensions were entirely tax exempt, but starting from 2002 there is a special allowance (non-taxable part) for the total amount of state pensions and benefits from compulsory pension schemes. It means that the tax base has been widened. Formerly the average amount of state pensions was very low and it was not acceptable for the society to tax them.

The main principle of the Estonian tax system is to keep the system simple; it is based on a combination of low tax rates and a broad tax base. It is, however, rather difficult to follow this principle in practice. Different interest groups and political parties tend to propose an unlimited number of different tax incentives. Tax incentives used in other countries are often used to explain such proposals. The risk of introducing new tax incentives is higher before parliamentary or local government elections.

Although the Ministry of Finance is committed to resist such kind of proposals, there still are some tax incentives for individuals. Most important of these are in form of **deductions** that can be made from taxable income. The list of deductions includes:

- mortgage interest paid to credit or leasing institutions (since 1996);
- educational expenses (all types and levels of education) (since 1996);
- contributions to voluntary pension schemes (since 1998);
- gifts and donations to charities and political parties (since 1999);
- trade union membership fees (since 2000);
- additional allowance per second and every following child[4] (since 2001).

The total amount of the abovementioned deductions[5] is limited to the lower of the following two conditions: 50000 Estonian kroons (3192 euros) per year or maximum of 50% of the taxable income. A taxpayer has to submit an annual income tax return for benefiting from these deductions. In most cases there is no need to submit the tax return and pay additional amounts of tax after the tax year because in case of most payments there is already a withholding tax in place (in calculating the withholding tax, the basic personal allowance is taken into account)[6].

Most of the **annual tax returns** are submitted voluntarily, for using different tax deductions available. In spite of different deductions, the system is simple and individuals spend in average 10-15 minutes to submit their returns. In principle, a taxpayer can access one's tax return over the Internet. The tax return is already pre-filled by the tax authority and the taxpayer simply has to confirm (or correct, if necessary) the data submitted in the return. In 2005, approximately 76% of taxpayers submitted their tax returns through the Internet. For income tax refunds the **electronically submitted tax returns** are processed first. The Estonian tax administration uses an electronic control system for processing income tax declarations. Tax returns are processed on the basis of risk assessment (so-called corridors with different colours (green, red, etc) as in case of customs). In 2005, the overpaid income tax was refunded during five working days to almost 90 per cent of those taxpayers who used electronic channels for submitting their income tax returns.

Estonia has an interesting scheme for the **tax allocation of income tax** paid by resident individuals. While income tax paid by non-residents and resident legal persons is collected to the state budget, the tax paid by resident individuals is allocated differently. In the latter case, the tax revenue is divided between the state and the local government of the taxpayer's residence. From 1994 to 2003 local governments received a certain percentage of income tax actually paid by resident individuals[7]. It meant that if the Estonian parliament decided to introduce any new tax incentive (deduction), to increase the basic personal allowance or to reduce the tax rate, there was a negative impact for local governments' budgets. But starting from 2004 the amount received by local governments is calculated as a percentage of a person's taxable **income**[8] (deductions are not taken into account). The excess amount goes to the state budget. In any case the income tax paid on pensions and capital gain goes to the state[9]. Such a system is not only a formula

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[4] The unused part of a child's annual personal allowance is transferred to one of the parents after the end of the taxation year. For 2001-2005 the additional allowance was available per *third* and every following child.

[5] The limit is not applicable to the contributions to certain voluntary pension schemes. Such contributions have separate limit -15% of the taxable income of the person (taking into account not employment income but all types of income).

[6] It is necessary to submit the annual income tax return if a person has received income from foreign sources, from self-employment, in form of capital gain or if the amount of income tax withheld is less than required by the law.

[7] Initially 52%, later 56% of the income tax actually received.

[8] For 2006 and onwards it is 11,8% of the income; the rate was 11,6% for 2005 and 11,4% for 2004.

[9] For small municipalities it is difficult to estimate capital gains derived by some wealthy habitants. It may lead to over- or underestimations of budget revenue. In case of pension income, most amounts of state pensions are still below the additional pension allowance and only minor part of retired people pay income tax on their pension. It would be distorting if the central government would transfer to municipalities substantial amounts of tax revenue that is actually not received.

of distributing income tax revenue, but also a rather stable basis for financing local governments.

In case of persons with low income, the tax administration transfers more money to the local government than the taxpayer actually paid.

Example:

Annual taxable income 30000 EEK
Basic personal allowance 24000 EEK

Taxable income 6000 EEK (tax rate 23%)
*Income tax payable **1380 EEK***

Income tax transferable to the local government of the taxpayer's residence:
*30000 EEK*11,8%=**3540 EEK***

In addition to the abovementioned changes, Estonia has made a number of amendments in its income tax law due **to the accession to the European Union**. The tax rules for non-resident individuals are becoming more and more similar to the rules applicable to residents. It is still an ongoing process to achieve the equal treatment of residents and non-residents in all aspects where it is necessary.

3. Economic Background and Results

People from countries with progressive income tax rates are sometimes afraid that a proportional tax rate might not reflect social values like solidarity between the rich and the poor people. In theory the **flat rate system meets both important requirements for an income tax system: vertical and horizontal equality.** In practice it is clear that equality principle is already reflected in the flat tax system as a person earning 100000 Estonian kroons is liable to a proportionately bigger amount of tax due than a person who earns only 10000 kroons (respectively 23000 kroons and 2300 kroons, not taking into account personal allowance that reduces the effective tax rate significantly more for the low-paid). Equality and fairness are among the guiding principles stipulated by the Estonian Constitution and are also reflected in the tax laws. Tax system is not the only vehicle for redistribution. If necessary, direct subsidies to poor people are also available.

Some progression has still remained in the flat rate system through the personal allowance. The Estonian system has sometimes been referred to as a system with a progressive tax scale of 2 rates: 0% and 23%. As described above, there are special deductions available for certain special groups of people (e.g. families with several children as well as retired persons).

Some counteractive role for social differentiation is also played by the social security contributions (social tax) that are based on solidarity principle. In case of employees, social security contributions (33%) have no upper ceiling and there-fore people with high income pay relatively more tax than they use services (e.g. health-care) financed through social security contributions.

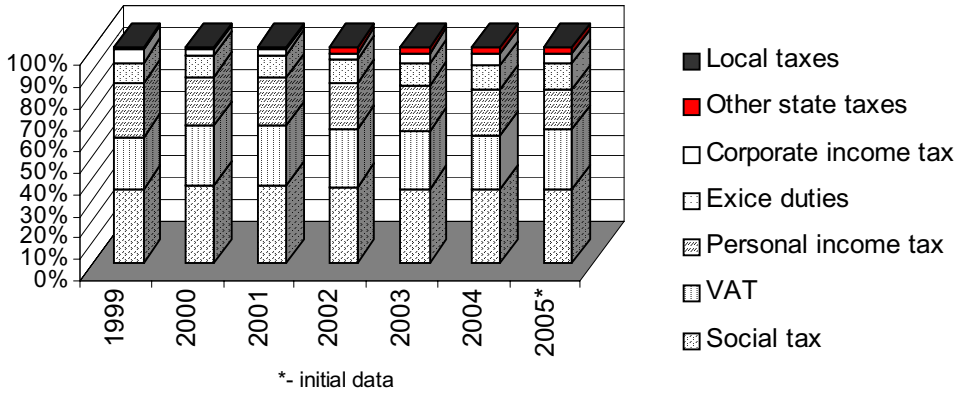
Switching from progressive tax rates to flat tax rate did not have a negative impact for the state budget. The same can be said for the reduction of tax rates during the recent years. One of the main reasons is that the general tax base remained the same. When tax rates were lowered, eliminating different incentives broadened simultaneously the tax base. The following table gives an overview of the collection of individual income tax to the state revenue before and after the tax reform of 1994.

In the Estonian tax structure, the personal income tax (PIT) raises about a quarter of total tax revenue. The importance of personal income tax is clearly decreasing. For instance, in 1999 it raised approximately 25% of tax revenues, but in 2005 only 18%.

	GDP real growth %	Taxes	Personal income tax	
		% of GDP	% of GDP	Million EEK
1990*	-6,5			
1991*	-13,6	31,7	6,6	120,0
1992*	-14,2	29,2	6,5	856,9
1993	-8,5	34,8	8,0	1 832,1
1994	-1,6	36,4	7,6	2 388,2
1995	4,5	35,4	8,3	3 593,1
1996	4,5	34,0	7,8	4 353,7
1997	10,5	34,9	7,6	5 240,0
1998	5,2	34,2	8,0	6 239,1
1999	-0,1	32,8	8,0	6 531,8
2000	7,8	31,6	7,1	6 594,4
2001	6,7	30,7	6,8	7 099,1
2002	7,2	31,9	6,7	7 806,4
2003	6,7	32,9	6,9	8 818,2
2004	7,8	32,5	6,7	9 416,9
2005 (forecast)	9,3**	33,5	6,1	9 727,0

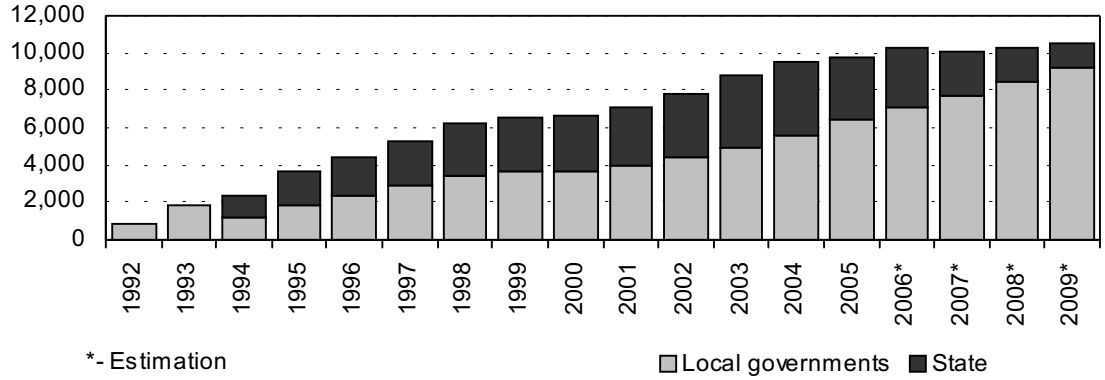
Source: Ministry of Finance, Estonia
Notes: * Actually Estonian national accounts start with the year 1993 and so the GDP growth numbers with the year 1994. The numbers for the former years are not so reliable.
**- annual growth based on 9 months of 2005.

Chart 3: Tax Structure



Source: Ministry of Finance, Estonia.

Chart 4: Personal Income Tax (Million EEK)



Source: Ministry of Finance, Estonia.

One of the reasons is the compulsory increase in tax rates of value added tax and excise duties. For keeping the former level of total tax burden, reduction of direct taxes is necessary. It also reduces the tax burden on labour and encourages the creation of new jobs.

In addition, the chart above indicates that the proportion of local taxes is almost zero. Local municipalities are financed mainly via state taxes (personal income tax and land tax[10]).

The following chart shows that since 1994 the proportion of the PIT received by local municipalities has increased. When Estonia will introduce 20% rate in 2009, local governments will receive the major part of the PIT.

4. Plans for the Future

Estonia has more than 12 years of experience of applying the flat rate. The experience has been only positive, there are no clear disadvantages. **Most of the Estonian people like the flat tax rate.** When analysing the political situation, it is clear that almost all political parties are in favour of the flat tax rate. The situation was different years ago when there were only few countries in Europe that applied the proportional tax rate. Recent decisions of other countries to apply a flat rate indicate that in 1994 Estonia made a step in right direction. The reintroduction of progressive rates in Estonia is very unlikely.

[10] According to the law, land tax is a state tax but the local municipality where the land is situated receives all tax revenue. There are more than 200 municipalities and it is cheaper to administer the land tax centrally.

The main challenge for the future is to abolish some inefficient tax incentives or narrow their scope. It is clear that the tax laws are the most expensive tools for redistribution of wealth or achieving other goals of social policy. Tax incentives are often used by wealthy people, making their effective income tax rate rather regressive. It is easy to introduce new incentives but almost impossible to abolish them.

In broader terms, the **main goal for the future is shifting tax burden from income and employment to consumption and environmental taxes.** The objective is to leave more resources available to people to save and to invest and discourage spending their income on "bads" such as alcohol, tobacco and gambling. The project for preparing the ecological tax reform is still ongoing, according to which the inefficient and polluting usage of national resources would be taxed higher.

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The Effects of Flat Tax in Romania

Over the last years, the business environment has accumulated structural, institutional and behavioural tensions. The only viable solution was the introduction of a flat tax which was meant to bring a fiscal expansion. It was indeed the time of taking the decision, in spite of critics and opposition from former governance.

The introduction of the flat tax led, first of all, to a simplifica-tion and a more efficient computation system of global income taxation, to a significant reduction of bureaucracy and to an increase of transparency in tax collection and administration.

On the other hand, a fiscal expansion was necessary from the following points of view:

- Structural and behavioural inertia in real economy decrease the effect of fiscal expansion of low amplitude, although they are repeated at regular time spans.
- A big share of hidden economy does not react to such low institutional shocks.

Introduction of 16 percent flat tax was launched by decreasing the taxation rate at the level of direct taxation of income and profit, because the economic behaviour is directly generated by this type of taxation, and not at the level of indirect taxation or consumption.

The expected impact was mainly the change in economic behaviour of business environment, by:

- Increasing the tax base by extending the formal economy and making official a part of the hidden economy.
- Increasing the voluntary compliance in paying budgetary obligations.
- Increasing the arrears recovery, depending on the change in financial position of economic agents, following the reduction in profit taxation.

According to the new fiscal policy, duties and taxes should have a stimulative and orientative role for an economic growth and development, a fiscal consolidation and a middle class progress.

Together with the main measure applied in 2005 of introducing the flat tax of 16 percent both on profit and income, a process to align towards the level of flat tax the legal rates of taxation of the other sources of revenues (dividends, interests, capital revenues) started as well.

In the area of income tax, the global system of taxation of income achieved by private persons that assumed the use of a taxation standard with progressive quotas between 18 and 40%, was replaced by a system based on proportional quota of 16%, applied to the largest part of the income categories.

According to the new system, the procedure of globalizing several incomes is given up while the tax becomes final as the system by the taxation of the incomes by each source of income in each category is being replaced.

The categories of income for which the tax is computed by levying the 16% quota on each source of income in the respective category are: incomes from independent activities; incomes from wages and salaries; incomes from yielding the use of goods; incomes from pensions; incomes from agricultural activities; incomes from prizes; incomes from other sources.

The 2005 budget was computed so that it ensures the sustainability of the budget itself and the aggregate demand.

The modelling of the tax bases' reaction to the variation of the legal tax rates was made through a logistic function, function that is, nevertheless, the most adequate for modelling the institutional impulses' transmission. The logistic function was calibrated at the level of parameters in line with the dynamics of indicators from the SAM-MEGA economic model, an annual model for financial programming, based on the equilibrium relations of the national accounts system, used for the macroeconomic forecast and financial programming on medium term.

In the budgetary revenues projection, one took into account the behaviour of economic agents as well,

* Government of Romania, National Commission for Economic Forecasting

although at this moment no behavioural relations have been built on, expressed by:

- The favourable reaction of companies to the fiscal relaxation policy, in the sense of the partial formalization of employment; as a result, one estimated for the entire period a growth of the number of employees by 415 thousand persons, double as compared to what it would have resulted from the normal elasticity between economic growth and employment;
- The improvement in propensity to pay the debts to the budget, expressed for example by the increase of collection rate for social security contribution by almost 2% on an yearly basis; in the same sense one estimated that the taxes on product will maintain their dynamics over the Gross Domestic Product's one;
- The preservation of economic agents' behaviour oriented toward competitiveness and a moderate growth of salaries, in accordance with the economic achievements; as a result, one took into considera-tion that the gross average wage earning by total economy will not exceed, during the entire period, the increase foreseen in the Governing Programme, of 60%.

From this point of view, the scenario resulted from SAM-MEGA model for the level and structure of budgetary revenues in 2005 does not significantly differ to the rectified budget of 2005.

A comparison between the rectified budget of 2005 (September 2005) and the Governing Programme stresses out the following:

- The revenues estimated for 2005 by the Ministry of Public Finance are 5% higher than the budgetary revenues in the Governing Programme;
- The tax revenues have equal shares in GDP in both cases (27.1%), both for direct taxes and the indirect ones;
- The only difference can be found in the profit tax. The fact that the achievements in the first 9 months determined the Government to increase the provisions concerning the levies from profit tax (29% larger than in the Governing Programme) reflects only the fact that the economy responded to the reduction of this type of tax even better than expected at the moment of elaboration of the Governing Programme.

The positive effects of fiscal expansion are significant and emerge mainly from the incentive role of the direct taxation on labour and capital reduction. The assumption according to which the transfer of resources from the budget to the population and society **has a multiplying effect in economy**, by generating superior revenues for the budget, on the background of more intense economic activity, has proven to be realistic. **The main conclusions emerged from pertinent statistical data analyses which are presented below:**

1. Stimulating the economic growth.

- The profit tax reduction assured important financial resources to the economic agents for production and investment.
- Excluding the floods' impact on agriculture, and on the household industry (part of industry with a share of 4 percent in Gross Domestic Product), the Gross Domestic Product of the other branches increased, in the first 9 months, by 6.5 percent as compared to 6 percent in the same period of 2004.
  - GDP growth on 9 months: 3.6 percent
  - GDP growth, without agriculture: 5.8 percent
  - GDP growth, without agriculture and household industry: 6.5 percent

2. Technological modernization of economy has accelerated, with positive impact for the future economic growth.

- Gross Fixed Capital Formation has accelerated its growth in the third quarter as well, by 10.5 percent, respectively, determining an increase on 9 month by 9.4 percent.
- **The import of capital goods increased in the first 9 months by 31.2 percent**, as compared to the average increase of imports of 23.7 percent and with the one of consumption goods of 24.7 percent.

3. Improvement of the effective rates of taxation

The introduction of flat tax has a significant effect on the taxpayers' behaviour, in the sense of increasing the degree of voluntary compliance, of paying the budgetary obligation, respectively.

a) To the profit tax – according to **the balance sheets of economic agents,** on the first 6 months the gap between the legal rate and the effective one, computed on the base of the due tax, was improved:

	Semester I 2004	Semester I 2005
Standard quota	25	16
Effective quota	15.9	11.6

- The differences between quotas have been reduced together with the increase of the profit mass in economy and the diminishing – **in real terms** – of losses.

  In the first quarter, the total profit increased **in real terms** by 1 percent, and the total loss has been reduced by 5 percent.

The introduction of flat tax together with the strengthening of the financial discipline led in the first semester to a budget revenue from the profit tax 50 percent higher than the due profit tax.

b) To VAT (as compared to the market consumption of population), the effective collecting rate has been improved, reflecting the reduction in fiscal evasion:

14.3% in 2004

15.4% in 2005

The improvement in VAT collecting rates leads to an increase of 36.2 percent of VAT that was reflected in the increase in indirect taxes by 25.3 percent, for 12 months 2005.

4. Budgetary revenues

For the 12 months of 2005, the revenues of the general consolidated budget were higher by 17.8 percent than in the same period of 2004, meaning in real terms an increase by 8.1 percent.

- In absolute terms, the increase in revenues was mill. RON 12,608.7, of which the increase of the state budget was mill. RON 4,404.6.

These results were obtained in the condition in which the appreciation of national currency (unlike in the year 2004 when the national currency had depreciated) has influenced in a negative way the cashing of excises (the excises are computed in Euro and if we have had depreciation, the payment in lei would have been greater).

- Due to the increasing number of both employees and average earning salary, the revenues of the main social security funds (social security fund for health, the state social security budget, the social security budget for unemployment) increased by 11 percent in 12 months 2005.
- The Value Added Tax on whose evolution contribu-ted mostly the reduction of direct taxation at the income level, generating this way an increase of disposable income of population, meaning a higher consumption of goods and services, presented the most significant nominal increase of the total budgetary revenue sources, by 36.2 percent respectively, meaning 24.9 percent in real terms.

5. The effects of introduction of the flat tax rate on employment

- The introduction of flat tax assured the reversal of previous historical evolution of annual increase of employees' number from the hidden economy.
- Even if the monthly data regarding the number of employees has shown a seasonality pattern, yet the significant increases registered this year (the highest ones since 2000) showed that the fiscal expansion encouraged employment.
  - In the delivered materials there is a detailed analysis of flat tax effects on employment.
- The final statistical data regarding the first semester (households' inquire) show that the increase in employees' number in the first semester totally represented a transfer from the hidden economy to the official one, by 125 thousand persons, respectively.
- A second conclusion – emerged from the operative data at the end of October – reveals that the employees' number was higher by 140 thousand persons, as compared to December 2004.
- One has to highlight that if we do not take into account the reduction in industry - due to the reorganisation and the need of increasing competitiveness of some activities - **the net increase of employees in other activities is 193 thousand persons, as compared to 2004.**

6. The effects of flat tax on average wage earning

- Flat tax introduction was reflected in the **increase in salary incomes, but these results were pointed out in the evaluations made before the flat tax introduction, meaning a correct substantiation of usefulness of fiscal reduction for Romanian economy.**
- During January–November 2005, the increase of gross average wage earning is only by almost 2 percent over the forecasted level.
- The share of net average wage earning in the gross average wage earning became 76.4 percent, exactly as anticipated.

For the next period, fiscal legislation reform will grant priority to the consolidation of competitiveness advantages obtained by flat tax introduction and to the continuation of the process of alignment to the aquis communautaire. The process of

supplementary diminishment of contributions to social security will continue in short run together with the increase towards the level of flat tax of legal taxation rates for the other income sources. The main objective is represented by the increase of transparency and predictability degree of fiscal policy and creation of non-discriminatory business environment.

The fiscal policy measures, being applicable starting 2006, follow the increase of taxation base and alignment to flat tax rate of 16 percent for the entire revenue category. For example, in this sense, the flat tax of 16 percent will be applied on incomes from dividends, interests, earnings from bonds, from operations of selling and buying foreign currency in time, based on contract, on the incomes from liquidation of a juridical person.

*Thomas Larsen**

A Flat Tax in Denmark?

1. Introduction

The Danish tax system is a classic system with progressive taxation of labour income and positive net capital income. Compared to most countries the Danish system is characterised by relatively high marginal tax rates at relatively low-income brackets and almost no social security contributions as a means of financing public expenditures.

Furthermore the Danish tax base is to a wide extent based on comprehensive income with the major qualification that most tax credits are not (fully) deductible in the base of the state and progressive income taxes. This is especially true for net negative capital income (i.e. interest payments), which is treated more in line with a dual income tax system.

High marginal taxes and complicated rules for the calculation of taxable income has led to public debate on the possibilities and effects of introducing a flat tax in Denmark. So far the debate has stranded due to the potentially very big distributional effects of such a tax reform. Also the debate in Denmark has not been very clear as to whether one was referring to a flat tax rate or a flat tax.

This paper starts by describing the existing Danish tax system in sections two to four. Some parts of the system might seem to be very far from a flat tax while other parts comes close to the archetypical flat tax. In fact – measured in revenue – the Danish tax system is not very far from being a flat rate tax system. But the distributional effects from a revenue neutral transmission from the current tax system to a flat tax system seem to be quite large compared to what historically has been accepted when reforming the Danish tax system.

In section five I show the effects of three different revenue neutral flat tax experiments to illustrate the difficulties in implementing a flat tax reform. The experiments shown in this paper are based on calculations made on the Danish micro simulation model. There are no estimates of effects on labour supply etc.

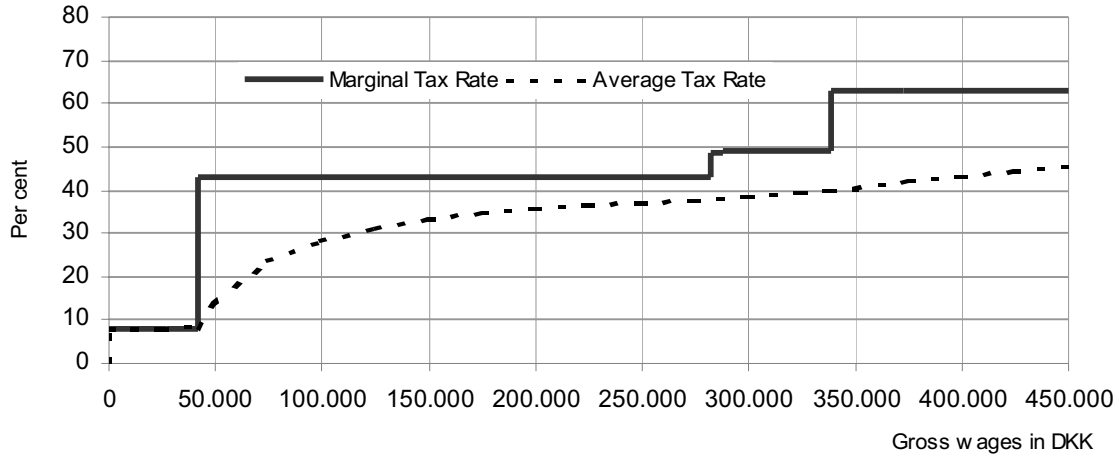
Finally in section six I briefly discuss the trends in the development of the Danish tax system and take a look at what the future might bring.

2. Personal Income Taxation

2.1. Labour Income

The Danish taxation of labour income is progressive following the schedule shown in figure 1. Total marginal tax rates vary from 8 % to 63 %. An 8 % labour market contribution is levied on all labour income in practice with no tax credits.

Fig. 1.: Marginal and average tax rates, 2005.



* Ministry of Taxation, Denmark (Head of Division, Economic Analysis

Table 1: Average taxes paid

Income	Singles		Married couples		All households	
	Number	Average Tax	Number	Average Tax	Number	Average Tax
DKK	(1,000)	DKK	(1,000)	DKK	(1,000)	DKK.
Below 100,000	318	12,155	7	35,550	325	12,680
100,001-150,000	577	34,370	8	34,665	585	34,375
150,001-200,000	311	52,210	83	44,035	394	50,495
200,001-250,000	276	74,705	57	66,500	333	73,300
250,001-300,000	253	95,150	69	80,595	322	92,040
300,001-350,000	175	118,465	65	100,665	240	113,560
350,001-400,000	100	146,500	63	120,640	163	136,525
400,001-500,000	80	188,690	158	155,260	238	166,530
500,001-600,000	28	257,405	195	192,090	223	200,250
600,001-800,000	18	334,250	216	265,960	234	271,300
800,000 -	8	630,575	111	508,450	119	517,015
Total	2,144	71,725	1,032	197,350	3,176	112,555

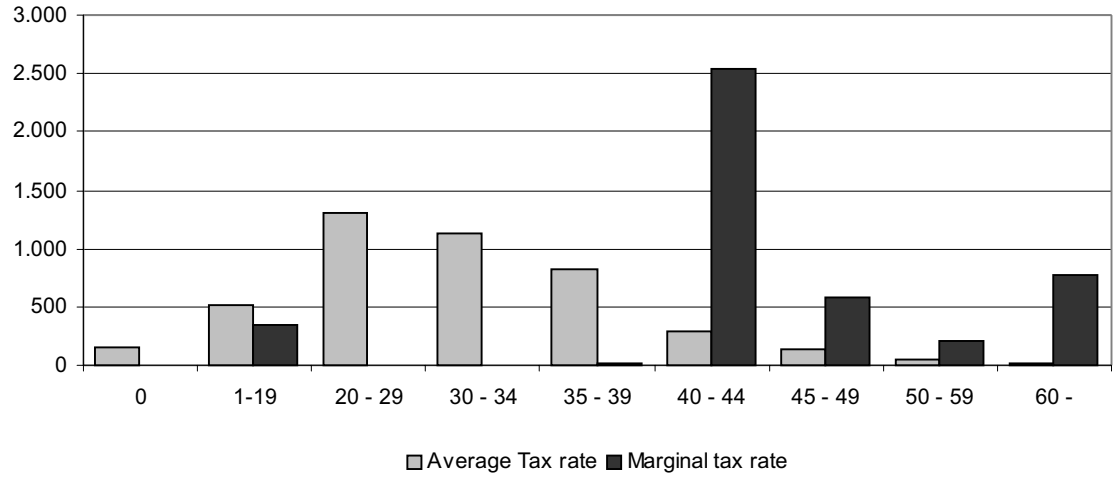
On top of the labour market contribution municipal and county taxes of 33.3 % on average are levied on all taxable income above a personal allowance of DKK 37,600 (€ 5,035). Taxable income includes both labour, most transfers and some capital income with credits for interest payments, expenses aiming at maintaining income, membership of labour union etc. Also an in work tax credit is deducted as well as the labour market contribution.

The basic state tax of 5.48 % is levied on all personal income including positive net capital income with credits for the labour market contribution, pension savings and expenses for self-employed.

The middle (6 %) and top (15 %) state taxes are levied on the same income as the basic state tax above thresholds of DKK 259,500 (€ 34,740) and DKK 311,500 (€ 41,700) respectively. It is allowed to transfer unexploited personal allowance and middle state tax threshold to the spouse. The average taxes paid are shown in table 1. In figure 2 the resulting average and marginal tax rates are illustrated.

Part of the argument put forward by some in favour of a flat tax in Denmark is that it is difficult to calculate taxable income and tax due to the differences in tax base, tax credits that may be deducted in the different tax bases and the different tax rates applicable to the different tax bases.

Fig. 2.: Number of average and marginal taxpayers



At a first glance this might seem to be a convincing argument. In reality however the vast majority of Danish tax payers spend little or no time doing their tax returns. Tax authorities receive information on income and tax credits from employers and banks etc. and do the calculation for the taxpayer. Thus the actual gains in reduced administrative costs to tax payers would be relatively modest compared to the current tax system.

The revenue from the different parts of the personal income taxation is shown in table 2.

The total Danish tax burden is around DKK 765,000 million (€ 102,410 million) and GDP is around DKK 1,540,000 million (€ 206,160 million) in 2005 leaving the tax-to-GDP ratio at 49.6 %. Personal income taxes amount to 23.5 % of GDP and 47 % of total taxes.

Table 2: **Revenue from the majority of personal income taxes in 2005, DKK 1,000 million**

State income tax:	**65.0**
- Basic tax	42.2
- Middle tax	7.6
- Top tax	15.2
Labour market contribution:	**67.2**
Municipal and county taxes:	**230.1**
- Municipal taxes	145.7
- County taxes	68.8
- Municipal and county tax on owner occupied houses	10.8
- Church tax	4.8
Total revenue from personal income taxes	**362.3**

2.2. Capital Income

The Danish capital income tax system is quite complicated and tax rates on net positive capital income are very high. In some cases real tax rates exceed 100 percent. The lowest tax rates vary from 0 % on gains on owner occupied housing and 15 % on the yield from pensions savings. In the middle range taxes on shares are taxed progressively with either 28 or 43 %. Finally interest payments from bank accounts and bonds are taxed with the progressive income taxes mentioned above with a maximum of 59 %.

Net negative capital income is deductible in the municipal and county tax with an average rate of 33.3 %. Since the 1980'ies this rate has been reduced substantially from 73 %.

3. Corporate Taxation

The Danish corporate tax rate is 28 %. The rate has been reduced continuously from 50 percent to the current level since the 1980'ies. Rate reductions have been followed by base broadening.

Revenue is currently around DKK 50,000 million (€ 6,695 million) corresponding to 3.1 % of GDP or 6.3 % of total taxes. In addition there are specific taxes on the extraction of hydrocarbons.

4. VAT and Excise Duties

The Danish VAT-system only operates with one rate of 25 % on almost all goods and services. There are no reduced rates although some services are exempt or zero-rated in accordance with EU regulation.

Revenue is currently around DKK 155,000 million (€ 20,750 million) corresponding to 10 % of GDP or 20 % of total taxes.

The Danish Tax system also includes a wide range of excise duties on cars, energy, tobacco, alcoholic beverages, waste and water etc. These excises are used to pursue several different goals being both fiscal as well as goals within different policy areas like environment, traffic, energy and health.

Revenue is currently around DKK 95,000 million (€ 12,715 million) corresponding to 6 % of GDP or 12 % of total taxes.

5. Modelling Flat Tax in Denmark

It is possible to model at least three different main categories of flat tax experiments in the Danish economy that have been touched upon in the public debate. Other variations of calculation of income, size of basic allowance and tax rates could have been considered. The effects of the following three revenue neutral flat tax experiments are analysed:

A. A flat tax of 35.2 % on all positive income. The only tax credit is for pension savings.
B. A flat tax of 42.0 % on all positive income above a basic allowance of DKK 37,600. The only tax credit is for pension savings.
C. A flat rate of 48.9 % on existing taxable income above a basic allowance of DKK 37,600.

These experiments might seem simple. In reality however, a flat tax reform might be extremely

Fig. 3.: Average tax rates of three flat tax experiments.

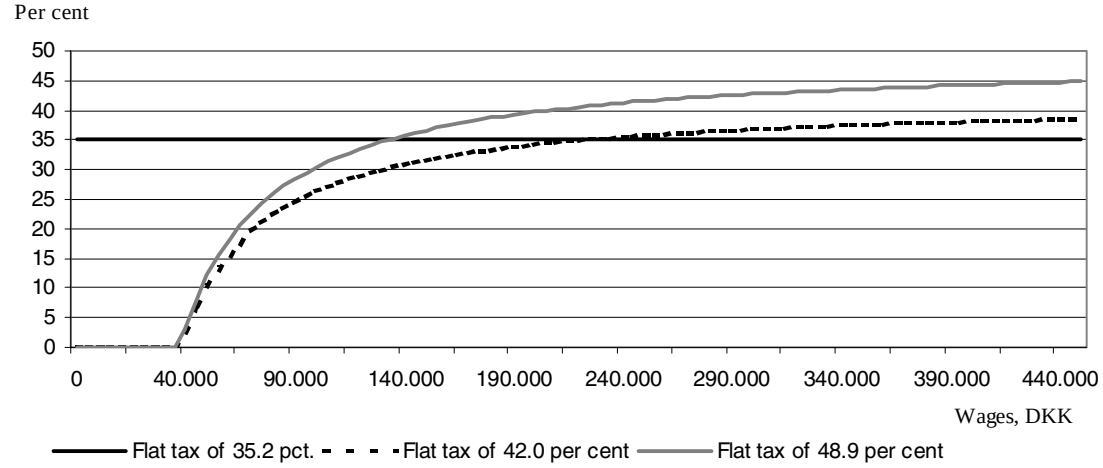
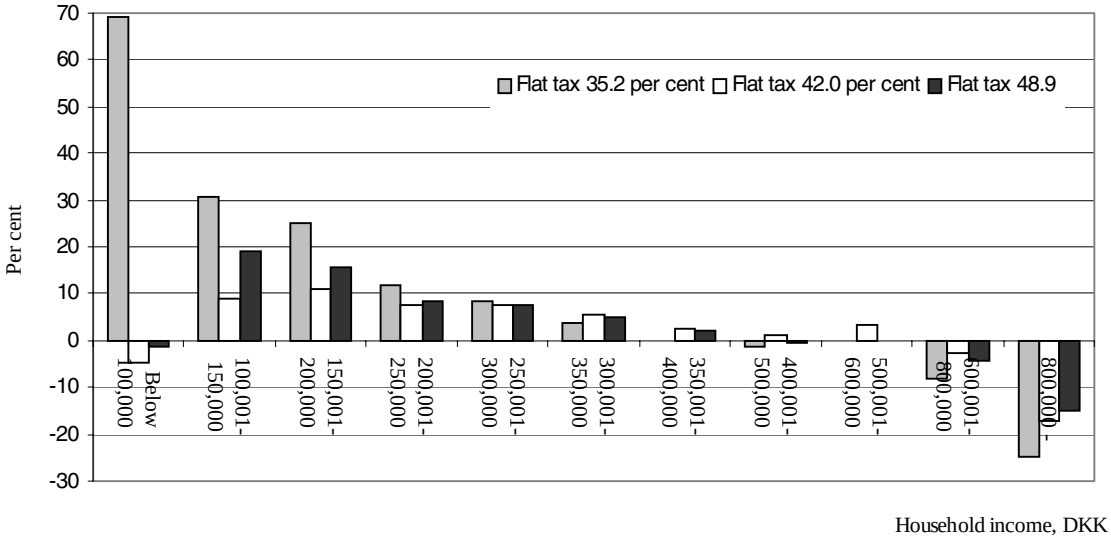


Fig. 4.: Changes in average taxes paid.



complicated to implement, as most income transfers are gross of taxes and would have to be recalculated to take into account the changes in tax rates. Also the treatment of self-employed and majority shareholders should be addressed. And it would be necessary to decide upon the treatment of existing pension savings.

In figure 3 the resulting average tax rates are shown with increasing income. As is the case in figure 1, the shown tax rates are not taking into account possible tax credits. Results from micro simulations on a sample of the actual Danish population of taxpayers are shown in table 3-5. The changes in average taxes paid are shown in figure 4.

In the first experiment (A) the marginal and average tax rates are equal. This flat tax experiment will shift more than DKK 30,000 million (€ 4,015 million) in tax revenue from poorer households to more wealthy households. More than 2.3 million Danish households will loose an average of DKK 12,735 (€ 1,705) a year. Only 780,000 households will gain on average DKK 39,430 (€5,275) a year. In general households with income of less than DKK 350,000 (€ 46,855) will loose. Households with income of more than DKK 350,000 will gain.

The loss (gain) will be reduced (increased) as income increases. Thus the result of the experiment is highly regressive. The poorest households face an increase in average taxes paid of 68 % while at the other end of the income scale the wealthiest households receive average tax cuts of 25 %.

In the second experiment (B) the marginal tax rate is 42.0 % above a personal allowance of DKK 37,600. This of course introduces progression in the tax schedule and average tax rates increase

gradually from 0 towards 42.0 %. The effect of this change compared to experiment (A) is that only around DKK 20,000 million (€ 2,675 n illion) shifts from lower and middle-income households to high-income households. On average more than 2.2 million households loose DKK 8,845 (€ 1,185) while 820,000 households gain DKK 24,980 (€ 3,345). Beca se of the personal allowance very low-income married couples actually gain. The introduction of a personal allowance does repair some of the distributional problems faced in experiment (A). Both losses and gains from the experiment are reduced. The losses are no longer decreasing with increasing income due to the introduced progression in the tax schedule.

The downside of this perhaps less unacceptable distribution of taxes is that only households with income of more than DKK 600,000 (€ 80,300) will gain. The lower to middle income households face tax increases of around 10 % of current average taxes while the high income households receive tax cuts of 3-17 % on average.

The third experiment (C) is closer to the current Danish tax system in the sense that the tax base is

Table 3: Total change in household taxes - experiment (A)

Income	Singles		Married couples		All households	
	Number	Average Tax	Number	Average Tax	Number	Average Tax
DKK	(1,000)	DKK	(1,000)	DKK	(1,000)	DKK
Below 100,000	318	8,940	7	-3,110	325	8,670
100,001-150,000	577	10,410	8	22,080	585	10,580
150,001-200,000	311	9,850	83	23,590	394	12,735
200,001-250,000	276	6,660	57	18,760	333	8,730
250,001-300,000	253	3,920	69	22,055	322	7,800
300,001-350,000	175	-1,645	65	20,580	240	4,370
350,001-400,000	100	-11,740	63	18,385	163	-120
400,001-500,000	80	-28,850	158	11,615	238	-2,025
500,001-600,000	28	-59,640	195	8,370	223	-125
600,001-800,000	18	-89,925	216	-16,415	234	-22,165
800,000 -	8	-232,470	111	-121,260	119	-129,060
Total	2,144	2,655	1,032	-6,200	3,176	-225

Table 4: Total change in household taxes - experiment (B)

Income	Singles		Married couples		All households	
	Number	Average Tax	Number	Average Tax	Number	Average Tax
DKK	(1,000)	DKK	(1,000)	DKK	(1,000)	DKK
Below 100,000	318	-245	7	-15,970	325	-600
100,001-150,000	577	3,155	8	755	585	3,120
150,001-200,000	311	5,730	83	4,715	394	5,515
200,001-250,000	276	6,140	57	3,025	333	5,605
250,001-300,000	253	6,580	69	9,410	322	7,185
300,001-350,000	175	4,295	65	11,140	240	6,145
350,001-400,000	100	-2,575	63	12,245	163	3,140
400,001-500,000	80	-15,015	158	10,530	238	1,920
500,001-600,000	28	-38,745	195	13,110	223	6,635
600,001-800,000	18	-60,525	216	-2,820	234	-7,330
800,000 -	8	-173,260	111	-81,885	119	-88,290
Total	2,144	1,180	1,032	-2,830	3,176	-125

Table 5: Total change in household taxes - experiment (C)

Income	Singles		Married couples		All households	
	Number	Average Tax	Number	Average Tax	Number	Average Tax
DKK	(1,000)	DKK	(1,000)	DKK	(1,000)	DKK
Below 100,000	318	200	7	-15,525	325	-150
100,001-150,000	577	6,645	8	80	585	6,550
150,001-200,000	311	7,765	83	8,925	394	8,005
200,001-250,000	276	6,235	57	6,690	333	6,315
250,001-300,000	253	5,105	69	13,320	322	6,860
300,001-350,000	175	3,190	65	13,105	240	5,870
350,001-400,000	100	-2,745	63	10,905	163	2,520
400,001-500,000	80	-13,710	158	5,455	238	-1,025
500,001-600,000	28	-34,115	195	4,370	223	-440
600,001-800,000	18	-51,695	216	-8,310	234	-11,700
800,000 -	8	-148,875	111	-71,840	119	-77,240
Total	2,144	2,500	1,032	-4,485	3,176	230

the familiar tax base used for municipal and county taxes including deductions for interest payments and other tax credits etc. The marginal tax rate is 48.9 % above a personal allowance of DKK 37,600. Again this experiment has a progressive tax schedule. The effect of this experiment is to shift more than DKK 18,000 million (€ 2,410 million) from lower and middle-income households to high-income households. More than 2.3 million households loose an average of DKK 8,130 (€ 1,090) while 762,000 households gain an average of DKK 23,945 (€ 3,205). Again, because of the personal allowance, very low-income married couples actually gain.

Holding on to the tax credits in the current tax system means that the tax rate has to be increased compared to the other flat tax experiments. For household income below DKK 250,000 (€ 33,465) the effect of the higher tax rate dominates the effect of the tax credits. These households face increasing losses compared to experiment (B), but still the losses are lower than experiment (A). Households with incomes between DKK 250,000 and DKK 800,000 (€ 107,095) are better of than in experiment (B). This is because the average and marginal tax rate of 48.9 % is relatively close to the tax rate they face in the current tax system and in fact lower for the more wealthy households. Keeping the tax credits dominates the effect of the relatively high tax rate. Finally the households with the highest incomes will gain. But less than in experiment (A) and (B). The reason for this is again that the higher tax rate dominates the effect of keeping the tax credits.

The low-income households face average tax increases of 10-20 % while the higher income households receive tax cuts of 1-15 %.

The distributional effects shown above are of course calculated before any possible behavioural effects on labour supply, education etc. I have not tried to assess these effects, but they would have to be considerable in order to sufficiently reverse the first order distributional effects from the tax experiments. It is however possible to make one or two notions about what could be expected from effects on labour supply and education.

In the case of experiment (A) almost every household and taxpayer faces lower marginal tax rates. This indicates that labour supply will increase substantially from this kind of tax reform. Also reduced progression will work in favour of increases in the level of education. The costs of these effects are that more than 3 million taxpayers face increased average taxes.

Experiments (B) and (C) try to repair some the deficiencies in experiment (A). In experiment (B) around 2.8 million taxpayers out of 4.46 million taxpayers face reduced marginal tax rates while the rest of the taxpayers face mostly smaller increases. In experiment (C) only around 1 million taxpayers face reduced marginal tax rates while around 3 million taxpayers face larger increases in the marginal tax rates. While these tax experiments most probably will have positive effects on the incentives to increase education the effects on labour supply is less favourable than experiment (A).

6. Is There a Future For the Flat Tax in Denmark?

This paper has shown the effects of three of the most straightforward revenue neutral flat tax experiments that could be envisaged in Denmark. The conclusion to this analysis is that Denmark is not likely to introduce a flat tax due to the distributional effects from such a tax reform. If you – like Denmark – at the outset have a tax system with relatively high levels of progression it will be very difficult to shift towards a flat rate tax system without reducing tax revenue. And the total tax reductions required, might have to be substantial. However, it is very likely that a flatter tax system will gradually emerge during the coming years.

Most parties in the Danish Parliament have plans to reduce marginal and average taxes on labour income. The controversies are mainly related to the financing of the tax cuts and to the mix of the tax cuts between high, low and middle-income earners.

The current government has as a goal to reduce taxes on labour income when it is compatible with sustainable economic conditions. The Danish Welfare Commission has recommended lower taxes on labour income and positive capital income.

The development since the 1980'ies has shown a history of continuous cuts in marginal labour tax rates. Globalisation and the aging population put increasing pressure on the tax system to promote labour supply, education, R&D etc.

Finally, there are already elements in the current Danish tax system that could be thought of as being similar to a flat tax. For instance the uniform VAT-rate and large parts of the personal income taxation.

Measured as the share of total tax revenue capital taxation is not far from being in effect a flat tax. Reduced rates on parts of positive capital income at gross costs of 1 % of tax revenue would be sufficient to change the taxation of capital (except for housing and pension funds) into a flat tax system. A similar cut in progressive taxes on labour income removing middle and top state income taxes would require gross revenue cuts of around 3 %.

*Jean Tesche**

Direct Taxation in Southeastern Europe

This paper gives an overview of the current situation and trends in direct taxation in Southeastern Europe (SEE). Here, SEE refers to the countries of the former Yugoslavia plus Albania, Bulgaria and Romania. Some data on the Czech Republic, Hungary, Poland and Slovakia is also included for comparison. Although all of the countries of SEE had some form of socialist government, there were three distinct types: Albanian, Soviet and Yugoslav.

The countries that emerged from the former Yugoslavia started with the same system. Clearly some have changed more than others. Slovenia, with by far the highest standard of living (Table 1), has now joined the European Union as will Bulgaria and Romania soon. EU membership is a real possibility for the other countries in the region as well and all are moving towards modern European tax systems.

The EU does not require the same level of uniformity in direct taxes as it does for indirect taxes. There have been several attempts by the EC Commission to harmonize direct taxation, but so far the main agreement has been a minimum level of taxation for savings (European Commission, 2000). The desire of all these countries to join the EU means that they are ready to adapt their tax systems more quickly than might otherwise be the case.

Section One will give a bit of background of the region, particularly of the former Yugoslav countries. Section Two will discuss the current direct tax systems and recent changes. Section Three will give some thoughts on the future development.

1. Background

Much has changed in the region since the mostly peaceful falling apart of the Soviet Union's sphere of influence and the violent breakup of Yugoslavia. In socialist systems, taxes were more of a residual resulting from government decisions as to production, wages and prices than an explicit policy. Albania had a more extreme form of this before 1990, with state control of virtually all of the economy. In all three types of systems, any taxes on wages were invisible to wage earners, who received the net amount.

Yugoslavia started the period of transition from Socialist systems towards the end of the 1980s with a relatively high standard of living. The country was fairly open and seemed to have found the middle way between strict socialism and the market. However, 15 years later, five of Yugoslavia's six republics are independent countries and Kosovo, one of two autonomous provinces, is under United Nations protection. The standard of living in most of the former Republics is still below that in the 1980s. One obvious reason for the drastic economic deterioration was the series of internal wars that devastated parts of former Yugoslavia in the 1990s. The slow collapse of the Yugoslav self-managed economy in the 1980s is a less obvious reason.

Meanwhile, other former socialist countries have developed rapidly and joined the European Union (EU). Their standards of living far surpass that in most former Yugoslav countries. Slovenia is the exception. It has progressed rapidly economically and joined the EU. Table 1 gives recent figures for population, GDP and GDP per capita for the region from the EBRD Transition Report (2005).

Of the former-Yugoslav republics, both Bosnia and Herzegovina (BiH) and Serbia and Montenegro (S&M) need some extra comment. The Dayton Peace Accords which ended the conflict in Bosnia and Herzegovina at the end of 1995 set up a decentralized state with 2 Entities: the Federation of BiH (Federation) and the Serb Republic (Republika Srpska or RS). Taxes and custom administration were set at the Entity level, with only customs policy at the state level. A series of laws as well as decrees from the Office of the High Representative (OHR, set up by the UN to help

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implement the Dayton Peace Accords) beginning in 2003 have moved indirect taxation to the State level. The international community has played a much bigger role in BiH than in other transition countries, with the exception of Kosovo.

Serbia and Montenegro (called Yugoslavia, or rump Yugoslavia until early 2003 when the name was changed) is made up of two former republics plus two autonomous provinces, Vojvodina and Kosovo. Kosovo has been under UN protection since the NATO bombing in 1999 and has its own tax system set up by UN regulations. Montenegro is part of the same country, but has a completely separate system, including a separate currency and customs. A referendum on independence is scheduled for April of this year. Vojvodina is now an integral part of Serbia.

2. Direct Taxes

Personal Income Taxes

For personal income taxes, the general movement in the region has been towards fewer rates and a decrease in the top marginal rate. Romania and Slovakia have introduced flat taxes. Tables 2 and 3 summarize the current personal income tax systems in SEE and some Central European countries. We will start with the non-former Yugoslav countries.

Albania, the poorest country in the region (Table 1) had and still has the highest number of rates, with 6, ranging from 0-30%. This is a decrease from 7 in 2004. The highest, 30%, is reached at a relatively low €4000.

Bulgaria has the second highest number of rates with 5, ranging from 0-24%, also reached at a fairly low threshold of around €3000. The top three rates are quite close at 20, 22 and 24%. A top rate of 29% was added in 2004, but dropped again in 2005, along with a 26% rate.

Romania introduced a single rate of 16% in June 2005. Previously there had been 5 rates ranging from 18-40%.

In pre-war Yugoslavia, the six republics and two provinces had a great deal of autonomy over direct taxation. They had progressive income taxes on total personal income, but it covered only income greater than a multiple of average net income. Most workers did not pay this tax. The top marginal rate was as high as 80%. The Federal level relied mainly on indirect taxes (Lydall, 1989).

The two Entities in Bosnia and Herzegovina, the Federation and the RS, still have the closest to the Yugoslav system, with its number of different taxes and rates. Only rates have changed in the Federation since new Entity laws were passed in 1996-7 to replace the pre-war Republic laws. In the RS, however, a bold experiment in regressive rates was introduced in 1998. Reform of the direct tax system in both Entities is planned for 2006.

Wages are now taxed at a single rate in both Entities: 5% in the Federation and 10% in the RS. Other sources of income are taxed separately at different rates in both: varying from 30-50% in the Federation and 25-45% in the RS. In the Federation, wage tax rates are down from 15% since 1996, changed to 10% after 2000. In the RS, a regressive system was in place between 1998 and 2001 with rates ranging from 25 to 0% (see Tesche, 2005 for a more complete history of BiH taxes).

Croatia overhauled the inherited Yugoslav tax system in1994. It now has 4 rates between 15-45%, The top rate, which is reached at more than €15.000, was added after 2000. An additional amount up to 18% can be levied on incomes by municipalities.

Macedonia has two rates of 15% and 18%. The number of rates has decreased and the rates have been decreased from 23, 27 and 35% in 2003.

For most of the 1990s, (rump) Yugolavia had a number of Federal level tax laws on the books. These were basically ignored by both Serbia and

Table 1: Background Data

	Population	GDP 2004, billion $	GDP/capita, PPP
Albania	3.2	7.6	4.929
BiH	3.8	8.2	7.168
Bulgaria	7.8	24.1	8.026
Croatia	4.4	34.3	12.336
Macedonia	2.0	5.3	6.767
Romania	21.7	73.2	8.413
Serbia & Montenegro	10.6	23.9	n.a.
Slovenia	2.0	32.2	20.853
Czech Republic	10.2	107.0	19.311
Hungary	10.1	100.3	16.596
Poland	38.2	241.8	12.876
Slovakia	5.4	41.1	13.549

Source: EBRD Transition Report, 2005.
Note: For S&M includes Kosovo.

Table 2: Personal Income Tax, 2005

Rates	Thresholds	All amounts shown in Euros. Exchange rates as of 1/1/2005.
Southeastern Europe		
ALBANIA		
0%	< 111	
5%	318	Contributions: **41.9%**
10%	716	
15%	159	
25%	3879	
30%	> 3879	
BiH: FEDERATION		
5%		Wage income
30-50%		Other income: varies by type
		Contributions: **45%**
BiH: SERB REPUBLIC		
10%		Wage income
10-25%		Other income: varies by type
		Contributions: **44%**
BULGARIA		
0%	< 702	
10%	810	Contributions: **42.4-43.1%**
20%	1350	
22%	3240	
24%	> 3240	
CROATIA		
15%	< 5018	
25%	12544	Contributions: **37.2%**
35%	35123	
45%	> 35123	
KOSOVO		
0%	< 960	
5%	3000	
10%	5400	
20%	> 5400	
MACEDONIA		
15%	< 5469	
18%		Contributions: **32.5%**
ROMANIA		
16%		Flat rate from 2005
		Contributions: **49.75-55.0%**
S&M-MONTENEGRO		
0%	< 785	
15%	To 2,615	Contributions: **40.0%**
19%	To 4,577	
23%	> 4577	
S&M-SERBIA		
14%		Salaries, agricultural, self employment income
20%		Interest, dividends, real estate, capital gains, other income
10%	> 10,990	Annual income tax on incomes over 4 times average annual salary
		Contributions: **35.8%**
SLOVENIA		
16%	< 5422	
33%	10594	Contributions: **38.1%**
37%	21438	
41%	43085	
50%	> 43085	
Central Europe		
CZECH REPUBLIC		
15%	< 3585	
20%	7169	Contributions: **47.5%**
25%	10872	
32%	> 10872	
HUNGARY		
18%	< 6256	
38%		Contributions: **41.5%**
POLAND		
19%	< 9064	
30%	18129	Contributions: **38.54-40.53%**
40%	> 18129	
SLOVAK REPUBLIC		
19%		Flat rate
		Contributions: **47.8%**

Sources: European Tax Handbook, 2005, Ministries of Finance, PriceWaterhouseCoopers CEE-CIS Tax Notes, Issue 5/1, Annual 2005, www.fxtop.com for exchange rates.

Montenegro, who pursued their own tax reforms. Montenegro introduced a global income tax in 2002. It now has 4 rates, ranging from 0-23%, with the highest reached at a low €4500. All rates were decreased by 2% in 2003.

Serbia now has what looks closer to a single rate, but is a hybrid. There is a single 14% rate on salaries, agricultural and self employment income, plus an additional 10% on annual incomes over 4 times the average salary. Some other forms of income, mostly capital income, are taxed at 20%. In addition, up to another 3.5% can be levied on salaries and wages by municipalities. Serbia had previously introduced a single rate of 20% on wage income, which was decreased to 14% in 2003. Non-wage income had been subject to progressive rates of 24-40% with the citizen's income tax since the mid-1990s. This was changed to 20% for most types of income in 2003, with 10% for agriculture and self employment income (see Tesche, 2005). A "synthetic" tax is planned for 2006, which would tax all aggregated non-wage income at 10%.

The tax system in Kosovo has been put in place via UN regulations. The personal income tax has 4 rates between 0-20%, with the maximum reached at €5400.

Finally, Slovenia has 5 rates, from 16-50%, with the highest reached at incomes more than € 43.000. The number of rates has been decreased from 6 in 2003, and most have been lowered slightly.

By comparison, the Central European countries mostly have fewer rates. The Czech Republic has the most with 4 rates, between 15 and 32%, with the maximum reached at incomes of€ 11.000. Poland follows with 3 rates between 19% and 49%, with a much higher threshold of over €18.000 for the highest rate. Hungary has only 2 rates, 18 and 38%. The higher rate is reached at a relatively low level of around €6000. Finally Slovakia has introduced a single 19% rate in 2004, replacing 5 rates ranging between 10-38%.

Note that three countries have a 0% rate: Albania, Bulgaria and Montenegro. Of these, Albania and Bulgaria allow no personal allowances or deductions. All countries without a 0% bracket have some type of personal allowance, deduction or credit, as does Montenegro.

Social contributions in the region are fairly high. The combined employer and employee contributions are under 40% of wages only in Croatia, Macedonia and Slovenia, as well as in Poland. They are close to 50% in Romania, the Czech Republic, Hungary and Slovakia. The others fall somewhere in between 40-50% (Tables 2 and 3).

Corporate Income Taxes

Corporate taxes also vary widely. While the statutory rate tells only a part of the story, the trend has been downward in most cases. Rates are now less than 20% in most of these countries. They are 9-10% in the RS, Montenegro and Serbia, and between 10-20% in Bulgaria, Croatia, Kosovo, Macedonia, and Romania. They are also between 10-20% in Hungary, Poland and Slovakia. The highest rates are in Albania (23%), Slovenia (25%), the Czech Republic (26%) and the Federation of BiH (30%). Between 1998 and 2001 corporate tax rates in the RS of BiH were regressive, with 4 rates between 20-10%.

3. Future Developments

Most countries in the region have implemented or are in the process of implementing modern direct tax systems. Although this has usually meant introducing a global income tax, there is some movement away from a fully global tax in European countries. Final withholding at a single rate on some types of income, such as interest on savings or capital gains is becoming more common. As SEE countries join the EU, or at least prepare for

Table 3: CORPORATE PROFIT TAX-Statutory Rates-2005

ALBANIA	23%
BiH-Federation	30%
BiH-Serb Republic	10%
BULGARIA	15%
CROATIA	20%
KOSOVO	20%
MACEDONIA	15%
ROMANIA	16%
S&M-Montenegro	10%
S&M-Serbia	9%
SLOVENIA	25%
CHECH REPUBLIC	26%
HUNGARY	16%
POLAND	19%
SLOVAKIA	19%

Sources: European Tax Handbook, 2005, Ministries of Finance, PriceWaterhouseCoopers, "CEE-CIS Tax Notes", Issue 5/1, Annual, 2005.

accession, they will continue to develop their tax systems. There may be more moves toward harmonization of direct tax regimes within the EU, although any changes in the tax area require unanimity.

As can be seen from the introduction of a single flat rate of income tax, as well as in other areas such as pension reform, some former socialist countries are now at the forefront of change in the tax area. It may be that the experiences in Romania and Slovakia and the others implementing bold reform will lead the way for "old" Europe.

Sources

European Bank for Reconstruction and Development, "Transition Report 2005: Business in Transition", London, 2005.

European Commission, "Tax Policy in the European Union:, EC Directorate-General for Taxation and the Customs Union, Luxembourg, Office for Official Publications of the EU Communities, 2000.

International Bureau of Fiscal Documentation, "European Tax Handbook, 2004", 2005.

Lydall, Harold, "Yugoslavia in Crisis", 1989, Oxford University Press, Oxford.

Ministry of Finance, Croatia, www.pu.mfin.hr.

Ministry of Finance, Federation of Bosnia and Herzegovina, www.fmf.gov.ba.

Ministry of Finance, Macedonia, www.finance.gov.mk.

Ministry of Finance, Montenegro, www.ministarstvo-finansija.cg.yu.

Ministry of Finance, Serb Republic, BiH, www.vladara.net.en/min/mf/html.

Ministry of Finance, Serbia, www.mfin.sr.gov.yu.

Ministry of Finance, Slovenia, www2.gov.si/zak.

Ministry of Finance and Economy of Kosova, www.mfe-ks.org.

PriceWaterhouseCoopers, "CEE-CIS Tax Notes", Issue 5/1, Annual, 2005.

Tesche, Jean, «Tax Reform in Bosnia and Herzegovina and Serbia and Montenegro: Progress and Problems», Proceedings of the Economics Faculty (Zbornik Radova Ekonomskog Fakulteta), Vol. 23, no. 2, 2005, University of Rijeka, Croatia.

Tesche, Jean, "Tax Harmonization or Competition: Croatia and Neighboring Countries", Paper prepared for the 41st ERSA Conference, 29August-1 September 2001, Zagreb, Croatia.

*Alvin Rabushka**

A Flat Tax for Slovenia

The object of this paper is to estimate the parameters for a flat tax for Slovenia, modeled on the framework of the Hall-Rabushka flat tax, which would be a revenue-neutral replacement for Slovenia's current corporate and individual taxes on income and profit.[1] The table is based on data posted on the web sites of the Statistical Office of the Republic of Slovenia and the Ministry of Finance. I want to thank Mr. Gonzalo Caprirolo in the Ministry of Finance, who clarified the tax treatment of social security contributions paid by employers and employees, provided the actual data on allowances, the change in 2005 in the way additional allowances for pensions was provided to make the system transparent, and the appropriate percentage of allowance on investments.

Table 1 derives the revenue-neutral flat rate for a Hall-Rabushka flat tax for Slovenia. Line 1 is the gross domestic product of Slovenia in 2004 in Mio. SIT.[2] Line 2 is indirect business tax, consisting of VAT and Excises, that is included in GDP but not under the flat tax. Line 3 is left blank (I have no data on this). It is income included in GDP but not in the tax base, mostly the value of houses owned and lived in by families (imputed rental income of owner-occupied housing); this income does not go through the market. Line 4 is wages and salaries that would be reported on the first line of the wage-tax form (see Figure 3.1 in Chapter 3 of *The Flat Tax, 2nd Edition*) and would be deducted by businesses.[3] Investment, line 5, is the amount spent by businesses purchasing new plant and equipment (expensing of investment, or 100 percent first-year write-off).[4] Line 6 shows the taxable income of all businesses after they have deducted their wages and investment. The revenue from the business tax, line 7, is 17.5 percent of the tax base in line 6. (The 17.5 percent rate was the derived revenue-neutral flat rate.) Line 8 shows the amount of personal allowances (relief) under Articles 8,

Table 1: Hall-Rabushka Slovenia Flat-Tax Revenues Compared with Current Slovenian Revenues

Line	Income or Revenue	Mio. SIT
1	Gross domestic product	6.193.539
2	Indirect business tax (VAT plus excises)	856.610
3	Income in GDP, but not in tax base	
4	Wages and salaries	2.891.765
5	Investment	1.152.320
6	Business-tax base (line 1 minus lines 2 through 5)	1.292.844
7	Business-tax revenue (17.5 percent of line 6)	226.248
8	Personal allowances	591.658
9	Wage-tax base (line 4 less line 8 less SS contribution)	1.661.027
10	Wage-tax revenue (17.5 percent of line 9)	290.680
11	Total flat-tax revenue (line 7 plus line 10)	516.928
12	Actual individual income tax	382.523
13	Actual corporate income tax	124.355
14	Total actual revenue (line 12 plus line 13)	508.878

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[1] The Hall-Rabushka flat tax model is set forth in Robert E. Hall and Alvin Rabushka, *The Flat Tax, 2nd Edition* (Stanford: Hoover Press, 1995), pp. 52-82. Any mistakes in this derivation are my responsibility.

[2] Statistical Office of the Republic of Slovenia, Rapid Reports, September 30, 2005, st./No 262. 3 National Accounts, st./No. 1, Table 2, "Gross value added by activities at basic prices and gross domestic product, current prices, 2000-2004," p. 3.

[3] Ibid., Table 4, "Gross domestic income and primary incomes, 2000-2004," p. 5. The figure is wages and salaries of employees, excluding employers' social contributions.

[4] Ibid., Table 5, "Gross domestic product by expenditures, current prices, 2000-2004," p. 5. The number inserted in line four amounts to 70 percent of gross capital formation for 2004, based on the approximate percentage on allowances for investment in 2003 supplied by Mr. Caprirolo. It is likely that expensing of investment would increase investment, but it is also true that expensing and low rates would enhance growth that would raise revenue, thus offsetting any loss from a smaller tax base due to higher investment.

9, and 10 of the Income Tax Law.[5] The wage-tax base on line 9 shows the amount of wages and salaries after deducting all family allowances from the amount on line 4, increased along with social security contributions paid by the employee at 22.1 percent of gross wages. The wage tax revenue on line 10 is 17.5 percent of the wage-tax base. Total flat tax revenues appear on line 11. Lines 12 and 13 show the actual revenue in 2004 from the current individual and corporate income taxes.[6] Total actual revenue appears on line 14.

Total actual revenue in 2004 from the current Slovenian individual and corporate taxes on income and profit amounted to Mio. SIT 508.878. A flat rate of 17.5 percent on the Hall-Rabushka framework applied to business and personal income amounts, respectively, to Mio. SIT 226.248 and Mio. SIT 290.680, totaling Mio. SIT 516.928, slightly above actual revenue.

[5] Data on allowances are for 2003. I increased the number by 4 percent as an estimate of likely higher allowances claimed in 2004.

[6] Rapid Reports, September 30, 2005, st./No. 264, National Accounts, st./No. 2, Table 5, "Detail classification of national taxes and social contributions according to ESA 1995, Slovenia 2000-2004", p. 7.

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Welfare and Efficiency Effects of Alternative Tax Reforms in Slovenia

Abstract

This non-technical paper presents early results of our simulations of alternative tax reforms in Slovenia within a simple general equilibrium framework. We find that progressive tax regimes in general outperform flat tax alternatives in terms of welfare. In terms of efficiency, i.e. in terms of labor effort and production, however, some flat tax settings represent significant improvements compared to the current tax regime, which is also true for adapted progressive regimes, and sometimes even more so. Ultimately, since the general deduction does not compensate for the increase in the marginal tax rate and the loss in the purchasing power due to a higher consumption tax in some low income segments, flat tax settings generate a potentially sizeable fall in the participation rate. We also discuss the limitations in shifting the tax burden form labor towards a single rate VAT, the flat tax effects on the tax setting simplicity, on human capital accumulation, and the competitiveness of the economy. Finally, we question the rationale for the imposed constant net wage transition that is specific to the Slovenian flat tax proposal.

1. Introduction

Economic theory and practice put forward that the design of the tax setting exerts strong effects on economic activity. Marginal and average tax rates on labor income can affect individual work effort and the decision to participate in the active population, and can therefore impact the aggregate labor supply and the potential output of the economy. The effective taxation of capital is a relevant determinant of physical capital accumulation, because it decreases the net capital income at the margin and deters from investment decisions. This in turn reduces the potential output as physical capital is a crucial production factor. Furthermore, theory also suggests that taxes may affect human capital accumulation since the taxation of productive work is an incentive for economic agents to reduce their in-work and formal education. Finally, many tax settings are complicated, non-transparent and sometimes entailing sizeable costs for the economy in terms of compliance costs and the administrative burden. Acknowledging the distortive effects of taxation is often advanced - and rightly so we believe - as a motivation for implementing tax reforms with the aim of decreasing the inefficiencies that taxes impose on economic activity.

However, the optimal tax setting, at least as seen by economic theory, is the one that maximizes the welfare and not necessarily the production of the population. Welfare is typically defined as arising from the preferences of the population. In particular, in modern economic models a risk-averse population values efficiency and production that enable higher consumption, but dislikes the work effort necessary for production and the dispersion of lifetime incomes. The dispersion of lifetime incomes indeed increases the income risk in a given economy, which decreases the expected welfare of a risk-averse individual in the economy. All elements affecting the population's preferences and welfare must therefore be taken into account when comparing alternative tax settings. Comparing welfare outcomes is crucial since a tax reform may give rise to trade-offs between production or growth and welfare. In a revenue-neutral tax reform, the production incentives stemming from a decrease in the progressiveness of the personal income tax have to be traded off against a higher work effort and a larger lifetime income dispersion, as the tax system typically becomes less redistributive. In this respect, it must be welcomed that the title of the most recent reform proposals concerning the Slovenian economy set forth by the Committee for Reforms explicitly

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expresses the need to increase welfare, which also motivates this research.[1]

This paper in form of a non-technical discussion aims to provide intuition on the transmission mechanisms of different candidate tax reforms in Slovenia, attempts to quantify their effects on welfare and efficiency, and relates them to the theoretical and empirical literature.[2] It applies a simple general equilibrium model to compare alternative tax regimes in terms of efficiency (i.e. GDP, work effort, participation, etc.) as well as in terms of welfare, enabling thus to rank the tax regimes according to preferences. To identify the transmission mechanisms from taxes, the tax reforms we compare are revenue-neutral and conceptually as diverse as possible, ranging from several flat tax variants to fairly progressive tax settings. Finally, in addition to the issues related to the model experiments, the paper discusses some of the concepts that the Committee for Reforms has proposed with respect to its specific version of the flat tax reform.

The early findings from the model economy simulations can be summarized as follows. In terms of efficiency, according to our simulations, improving the current tax setting potentially raises GDP and consumption by some ten percent. The stronger effect arises from an increase in the individual labor supply, since a lower tax burden at the margin in all reforms examined boosts the work effort. Another strong effect is the transmission from capital, which depends especially on capital taxation, and which besides its direct effect on production also increases the value of labor and raises wages. As expected, flat tax regimes in general increase production with respect to the current regime, but some progressive tax regimes may raise GDP and consumption to an even higher level. Because switching to a flat tax results in a lower compensation of low-skilled labor, it usually generates a lower participation rate which limits efficiency gains. In simulations that assume an inelastic individual labor supply, production even falls due to lower labor participation in all tax reforms involving a decrease in low-skilled labor compensation and flat tax regimes therefore perform particularly badly. Finally, if the lifetime productivity risk increases, which is one of the likely consequences of globalization, progressive tax regimes are to be favored even more compared to flat tax regimes.

In terms of welfare, however, the examined flat tax regimes appear to be inferior to progressive tax regimes. Efficiency gains leading to higher lifetime consumption do not compensate for the additional risk in the lifetime revenue and the enhanced work effort or forgone leisure the flat tax regimes generate. In comparison to the current tax system, in all but one scenario significantly less than half of the households benefit from the introduction of a flat tax regime, but a majority of the households prefers a reform that retains a progressive tax system while shifting the tax burden from labor to consumption.

This introduction is followed by two sections and a conclusion. Section 2 presents and analyzes the simulations of alternative tax reforms in Slovenia, while section 3 discusses particular issues connected to the model experiments and to the implementation of the reforms.

2. Efficiency and Welfare in Simulated Tax Reforms

The Model Economy and the Simulated Tax Regimes

To gain intuition on the macroeconomic effects of tax reforms and attempt their quantification we have to build a simple general equilibrium model. We believe a credible candidate model for a tax reform evaluation must incorporate at least the following: explicit households' preferences and the available technology, household heterogeneity for a meaningful welfare analysis, elastic individual labor supply and an endogenous participation decision, the international free flow constraint on the domestic capital stock, overlapping generations since tax reforms may differently affect workers and pensioners and, finally, an explicit and complete tax and social security system. A non-technical description of the model mechanisms is presented in box 1. The simulation experiments are performed in form of a comparative static analysis of the model equilibrium outcomes in different tax settings.

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[1] The newest version of the reform proposals published by the Government of Slovenia is entitled "Framework of the economic and social reforms for increasing welfare in Slovenia" as opposed to an earlier version prepared by the Committee for Reforms entitled "Proposal of the concepts of economic and social reforms to increase the competitiveness of the Slovenian economy" (authors' translation).

[2] The formal outline of the model, the detailed presentation of the simulations and the due robustness analysis are forthcoming soon.

Table 1: Model economy in different tax settings

Scenarios	baseline	flat tax 20%	flat tax 20% low k	flat tax same T ratio	flat tax only on L	flat tax on L and C	"Kranjec"	Alterna-tive 1	Alterna-tive 2
		1	2	3	4	5	6	7	8
VAT	0.1485	0.2	0.2	endog.	0.1485	endog.	endog.	0.2	0.2
other cons.	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
capital	0.15	0.2	0.15	endog.	0.15	0.15	0.15	0.15	0.1
labor / personal income	brackets up to 0.4 0.16 0.4 to 0.75 0.33 0.75 to 1 0.37 1 to 1.5 0.41 above 1.5 0.5	0.2	0.2	endog. flat	endog. flat	endog. flat	brackets up to 0.6 0.17 0.6 to 1.7 0.28 above 1.7 0.42	endog. λ up to 0.4 λ x 0.16 0.4 to 0.75 λ x 0.33 0.75 to 1 λ x 0.37 1 to 1.5 λ x 0.41 above 1.5 λ x 0.5	endog. λ up to 0.4 λ x 0.16 0.4 to 0.75 λ x 0.33 0.75 to 1 λ x 0.37 1 to 1.5 λ x 0.41 above 1.5 λ x 0.5

Notes:

1 Endogenous taxes are computed so that the tax ratio remains unchanged.

2 Brackets boundaries are set in proportion to the (endogenous) average gross wage.

3 "Baseline", "Kranjec", "Alternative 1" and "Alternative 2" are completed with the current system of a general allowance, an additional 2% deduction and the deductions for dependents.

4 Flat PI taxes are specified in correspondence to the "Reforms Programme": general allowance of 0.2 of the average gross wage and a deductio per dependent worth the equivalent of an allowance of 0.15 of the average wage (respectively roughly 110% and 80% of the minimum incom

Scenarios	baseline	flat tax 20%	flat tax 20% low k	flat tax same T ratio	flat tax only on L	flat tax on L and C	"Kranjec"	Alterna-tive 1	Alterna-tive 2
		1	2	3	4	5	6	7	8
Endogenous tax (in %)	None	None	None	All 18.45	Labor 35.18	Labor, VAT 19.51	VAT 16.93	Labor λ 50.31	Labor λ 69.84
GDP (baseline = 1)	1.00	1.06	1.11	1.10	1.03	1.12	1.07	1.12	1.11
Capital/GDP	2.32	2.18	2.32	2.22	2.32	2.32	2.32	2.32	2.45
Effective labor	0.70	0.76	0.77	0.78	0.72	0.78	0.75	0.78	0.76
Participation (in %)	70.37	68.68	70.00	70.60	66.98	70.47	69.60	71.79	71.28
Individual labor [1;2]	1.26	1.35	1.36	1.37	1.30	1.36	1.34	1.37	1.33
Consumption	0.56	0.58	0.61	0.62	0.57	0.62	0.60	0.63	0.61
Avg. net wage	1.00	1.17	1.20	1.19	1.08	1.20	1.12	1.20	1.16
HS	0.21	0.22	0.21	0.21	0.22	0.21	0.21	0.21	0.21
Capital taxes/GDP	4.50	6.00	4.50	5.54	4.50	4.50	4.50	4.50	3.00
Cons. taxes/GDP	12.08	16.42	16.50	15.41	12.08	16.17	13.85	16.63	16.30
Labor taxes/GDP	9.25	5.22	5.27	4.88	9.25	5.16	7.47	4.70	6.53
Total taxes/GDP	25.82	27.64	26.27	25.82	25.83	25.83	25.83	25.83	25.83
Welfare rank	7	9	8	6	5	4	3	2	1
% of households better off		22.52	38.31	40.32	61.83	47.18	64.44	56.29	72.72

Box 1: A non-technical summary of the model economy setting

Risk-averse households of two members maximize their lifetime utility given their endowment in merchant productivity, home sector productivity and their share of the aggregate capital stock. The households' lifetime utility is a concave function of lifetime consumption, reduced by the disutility of the work effort (or forgone leisure). A composite consumption good can be exchanged for the net wage, the net capital income, or arise from home production. Households live through two distinct periods. The first period is the earning period, in which they may engage in the merchant sector, called GDP, or the home sector, called non participation. In the merchant sector they earn a wage corresponding to their productivity and effort, while in the home sector they contribute a home product to the household's consumption. The second period is a period of retirement where all individuals benefit from their home production and from a pay-as-you-go pension depending on their participation in GDP during the earning period. Individuals maximize the household utility by choosing to engage either in GDP or in the home sector and, in GDP, by selecting an optimal level of effort, potentially generating an individual labor supply anywhere up to a double of the minimal one. We constrain all households to have at least one participant during the earning period, i.e. at least one member engaged in GDP. Finally, a constant portion of each type of households is replaced by a newborn household, thus ensuring the stationarity of the population in equilibrium.

The GDP technology is a Cobb-Douglas production function, involving constant returns to scale in capital and labor. The capital stock is determined by the net return on capital, which, assuming a small open economy and free capital flows, must correspond to the international net return on capital in the long run. The net return on capital is the return after both taxes and depreciation. The home sector technology is linear in labor supplied to that sector.

The model is parameterized so that it resembles the Slovenian economy in dimensions that are relevant for the conducted tax experiments. In particular, the underlying productivity distribution is such that the model-generated gross wage distribution closely corresponds to the actual one in Slovenia and the home sector productivity distribution such that the participation rate equals the current one. The earning period and the retirement period reflect average years of employment and pensions. Eventually, the structure of the model economy enables to examine various and detailed tax settings, encompassing consumption, labor revenue and capital revenue taxes. As is standard, the welfare criterion used is the expected lifetime utility of a household in the model economy.

The current tax regime, "baseline", is compared to five regimes featuring a flat tax at least on labor income, the "Kranjec" proposal, and two alternatives. All tax settings are represented in the upper part of table 1. Regime (1) is a flat tax of 20% on labor income, capital income and consumption, while in regime (2) a flat tax of 20% on labor income and consumption is accompanied by the effective capital tax remaining at 15%. In regimes (3), (4) and (5) a flat tax is endogenized so that the tax-to-GDP ratio equals the one in "baseline", which is a more accurate way to compare tax settings. Regime (3) is a flat tax on labor, capital and consumption, (4) a flat tax on labor income only and (5) a flat tax on labor and consumption, with the effective capital tax rate remaining at 15%. The "Kranjec" proposal (6) involves three brackets instead of the five in the current regime and lower, albeit still progressive, marginal rates on labor income, with an endogenous adjustment in the consumption tax to keep the tax-to-GDP ratio unchanged. Regimes (7) and (8) are two alternatives that also decrease the taxation on labor income by shifting the tax burden on consumption and keeping the tax-to-GDP ratio unchanged, but they do so by decreasing by the same proportion the marginal tax in all brackets. Regime (8), "Alternative 2", in addition decreases the effective tax on capital to 10%, but at the expense of a lower tax relief on labor than in regime (7).

The tax regime specifications above are completed by a corresponding system of exemptions, deductions and social security contributions. "Baseline", "Kranjec", "Alternative 1" and "Alternative 2" embody the current system of the general allowance from the tax base, the additional 2% deduction and the deductions for dependents. Flat tax regimes are specified in correspondence to the proposal of the Committee for Reforms, imposing a general allowance of 20% of the average gross wage and an additional deduction per dependent person worth the equivalent of an allowance of 15% of the average gross wage. Finally, the social security system is the same in all regimes, with the pay-as-you-go pension contributions such that they finance net pensions at 70% of the net wage earned.

Effects on GDP

Looking at GDP we see that all alternative tax regimes perform better than the baseline, with an increase of sometimes up to around ten percent, which is significant. Notice that changes represent changes in the *level* of the potential GDP and not its growth rate. The growth rate only increases on the transitory path between the baseline and new equilibrium so that its cumulative amount equals the increase in the potential GDP. So why does GDP increase in all the scenarios?

The most important factor behind the increase in GDP is the increase in the average work effort, i.e. individual hours worked. In particular, because in all regimes marginal labor income tax rates for the most productive workers decrease, these agents prefer to work more when earning higher incomes at the margin. The productive value of the supplementary hours provided by the most productive workers outweighs the output loss due to less hours worked and a decreased participation rate of the less productive workers who face higher marginal taxes after the reform. This is consistent with the literature on flat tax rates where lowering the marginal tax rate on labor increases the supply of labor.[3]

However, besides the work effort, tax regimes also affect the participation rate, since they affect the relative incomes in GDP and the home sector. The "alternative 1" raises GDP even more than flat taxes do, and so does (but for one exception) "alternative 2". This is because alternatives 1 and 2 in fact decrease the marginal tax rates for *all* workers. Flat taxes typically increase marginal tax rates for some segment of the less productive workers, which explains why the participation rate in three of the five scenarios falls. Some of the less productive workers do not find it worthwhile anymore to work in the merchant sector and engage in home production where they pay no taxes. In accordance with the literature it is therefore the less skilled agents who are much more prone to quit the merchant sector than the more productive ones.[4] We can also deduce that GDP increases the least in regime (4) because it increases the marginal tax for the less productive workers so much that participation declines significantly.

Apart from labor supply, the other major transmission channel here is physical capital accumulation. Taxing capital in general harms output in two ways.[5] First, taxes on capital decrease the net capital income, discourage investment and therefore reduce the capital stock and production. Second, the diminished domestic capital reduces the marginal productivity of labor and therefore generates a fall in wages, because wages for all levels of skill depend positively on the capital to work with. We observe that GDP increases by the second-smallest amount in scenario (1) – the flat tax of 20% on everything – in particular because in this setting the effective capital tax rate shoots up from 15 to 20%. While a number of papers show that the flat tax can directly have a positive effect on capital accumulation, it must be emphasized that in Slovenia a pure flat tax of 20% would *raise* the effective capital tax rate. Now it also becomes clear why "alternative 2" performs so well in terms of GDP, as its lower effective capital tax makes investing in this economy more attractive. This is also very much consistent with the literature.[6]

Effects on Welfare

But there is more to life than GDP. In economics, the most important variable to look at is overall welfare, and in this respect most of the flat tax regimes that we evaluate make the society *worse off*. Measuring welfare is essential since it enables to assess the interactions, or potential trade-offs, between economic efficiency and equity.[7] In our simulation agents dislike inequality because they

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[3] This is a characteristic feature in the literature trying out flat taxes on models with heterogeneous agents. See for instance Altig et al. (1997) where the flat tax raises output by about 6%, mainly due to more labor supply. For the same reason, and also calibrated on the US, in Conesa and Krueger (2005) the flat tax increases aggregate output by less than 1%.

[4] This is a typical conclusion that one can find, among other, in Davis and Henrekson (2004). Note that an alternative to the home sector as a means to avoid the increased tax burden could be the underground economy.

[5] On the negative role of capital taxes in optimal taxation models see the seminal papers Judd (1985) and Chamley (1986).

[6] This mechanism is at work in the flat tax simulation found in Ventura (1999). González and Pijoan-Mas (2005) provide a simulation for Spain where the flat tax raises overall saving significantly. A substantial part of this extra saving, however, is precautionary, which is not welfare-enhancing. In these models the saving channel is somewhat stronger, since the increased stock of saving decreases the domestic long-term real interest rate and further boosts the domestic capital stock. In our model, the net real domestic interest rate is determined by international financial conditions, as we assume a small open economy and free international capital flows, at least in the long run. Since the net real interest rate remains unchanged after an increase (fall) in the effective tax on capital, the gross marginal capital revenue must increase (fall), which causes the domestic capital stock to fall (increase).

[7] In the literature virtually all papers stress this trade-off as regards flat taxes – see for instance Ventura (1999) for after-tax earnings inequality or Castañeda, Díaz-Giménez and Ríos-Rull (1999) for wealth inequality.

ex-ante do not know their own type and, being risk-averse, therefore prefer a more compact after-tax income distribution. From this perspective we see clearly that alternatives 1 and 2 as well as "Kranjec" perform the best because they essentially retain a sizeable amount of redistribution via progressive taxation *and* increase GDP. As to the flat tax regimes, it appears that the pure flat tax (1) and the proposal of the Committee for Reforms (2) perform the worst and in fact even worse than the baseline scenario, the current tax regime. The increase in GDP cannot compensate for the rising inequality and the additional work effort required in production. Notice that there are other flat tax reforms, though, which do perform better in terms of welfare than the baseline scenario. This is so because compared to regimes (1) and (2) labor income taxation is lower in (3) and (5), and consumption taxes are lower in regime (4).

An alternative option is to look at the percentage of households that are better off, in terms of their own welfare, than in the baseline scenario.[8] Again alternatives 1 and 2 appear attractive, with respectively 56% and 73% households better off. The reason why alternative 2 in particular performs so well is because the lowering of the capital tax increases capital, and therefore boosts wages for the same amount of work. It is worth noting that when a household's increase in consumption is due to longer work hours, then their increase in utility, *ceteris paribus*, is only the difference between the benefits of extra consumption and the disutility of more work, while with a rise in capital one could consume more without working more. Interestingly, of all the flat tax rates only option (4) with a very high labor income tax of 35% leaves more households better off compared to the baseline. The reason for a relatively high preference for this regime is threefold. First, the consumption tax does not change, improving the situation of the non-employed part of the population (pensioners). In addition, very highly productive workers pay lower taxes since their marginal tax rate becomes lower. Finally, low productive workers benefit from the higher general allowance and gain more from the tax deduction, given that it is proportional to the (higher) marginal tax rate in this model. The losers here are the middle class households, many of whom decide to retire into the home sector. Remember that, since the marginal tax rate increases for a great proportion of the active population, the efficiency gains are low.

Inelastic Labor Supply and Higher Individual Productivity Risk

We shortly discuss two additional sets of simulations that may help to understand some of the mechanisms underlying the tax effects in the model economy. One is the trivial case where the amount of hours worked remains fixed, no matter what the fiscal regime is, making the individual labor supply inelastic. This is admittedly quite unrealistic in the long run context when work practices can adjust. After all we can observe different work effort levels everywhere around. Nevertheless, a fixed individual labor supply may still be true in a number of jobs, and some authors find that men in particular tend to supply labor quite inelastically.[9] Under such assumptions all flat tax regimes perform worse because they increase inequality and at the same time lower potential GDP. The fall in GDP is again due to the many workers who decide to quit the merchant sector as a reaction to the rise of their effective marginal tax rate, while the individual labor supply of those at work does not change. Trivially, if taxes impose no inefficiency on individual effort, the optimal tax system must be designed so as to (completely) alleviate the lifetime risk, which requires redistribution and therefore potentially progressiveness.

A second simulation consists of increasing the variance of the individual productivity in the economy so that the gap between more and less productive workers widens, but the average remains the same. In this model this is equivalent to saying that pre-tax inequality increases. It is then not surprising that flat tax regimes again perform particularly badly in such a setting given that households are risk-averse. There are a number of different reasons for why the difference in productivity between agents might increase in the future. The process of globalization is perhaps the most blatant, because it entails that high-productive workers can sell their services at ever higher prices and that less productive workers are increasingly in competition with similarly-skilled workers from low-wage countries.[10] In the context of the model examined here, globalization should lead to *more* progressive income taxation, not less.

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[8] This argument concerns in fact more the (political) feasibility of any reform. It is not strictly an economic argument such as overall welfare, which is independent of the individual agents' position in the current regime and therefore does not discriminate between them.

[9] See Disney (2000) for a thorough discussion of the literature on labor supply elasticity and the link between tax systems and labor supply.

[10] See Piketty and Saez (2006) for an instructive analysis of inequality developments, and in particular the growing inequality between high and low-productive workers.

3. Discussion

The early results of the model economy provide, we believe, rich results in terms of intuition and quantification of the economic mechanisms relevant in the tax reform design. However, all model economies are only a simplified representation of reality. In this section we succinctly discuss some issues that complete the above analysis based on the model economy and that might contribute to the tax reform debate. Of course, all of the issues discussed would require research on their own.

The Role of the Human Capital Accumulation

Decreasing the tax rates could be beneficial for productive work, since it provides an incentive for economic agents to increase their in-work and formal education, thus boosting human capital and output. This could provide arguments for even stronger tax effects than the ones presented here, and surely constitutes some guidance for our future research. Yet one difficulty with this logic is that the direct costs of human capital investment are usually much smaller than the indirect costs of foregone earnings, which are implicitly tax-exempt anyway (if taxes are cut then your opportunity cost of not working while you are in school *increases*).[11] A more plausible possibility for the human capital effects is "learning by doing" where labor productivity increases with time spent at work. Can this argument provide additional motivation for a flat tax setting on efficiency grounds? Probably not. Flat taxes may generate higher effective labor, as in our simulations, but this is even more true for some of the alternative reforms. In addition, it is not far-fetched to argue that "learning by doing" depends more heavily on the participation rate than on the individual labor supply. If a flat tax boosts effort at the expense of a lower participation rate, this does not necessarily translate into optimal or even positive "learning by doing" effects.

Based on theoretical models with human capital accumulation, supporters of the flat tax sometimes argue that it has the potential to raise growth by several percentage points, and this indefinitely. This is in contrast with our model and most of the tax literature in that it concentrates on the GDP *level* effect, where the growth effect are temporary and intervene between two long-term equilibria. Growth effects are difficult to reconcile with the theoretical and even more with the empirical literature. More labor input in classical growth models simply means a higher level of potential GDP, not higher growth. It is only in parts of the endogenous growth theory that higher growth rates can be generated due to faster technological progress stemming either from debatable assumptions about the labor supply elasticity or more generally because they introduce a strong link between personal income taxation and human capital accumulation.[12] Increasing long-term growth in fact must be linked to human capital accumulation, which is solely capable of explaining the conception and adoption of new technologies.[13]

In general the problem with models incorporating human capital is that they build on the assumption that agents have very long time-horizons and the capacity of the human capital accumulation is assumed to be infinite. Also, the decision to acquire education might have more to do with social status-seeking than directly with expected future wages. Moreover, a progressive tax system also helps to ease the financial situation of the less well-off, who have liquidity constraints that hinder optimal human capital investment. Progressive taxation thus serves as a partial substitute for missing credit and insurance markets.[14] Since we do not as yet have any decisive presumption on whether taxes in general rather boost or hinder human capital accumulation, we have not included this feature in the current version of the model.

How Much Room is There for Shifting the Tax Burden from Labor Towards Consumption?

All tax simulations in section 2 (but scenario 4) involve shifting the tax burden from labor to consumption, in accordance with the principle to tax what you take out the economy and not what you put into it. This partly alleviates the distortive effect of taxes on work effort and enables for the

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[11] Heckman, Lochner and Taber (1998), on the other hand, emphasize that progressive taxation discourages education as the tax saved while in school is smaller than future taxes due to increased education-related earnings.

[12] One such recent model is Caucutt, Ýmrohoroğlu and Kumar (2003). See also Cassou and Lansing (2002) where the flat tax increases GDP by about the same amounts both in a classical and an endogenous growth setting.

[13] Jones, Manuelli and Rossi (1993) find a sizeable growth effect due to very elastic labor supply. Lucas (1990) in a similar model where long-run growth depends on human capital accumulation finds that a flat tax would have a positive but trivial growth effect, partly because he treats labor as inelastic. See Stokey and Rebelo (1995) for a discussion of these papers, and a conclusion that in most endogenous growth models with a representative agent the growth effect is almost zero.

[14] Bénabou (2002), for instance, calculates that these positive and negative effects of progressive income taxation on human capital investment basically cancel out each other.

efficiency gains in production. Nevertheless, increases in consumption taxes may generate unfavorable transitory effects on competitiveness and employment, and permanent ones on welfare. This depends in particular on the way this shift in taxation is operated, as well as on whether the final consumption tax rate is flat or not, i.e. whether two VAT rates remain in place or not.

Contrary to what might be a common perception, effective taxes on consumption in Slovenia are already rather high, while the effective labor income taxation does not stand out. Following Eurostat (2005) computations, only five EU25 countries tax consumption more heavily than Slovenia. On the side of labor taxes, the Slovenian labor income taxation appears to be largely comparable with that of other EU countries according to numerous sources. As reported by Eurostat (2005), World Bank (2005), and Caprirolo (2006) the overall tax wedge in Slovenia is somewhere around the EU average, and its progressivity actually does not stand out at all.[15] Dolenc and Vodopivec (2005) arrive at somewhat different conclusions by showing that the Slovenian tax wedge is currently the third highest in the EU.[16] Yet even according to their numbers, the Slovenian average and marginal tax rates on labor income will decrease substantially compared to the rest of the EU owing to the already-decided gradual elimination of the payroll tax. Only Damijan and Polanec (2005) contrasts with these findings by reporting by far the highest tax wedges for Slovenia, and claim that the labor income taxation in Slovenia is higher than in all OECD countries. It is, however, to be feared that this result is due to an unfortunate computational error, which is rather awkward, given that these authors base their reform proposals on the presumption of extreme labor taxation in Slovenia.[17] Anyhow, wherever the tax burden on labor currently stands, we believe that high (marginal) tax rates do matter for economic activity (i.e. permanent potential output and thus transitory growth increase), which is why they play a prominent role in the model of section 2.[18]

Following Damijan and Polanec (2005), by introducing a flat value-added tax (VAT) at 20% Slovenia would become the country most heavily taxing consumption in the EU-25, almost twice as heavily as in neighboring Italy. This is arguably a lot, but all simulations in section 2 are based on comparable increases of the VAT. Yet, the Committee also envisages a *single-rate* VAT system. It is worth noting that in practice VAT systems are characterized by different tax rates. In the EU, all countries but Slovakia and Denmark currently apply a reduced VAT rate for some products.[19] Moreover, some types of products are frequently exempt from VAT systems, such as transport services in Denmark, to mention but one example.

In the context of implementing a single VAT rate, shifting the tax burden from labor to consumption may be subject to limitations. First, if the tax burden shift is not neutral at the individual firm or industry level, it may at least transitorily affect competitiveness. This holds in particular for sectors with a relatively low labor share and/or subject to foreign competition (such as food, tourism, retail, and so on) even when a tax reform is revenue-neutral from the aggregate economy point of view. An increase in VAT rates, especially a large increase in the reduced VAT rate could have, *ceteris paribus*, a substantial effect on prices of some Slovenian goods and services and could therefore negatively affect the net purchases of non-resident households on the Slovenian market, which may not be negligible also in terms of VAT revenues. A VAT increase with differentiated rates may alleviate these harmful effects on the economy.

The second argument for a VAT rate differentiation stems from its permanent impact on equity and welfare. Using a computable general equilibrium model, Ĺvitsland and Aasness (2004), among others, show that the Norwegian VAT reform of 2001 that introduced a reduced VAT rate on food and non-alcoholic beverages undoubtedly increased equality. This result is quite intuitive, for even though the rich spend a larger *absolute* amount on

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[15] For example, Eurostat (2005) calculations show that the implicit tax rate on labor in Slovenia was the eleventh lowest in the EU in 2003, while World Bank (2005) reveals that the tax wedge for APW (average production wage in manufacturing) earners in Slovenia was almost two percentage points below the EU-15 average.

[16] The authors point out that their calculations only take into account single individuals without children.

[17] They calculate the tax wedge by adding all labor income taxes and contributions, including the shares paid out by employers, and divide this sum by gross wages instead of the sum of total labor cost! The correct computation gives results in line with the rest of the literature.

[18] This is not to say that the empirical literature wholly supports this view. In fact one of the rare articles that does find a negative correlation between effective marginal income tax rates and economic growth is Padovano and Galli (2001), who themselves admit that their findings are "opposite to those of most empirical literature". A recent paper by Lee and Gordon (2005), based on a cross-section data set of 70 countries over 1970-1997, shows that neither the average tax rate on labor income nor effective overall marginal tax rates are significantly associated with economic growth rates, while the corporate tax rate is significantly negatively correlated with economic growth.

[19] European Commission (2005): VAT Rates Applied in the Member States of the European Community.

products like food, it is the *proportion* of income spent on low-taxed products that matters for the equity analysis. As the poor spend a larger proportion of their income on typically low-taxed products like food, they obviously benefit from a VAT system with such a differentiation in tax rates.[20] Additionally, because the share of income consumed tends to decline with increases in income, the VAT *per se* is generally considered to be a regressive tax. Thus, it makes sense to introduce elements in the VAT system to mitigate its intrinsic regressivity. Finally, shifting the tax burden from income towards consumption also clearly leaves worse-off those population groups that do not participate in the labor market (e.g. pensioners), which is a fact that should not be neglected, especially as regards the political feasibility of tax reforms.

"Constant Net Wages" Proposal à la Slovenian Committee for Reforms

The Slovenian flat tax proposal includes a novelty, both in theory and practice, by planning to leave net wages constant during the transition to the new regime. The proclaimed objective of this heroic enterprise is to unburden Slovenian firms from labor costs that the Committee for Reforms judges excessive. The underlying arguments for such considerations have already been discussed above, but even if they were correct, it is up to labor market policies and not to a tax reform to address price-wage disequilibria on the labor market.

Moreover, the administrative constraint on net wages may present other conceptual problems than its objective itself, on which additional clarification from the reform proponents seems necessary. First, leaving net wages constant would require an agreement of all economic agents in the Slovenian labor market to adapt their contracts. Even if this was feasible, which remains to be demonstrated, this might end up incurring a huge administrative burden on the economy and rendering the system more complicated and opaque instead of simpler and more transparent. Second, in a market economy wages should be left to be determined by labor market forces. Whatever the tax system, in equilibrium labor costs should reflect the marginal productivity of workers and their bargaining power. More specifically, demand for labor is a function of labor costs, while the supply of labor depends on wages net of taxes, as in the model in section 2. If labor taxes decrease, the adjustment in net wages is highly likely to be fast and it should be so. Imposing a "constant net wages" restriction under tight labor market conditions would result in a severe labor market disequilibrium, entailing substantial distortions and an administrative transfer of the labor income to firms. It is difficult to understand why such a disequilibrium, where labor costs do not reflect the productivity of workers, is to be imposed on the economy, even temporarily. Economists in general believe that tax reforms, as any institutional reforms, bear a long-lasting character and can thus only be motivated within equilibrium reasoning.

Does the Flat Tax Really Equal Simplicity and Transparency?

There is little disagreement among tax system experts that the complexity of a tax system generally stems from deductions, exemptions, and special treatments, while the number of tax bracket is largely irrelevant. As Slemrod (1985) in his analysis of the tax simplification effects on compliance costs convincingly concludes, "significant resource savings can be expected from eliminating the system of itemized deductions, although no saving from changing to a single-rate tax structure can be confidently predicted".

A flat tax system is therefore by no means the only way to achieve simplicity and transparency. In fact, some real world flat tax systems retain a plethora of deductions and exceptions, making them neither simpler nor more transparent than progressive tax system alternatives.[21] If the aim of a tax reform is to simplify the system, this should be done through proposals for a clearer and common definition of taxable income, which should minimize the number of exemptions and exceptions. Similarly, removing the number of allowances from the tax code would make corporate taxation more transparent and simplifying the tax procedure would lead to lower tax administration costs.

As for tax evasion and undeclared work, no clear conclusions can be drawn from either the theoretical or the empirical literature on the link between tax compliance and tax reductions. Theoretical approaches modeling tax evasion as a gamble show that a tax rate cut can actually lead to an increase in the extent of evasion.[22] All we

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[20] Another option to achieve distributional goals is to implement a single-rate VAT system, but then redistribute through direct (lump-sum) payments. But the reader will understand that it is difficult (impossible) to efficiently target the redistributive needs of the population by lump-sum transfers, i.e. transfers identical for the whole population, regardless of the individual or wealth status.

[21] For example, see Ivanova, Keen and Klemm (2005) for the case of the Russian "flat tax".

[22] See for instance Ivanova, Keen and Klemm (2005) for a discussion.

can say for sure is that econometric work so far has not provided evidence on a general relationship between tax levels and compliance.[23] As the Damijan and Polanec (2005) flat tax proposal would increase the tax burden for less skilled workers who are also more likely to conceal economic activity, it is quite doubtful to expect that tax compliance would increase under the flat tax.

Nonetheless, a clean flat tax on production factors and consumption is the unique tax regime with the characteristic to leave individuals and companies with no incentive to fiddle with their accounts so as to make their revenue fall under the category with the lowest tax rate. Clearly then, however, this advantage is only possible when the effective tax rates on labor and capital income are equal, which in the Slovenian case translates into a higher effective capital tax. Given the detrimental effects of capital taxation discussed above, we do not think that a higher effective capital tax rate is warranted on grounds of closing these tax loopholes.

Does the Flat Tax Help to Improve "Competitiveness"?

One of the most common arguments of the flat tax proponents, especially when they address non economists, is that it boosts competitiveness. As we showed in this paper, taxes certainly affect economic efficiency, yet they have a limited role in competitiveness. Unfortunately, the concepts of competitiveness and efficiency are often confused or misused in the public debate on taxes.

For this we need to make clear what is understood under "competitiveness" when talking about economies, which is to be distinguished from the firms' perspective. Competitiveness quite crudely reflects the ability of a country to export more than it imports, meaning that it manages to produce goods that are either relatively better or relatively cheaper than foreign goods.

In this perspective, since tax reforms are meant to be long-lasting, they must be evaluated in the context of a complete price adjustment, and therefore bear no consequences on the competitiveness. In the medium and long run the amount and progressivity of personal income taxation generally does *not* affect the current account because net wages that constitute the price of labor simply adjust. Higher taxes force net wages to adjust downwards to maintain labor costs in line with productivity and restore the labor market equilibrium. (And if not, a tax reform is certainly not the adequate tool of economic policy to remedy the malfunctioning of the labor market.) In the short run, however, the flat tax proposal could affect competitiveness. As we have seen above, the flat tax on value-added would probably not help Slovenia's competitive position, on the contrary. As concerns the flat tax on personal income, the result is not obvious, because the question demands a proper analysis of the export industry at the micro level to see who would profit and who would not.[24]

But what economies really do compete for is mobile factors of production – capital and skills. When it comes to capital, a flat tax setting may end up increasing its effective taxation, with consequences presented in simulations of section 2. The skills flow, however, is not embodied in our model, i.e. there is no labor mobility across countries. Is there a role for the tax setting in this context? Before jumping to quick conclusions, we must emphasize a few facts. First, the difference in wages across countries reflects more the difference in overall productivity and has much less to do with personal income taxation. Typically, net wages in Switzerland, Slovenia, Slovakia, China, etc., are multiples of each others, while differences in taxation are measured in percentage points of the wage, making it usually impossible for the tax system to offset the differences in net wages, even with a complete elimination of labor taxes. Second, other factors than net wages are often determinant in the choice to migrate or not, in particular for high skilled labor: social status, family relationships, work opportunities, etc. Statistically, after all, we can hardly detect mass emigration as overall the annual net outflow of Slovenian citizens was about 700 over the last five years.[25] Finally, if taxation of high skilled labor becomes problematic, one should adapt taxes on high skilled workers, but this is different from implementing a flat tax. In respect to this discussion it is interesting enough to note that the promoters of the flat tax in Slovenia propose to keep net wages constant, which of course does not contribute to render Slovenia more attractive for skilled workers.

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[23] See Andreoni, Erard and Feinstein (1998) for a review. Also, while Schneider and Ernste (2000) find that higher tax rates are likely to discourage compliance, Friedman et al. (2000) arrive at the opposite conclusion.

[24] Interestingly enough, the sectors where wages are currently highest in Slovenia and whose workers would profit most from personal income tax breaks are: financial intermediation; public administration; education; mining; health and social work; as well as electricity, gas and water supply. Of these, only mining produces a truly tradable good. See SORS (2005) "Structure of earnings statistics in 2003".

[25] See SORS (2005) "Population".

4. Conclusions

When deciding on the structure of the tax system, policymakers have to make choices on the interrelated and sometimes conflicting objectives of economic efficiency, welfare and simplicity. The research supporting reform decisions must therefore aim at providing as convincingly as possible evaluations of the expected effect on labor incentives, participation, production potential, welfare and the income distribution of the population. Another important issue concerns the transition effects between two economic equilibria and the possibility to compensate the losers in the reform process.[26] So far, the analysis as set forth by the Committee for Reforms is confined to a demonstration that this proposal is revenue-neutral, which clearly appears to be insufficient to motivate a tax reform. Also, no tax reform should be proposed only by comparing it to the current tax setting, but to all relevant alternatives.

The general equilibrium model simulations show under plausible assumptions that the current Slovenian tax system may be improved, both in terms of welfare and in terms of its impact on the potential GDP. The essential lessons for the tax reform design can be summarized in the following way: first, although the tax burden is partly transferred from labor to consumption in all but one simulation, the most preferred regimes retain some progressiveness on labor income taxation. The optimal tax is the more progressive, the more the individuals are risk averse, the more the productivity distribution is dispersed (risky) and the more individual labor supply is inelastic. Second, to improve participation, and therefore the potential GDP, taxes on low income workers must be taken into consideration. And third, in a small open economy it is particularly dangerous to increase the effective taxation on capital, since a lower investment and capital stock directly affect production, which also affects labor productivity and therefore wages. These results are strongly in line with other analyses of tax experiments found in the literature, which emphasize the importance of low effective capital taxation - crucial especially in a small open economy - and the significance of low average taxes for less skilled workers, essential for improving the labor participation rate.[27]

Note finally that the discussion in this paper is confined to the design of restructuring fiscal revenues in the context of revenue-neutral tax reforms. Much stronger welfare efficiency gains can be generated by a reduction of the tax burden resulting from an increased efficiency of the public sector. However, the results presented in this paper remain valid in that they are suggestive on how and on which tax categories to implement tax decreases so as to maximize welfare and efficiency gains. Yet another possible direction to explore in the improvement of the tax setting is to rethink the system of exemptions and deductions, in line with the well-known tax principle to "broaden the tax base and decrease tax rates". Concerning the reduction of the tax burden, the fact that the gradual elimination of the payroll tax is planned to be partially made possible by reduced government expenditures must therefore be seen as a step in the right direction.

5. Bibliography

Altig, David & Alan J. Auerbach & Laurence J. Kotlikoff & Kent A. Smetters & Jan Walliser, 1997. "Simulating U.S. tax reform," Working Paper 9712, Federal Reserve Bank of Cleveland.

Andreoni, James & Brian Erard & Jonathan Feinstein, 1998. "Tax compliance," Journal of Economic Literature, 36, 818-60.

Ĺvitsland, Turid & Jřrgen Aasness, 2004. "Combining CGE and microsimulation models: Effects on equality of VAT reforms," Discussion Papers 392, Research Department of Statistics Norway.

Bénabou, Roland, 2002. "Tax and Education Policy in a Heterogeneous-Agent Economy: What Levels of Redistribution Maximize Growth and Efficiency?," Econometrica, Econometric Society, vol. 70(2), pages 481-517.

Caprirolo, Gonzalo C. 2006. "Proportional ("flat") personal income tax rate and competitiveness in Slovenia: Towards understanding the policy issues and policy implications," International Academic Forum on Flat Tax Rate, February 2006 [available at http://www.cef-see.org/Gonzalo_Caprirolo.pps].

Cassou, Stephen P. & Kevin J. Lansing, 2002. "Growth effects of shifting from a progressive tax system to a flat tax," Working Papers in Applied

[26] Proponents of flat taxes often insist on the distinction between taxes and redistribution, arguing that taxation should be the most efficient possible (in their view, flat) and that redistribution should be left to transfers. This is also the idea behind the general deduction in flat tax settings. It is important to understand that the efficiency gains of flattening the tax rates in this context remain valid only if the transfers are lump-sum or means-tested, not income-tested. If income-tested, the system is equivalent to a progressive tax. But it transfers are lump-sum, i.e. the same for all regardless of the personal revenue, there may be significant losses in not efficiently targeting the population in need of redistribution.

[27] As put succinctly in a recent study by World Bank (2005), "the relative tax burden for low wage earners is much higher in EU8 (new EU members) than in EU15 and this is one of the other main concerns given the expected more negative employment consequences of the tax wedge for low-wage income earners (than for higher-wage earners)."

Economic Theory 2000-15, Federal Reserve Bank of San Francisco.

Castañeda, Ana & Javier Díaz-Giménez & José-Víctor Ríos-Rull, 1998. "Earnings and wealth inequality and income taxation: quantifying the tradeoffs of switching to a proportional income tax in the U.S," Working Paper 9814, Federal Reserve Bank of Cleveland.

Caucutt, Elizabeth M. & Selahattin Ýmrohoroğlu & Krishna B. Kumar, 2003. "Growth and Welfare Analysis of Tax Progressivity in a Heterogeneous-Agent Model," Review of Economic Dynamics, Academic Press for the Society for Economic Dynamics, vol. 6(3), pages 546-577.

Chamley, Christophe, 1986. "Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives," Econometrica, Econometric Society, vol. 54(3), pages 607-22.

Conesa, Juan Carlos & Dirk Krueger, 2005. "On the Optimal Progressivity of the Income Tax Code," NBER Working Papers 11044, National Bureau of Economic Research, Inc.

Damijan, Jože P. & Sašo Polanec, 2005. "Davčna reforma za povečanje konkurenčnosti slovenskega gospodarstva," mimeo.

Davis, Steven J. & Magnus Henrekson, 2004. "Tax Effects on Work Activity, Industry Mix and Shadow Economy Size: Evidence from Rich-Country Comparisons," NBER Working Papers 10509, National Bureau of Economic Research, Inc.

Disney, Richard, 2000. "The Impact of Tax and Welfare Policies on Employment and Unemployment in OECD Countries," IMF Working Papers 00/164, International Monetary Fund.

Dolenc, Primož & Milan Vodopivec, 2005. "Tax wedge on labor: Slovenia vs. EU and OECD countries," Managing the Process of Globalisation in New and Upcoming EU Members, Proceedings of the 6th International Conference of the Faculty of Management Koper, November 2005.

European Commission, 2005. "VAT Rates Applied in the Member States of the European Community."

Eurostat, 2005. "Structures of the taxation systems in the European Union," Luxembourg: Office for Official Publications of the European Communities.

Friedman, Eric & Simon Johnson & Daniel Kaufmann & Pablo Zoido-Lobaton, 2000. "Dodging the grabbing hand: the determinants of unofficial activity in 69 countries," Journal of Public Economics, Elsevier, vol. 76(3), pages 459-493.

González, Marta & Josep Pijoan-Mas, 2005. "The Flat Tax Reform: A General Equilibrium Evaluation For Spain," Working Papers wp2005_0505, CEMFI.

Heckman, James J. & Lance Lochner & Christopher Taber, 1998. "Tax Policy and Human-Capital Formation," American Economic Review, American Economic Association, vol. 88(2), pages 293-97.

Ivanova, Anna & Michael Keen & Alexander Klemm, 2005. "The Russian 'flat tax' reform," Economic Policy, CEPR, CES, MSH, vol. 20(43), pages 397-444.

Jones, Larry E. & Rodolfo E. Manuelli & Peter E. Rossi, 1993. "Optimal Taxation in Models of Endogenous Growth," Journal of Political Economy, University of Chicago Press, vol. 101(3), pages 485-517.

Judd, Kenneth L., 1985. "Redistributive Taxation in a Perfect Foresight Model," Journal of Public Economics, 28 (October 1985), pages 59-84.

Lee, Young & Roger H. Gordon, 2005. "Tax structure and economic growth," Journal of Public Economics, Elsevier, vol. 89(5-6), pages 1027-1043.

Lucas, Robert E., Jr, 1990. "Supply-Side Economics: An Analytical Review," Oxford Economic Papers, Oxford University Press, vol. 42(2), pages 293-316.

Odbor za reforme, 2005. "Predlog konceptov ekonomskih in socialnih reform za povečanje konkurenčnosti slovenskega gospodarstva," 28.september.

Padovano, Fabio & Emma Galli, 2001. "Tax Rates and Economic Growth in the OECD Countries (1950-1990)," Economic Inquiry, Oxford University Press, vol. 39(1), pages 44-57.

Pikkety, Thomas & Emmanuel Saez, 2006. "The Evolution of Top Incomes: a Historical and International Perspective," NBER Working Papers 11955, National Bureau of Economic Research, Inc.

Schneider, Friedrich & Dominik Enste, 2000. "Shadow Economies: Sizes, Causes, and Consequences," Journal of Economic Literature, 38, 77–114.

Slemrod, Joel, 1985. "The Return to Tax Simplification: An Econometric Analysis," NBER Working Papers 1756, National Bureau of Economic Research, Inc.

SORS, 2005. "Structure of earning statistics in 2003", Statistical Office of the Republic of Slovenia, Rapid Reports, No 296, 29 December.

SORS, 2005. "Population", Statistical Office of the Republic of Slovenia, Rapid Reports, No 197, 12 September.

Stokey, Nancy L. & Sergio Rebelo, 1995. "Growth Effects of Flat-Rate Taxes," Journal of Political Economy, University of Chicago Press, vol. 103(3), pages 519-50.

Ventura, Gustavo, 1999. "Flat tax reform: A quantitative exploration1," Journal of Economic Dynamics and Control, Elsevier, vol. 23(9-10), pages 1425-1458.

Vlada Republike Slovenije, 2005. "Okvir gospodarskih in socialnih reform za povečanje blaginje v Sloveniji," 2.november.

World Bank, 2005. "World Bank EU-8 Quarterly Economic Report," April 2005.

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Proportional ("Flat") Personal Income Tax Rate and Competitiveness in Slovenia: Towards Understanding the Policy Issues and Policy Implications

Summary

The Slovenian policy model has performed relatively well over the last decade in terms of efficiency (rate of employment) and equity. It has delivered an uninterrupted economic expansion at a rate of about 4% which is in line with the level of productivity. Thus, the welfare has improved and accessibility to its benefits has been broad. The human development index 2005 has ranked Slovenia's wellbeing among the highest 24 countries. These achievements have been made while preserving competitiveness of the economy and without major macroeconomic imbalances.

The issue at stake is whether a flat tax reform can contribute to further improvement and upgrading these achievements (i.e. increase aggregate output and welfare gains for all). The assessment of the likeliness of such a development presented in this paper indicates that there are potential risks in the short term that should be carefully assessed with respect to labor participation of unskilled workers and labor intensive industries performance. As a result of the introduction of a flat tax rate, the inequality statistics of the economy can also deteriorate. The paper argues that under an unchanged net wage flat tax reform (Slovenian proposal) the impact on labor costs will be similar as in the case of standard flat tax reform in which the net wage adjusts to the new flat tax rate and gross wage remains constant. The impact of both types of reforms under the parameters proposed (20% flat tax rate and 19.5% APW fixed tax deduction) is similar in terms of labor participation of unskilled workers and output. Both types of reform are likely to generate adjustment costs affecting low skilled workers and labor intensive industries in the short run. Gains in output depend critically on the overall elasticity of labor supply. Additional impact on output could come from the unburdening of income of high skilled workers and their income split between consumption and savings (investment). The standard flat tax reform seems to perform better in the short-term than the Slovenian proposal as it dispels uncertainty with respect of short-term wage adjustment of high skilled workers to the pre-reformed gross wage (clear incentives). The flat tax reform could enhance incentives for improving education attainment. This objective should be carefully scrutinized against the efficiency of alternative instruments to achieve this key goal which should be at the top of policy priorities. The paper in search for a win-win situation proposes an alternative avenue for personal income tax reform which suggests gradual carving down of average and marginal tax rates below the existing ones without affecting labor incentives and equity. A critical input for further progress in personal income tax reform remains the final assessment of the effect of the recently adopted personal income tax (split system) with respect to labor incentives it generates for high skilled workers. A related important issue remains the financing of the reduction of the so-called "payroll tax".

After the government decision on the gradual elimination of "payroll tax" in November 2005, any discussion of labor taxation in Slovenia should take into account that the tax wedge for an average production wage earner will be reduced to a level slightly above Mediterranean EU countries. Additional unburdening of labor costs for employers (i.e. reduction of employer's social security contributions) that would not result in reducing pension and welfare benefits can be done at expense of reducing personal income tax (i.e. increasing net wage) to zero and thus transferring the risk of financing pensions and health to individuals. In this case, for an average production wage earner the maximum extent that employers' social security contribution could

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be reduced would be about 11% of gross wage. From that point onwards the complete elimination of employers' social security contribution can be carried out only at the expense of cutting pension and health care benefits. In light of population ageing, the challenge for Slovenia seems to be more on the side of avoiding increase of social security contributions rather than of cutting social security contributions. Furthermore, in facing the perils of globalization and population ageing, the key policy questions to address are whether the overall tax and social security system will be changed to increase the income uncertainty faced by households and if not, what could be done to improve the efficiency of existing policy arrangements that provide a relatively high degree of risk pooling. A step in this direction is to preserve the progressivity of the tax system while searching for efficiency gains as proposed in the paper.

Introduction

A proposal for introducing a proportional (flat) tax rate on personal income – subject to impact assessment of its introduction, social consensus and alternative better options – has been approved by the government. To date there is no formal government proposal regarding the specific features of the flat tax rate regime (e.g. the level of the rate and the size of the single tax allowance). The available information as to the specific features of the personal income flat tax system can be inferred only from the paper written by Messrs Damijan and Polanec (2005). The purpose of this paper is to contribute to the final assessment by the government on further potential changes to the personal income tax system just recently modified at the end of 2005. In particular, the paper touches upon the key issues to be observed in the tax reform (efficiency and equality) and the likely impact of the reform as envisaged in the labor market and economic activity. The analysis presented might also contribute to enhance the research agenda that needs to be consummated in order to thoroughly assess the impact of the introduction of a flat tax regime.

The paper builds on two key tax reform changes that took place in late 2005: the gradual elimination of the payroll tax and the systemic change from the former income tax regime that used to tax all types of income at progressive rates to the current system (split-system) that taxes labor related income and pensions at progressive rates (five tax brackets) and capital related income (interest, dividends and capital gains) at a single reduced rate of 20%.

The paper is divided in four sections. The first section aims at characterizing the main features of the Slovenian social model, reviewing labor market characteristics, and key indicators such as competitiveness, productivity and education. This section should provide the general background against which any tax reform should be assessed. The second section looks at the main features of the current tax system to determine its main characteristics. The third section presents an assessment of the impact of the introduction of the flat tax regime. The assessment is made with respect to the main objective it pursues which is unburdening the Slovenian economy, particularly by reducing the gross labor cost.[1] The final section provides policy recommendations.

1. Slovenian Social Policy Model

An important policy change such as the introduction of a flat tax reform should be assessed against the background of the current Slovenian policy model in order to disentangle its impact. According to Boeri (2002) and Sapir (2005) EU national welfare systems can be grouped in four different social policy models. Nordic countries model is characterized by the highest level of expenditure in social protection and universal welfare provision. Redistribution via tax and transfers is the highest in EU. As a counterpart, the share of tax revenue in GDP is also the highest. Strong labor unions determine wage compressed structures. Anglo-Saxon countries (UK and Ireland) feature a social assistance system of last resort. Transfers are oriented to people in working age. Tax revenue in GDP is the lowest in the former EU-15. Labor unions are weak, the wage dispersion is wide, and there is a relatively high incidence of low-pay employment. Continental countries (Austria, Belgium, France, Germany and Luxemburg) feature an extensive array of insurance-based, non-employment benefits and old-age pensions. Their share of tax revenue in GDP is lower than in the case of Nordic countries but higher than in Anglo-Saxon countries. Unions are relatively strong

[1] For a comparative assessment of the institutional features of a flat tax regime in light of tax principles see Kranjec (2005). According to the author the proportional income tax has no clear advantage over the progressive tax system with respect to any of the principles that are part of a good tax system (efficiency, transparency, simplicity and fairness).

and they influence the wage outcome to non-union negotiations. Redistribution via tax and transfers lay in the median position for Continental and Anglo-Saxon countries. The fourth model is from Mediterranean countries (Greece, Italy, Portugal and Spain) where social spending is concentrated on old-age pensions and entitlements are segmented and vary with status. Redistribution via tax and transfers is the lowest in EU-15. The tax revenue in GDP, with the exception of Italy, is lower than in the continental model but higher than in the Anglo-Saxon model. They feature a high degree of employment protection and early retirement provisions. The wage structure is - at least in formal sector - covered by collective bargaining and compressed.

The Slovenian social model to a large extent concurs to the Nordic model. It features a high level of expenditure in social protection as well as universal welfare provision. Taxes, social security contributions and transfers play an important role in income redistribution. However, the share of tax in GDP is lower than in Nordic countries while old-age expenditure in pensions is relatively high. Inequality of income distribution and poverty after taxes and transfers in Slovenia is among the lowest in the EU-25, and similar to Nordic countries the wage structure is relatively compressed.

According to Sapir (2005) the performance of the four social models can be assessed based on two criteria: efficiency and equity. An efficient model is one that provides sufficient incentives to work, thus generating high employment rates. A model is equitable, if it keeps the risk of poverty low. Taking into account the probability of escaping poverty and employment rate the Slovenian social model can be grouped close to the Nordic model (Figure 1) which ranks above EU-15 average in terms of both indicators. Undoubtedly, such an outcome is related to the underlying policy arrangements and institutions influencing labor market outcomes.

The Slovenian model compared to the Nordic model seems to perform poorly in terms of employment in spite of higher participation rate (82.5%) than in the EU-15 (77.2%) in the age range 25-54 years. This is due primarily to the very low employment rate among the group aged 55-64 ((23.5% in Slovenia) compared to the EU-15 average (41.7%). This can be attributed to a large extent to the number of early retirees after independence in 1991. The relatively low share of employees aged 55-64 is an important policy challenge.

The Slovenian social model has allowed an uninterrupted economic expansion after early recovery from independence. The average real GDP growth rate in the past ten years has been close to 4%. Such a growth rate is fully in line with the level of productivity achieved by Slovenia which places it among the middle developed countries in the EU-25 (Figure 2). The Slovenian average growth rate is also consistent with the resulting rate from the correlation observed in the EU-25 between productivity level and potential GDP growth as recently estimated by the EU Commission (2005) for the periods 2004-2010 and 2011-2030 (Figure 3). It is also possible to see from Figure 3 that the ageing of the population is a key challenge resulting in a decline in the potential GDP growth from 3.7% in the period (2004-10) to below 3% in the period (2011-30). Furthermore, according to the EU Commission, the GDP per capita of Slovenia will reach 94% of EU-15 by 2030 and will remain in that level thereafter. The Slovenian productivity level will finally catch up with that of the EU-15 by 2050.

The Slovenian social model has delivered a relatively low unemployment rate (the fifth lowest among EU-25 (5.9% November 2005). Unemployment in Slovenia affects predominantly low skilled workers which represents the same policy challenge as in most EU-15 countries[2]. This can be attributed to the gradual shift away from 'traditional' low-skilled work industries towards services and higher value-added manufacturing. The labor outcome in Slovenia is partly the result of an employment protection legislation which provides an EU-25 average protection to workers but which is lower than the protection provided by the Mediterranean and Continental European models (Figure 4). Another element characterizing labor market is the close-to-average (EU-25) availability of flexible forms of employment in Slovenia due to the underdeveloped part-time employment (Kajzer 2005). A third item characterizing labor market arrangements is the wage bargaining mechanism which is relatively highly centralized and influences the wage structure which is relatively compressed.

An important area that deserves particular attention is labor force education attainment. While about half of the persons employed in Slovenia have an educational attainment of at least secondary

[2] In Europe unemployment rates are higher for low skilled workers than for those with post-16 education. In some Member States unemployment rates among those with low educational attainment is four times the level for graduates 'Towards full employment in the European union', HM Treasury, DTI, DWP, 2002.

education this level seems lower than for example in Nordic countries (OECD (2004)). The share of individuals with tertiary education is low while the shares of individuals with primary school with qualification and non qualified individuals are relatively high (Figure 5). Lower education attainment (primary school with qualification and non qualified individual) is particularly high in tradable sectors of the economy (e.g. manufacturing (Figure 6). Taking into account the relatively high share of individuals with low education attainment, which to a large extent reflects the current industrial base, this situation might argue for ranking educational attainment as a top policy priority and for a very careful management of the transition of the economy towards a high skill based economy. Among the policies considered towards increasing education attainment should be not only those whose causality runs from relative wages to labor supply and vice versa but also from demand to supply as most progress in technology is skill biased.

When assessing a personal income tax reform or in general a reform affecting labor income it is critically important to estimate the labor supply elasticity with respect to changes in net wage as labor supply is the driving force behind the post-reform efficiency gains (i.e. increase in employment). In particular, starting from an equilibrium position in which gross wage equals productivity, changes in marginal and average tax rates affect labor decisions on labor market participation and work effort. For Slovenia, in absence of empirical estimates of labor supply elasticity and taking into account labor market characteristics and institutions briefly discussed above, it can be argued for a relatively inelastic labor supply, at least for high skilled workers (short in supply) and a relatively high degree of real wage rigidity, particularly in the private sector. Such an assumption seems to be broadly in line with empirical estimates of labor supply elasticity in other countries.[3]

The issue of the empirical relationship between taxes on labor, labor costs and effect on employment is hotly debated in the literature and empirical evidence is at variance. Arpaia and Carone (2004), for example, argue that there is a lack of a significant long-term influence of the tax wedge on wage costs. On the effect of labor cost on employment, Nickell and Layard, (1991, 1994, 1999), argue that in the long-term change in the tax wedge leaves equilibrium unemployment unaffected. These results partly contrast with the results of Daveri-Tabellini (2000) and World Bank (2005). The key issue at stake seems to be the response of different groups in labor market to changes in the tax wedge in light of the central finding in the empirical labor market literature that the extensive margin of labor supply (whether or not to work at all) is more important than the intensive margin (hours worked for those who are working).[4]

Besides labor force and labor market characteristics underpin-ning current policy model, an important dimension to look at is labor cost evolution and its relation with productivity develop-ments and thus relative competitiveness. Different indicators related to labor cost competitiveness indicate that Slovenian competitiveness has remained broadly satisfactory. The dynamics of the real unit labor cost, a key measure capturing changes in (labor) cost-competitiveness, shows that labor cost in Slovenia has declined below the 1995 level and remains stable (Figure 7). The ULC-based real effective exchange rate and the relative profitability index have also remained broadly unchanged since 1998. Beyond labor costs, if we look at competitiveness in terms of the ability of Slovenia's goods to withstand competition in the key export market, we observe that the export market share in the EU-15 has experienced a sustained recovery since 2001 (IMAD 2005).

An important question to address is what policies can enhance labor contribution to the competitiveness of the economy and what should be the priority. Two types of policies can be pursued: policies that focus on reducing the cost of labor and/or policies that enhance the ability and productivity of labor. Among the policies that can lower labor cost are those that reduce labor taxes (i.e. tax wedge). In this regard, the government in 2005 decided to abolish payroll tax and its effect on labor costs has to be carefully monitored. However, the reduction of labor cost via reduction of taxes is subject to limits and can not be the primary tool for pursuing competitiveness. For example, even in the case that total taxes related to labor will be eliminated at once in Slovenia, this will not result in lower labor cost in absolute terms in Slovenia than in most new EU members (Figure 8). On the other hand, if we compare labor cost in Slovenia with the EU-15 average, labor cost in Slovenia will remain cheaper at least up to around 2030.

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[3] A survey of 65 labor economists conducted by Fuchs, Kruger and Potreba (1998) found that the labor supply elasticity for men is 0.18 and 0.43 for women.

[4] See Immervoll et al 2005.

Another limit on pursuing competitiveness by reducing the tax wedge is given by the required financing of pension and health benefits. In particular, the maximum extent to which employers' social security contributions can be reduced without hurting pension and health benefits is given by the elimination of personal income tax. However, even in this case employer's social security contributions will not be completely eliminated, but the reduction of employer's social security contributions will imply transferring the risk of financing health and pensions to individuals.

Given the limits to pursue competitive gains based on reducing the tax wedge, the policy priority should be to focus on rising labor productivity rather than primarily on reducing labor cost which, otherwise, reflects the level of productivity achieved. Furthermore, changing the tax wedge can have important consequences on equity that deserve careful evaluation. Of course, redistributing the tax burden from high skilled workers to low skilled workers could, for example, in the long run change incentives for rising education attainment, but such a policy has to be assessed against the effectiveness of the policy in itself and in light of the effectiveness of other available policy instruments. However, beyond any theoretical consideration about the transition to a labor skill biased economy any serious analysis of this process, which is beyond the purpose of this paper, should start from a diagnosis of the current matching between labor skill and current industrial structure, the labor demand structure and its evolution. Before assessing the impact of the tax reform proposal, next section looks broadly at the main features of the current tax system.

2. The Current Tax System

The Slovenian social policy model is underpinned by a relatively high share of tax revenue in GDP (on average 40% during 1995-2002 (Figure 9)). This share is lower than in the Nordic and Continental social policy model. The bulk of tax revenues are taxes on goods and services and social security contributions (72%) which are regressive taxes although the VAT has two rates (standard and reduced rate) implying certain degree of progressivity (Figure 10). The total share of these taxes and social security contributions in total tax revenue is higher than the average of EU and US (62%). The share of income tax revenue is also relatively low (20.1%) compared to the average of these countries (31.1%). Tax on personal income arising from labor and pension is levied at progressive tax rates (five tax brackets) while income from capital (interest, dividends and capital gains) at a single flat tax. At aggregate level the bulk of labor tax are social security contributions (two thirds). Corporate income tax (CIT) is levied at a single rate of 25%. CIT is subject to some exemptions (mainly R&D).

A distinctive feature of the Slovenian system until 2005 was the so-called payroll tax levied on employers paying social security contributions at progressive rates. The tax is being gradually abolished between 2006 and 2008. The payroll tax revenue represented about 2% of GDP in 2004 and its share in total tax revenue is higher than tax revenue on property which in turn is among the lowest in EU.

In terms of their relative size in GDP, VAT and personal income tax (PIT) exhibit distinctive features. VAT revenue in GDP (8.9% average 2000-2005) is among the highest in EU-25 (Figure 11) while PIT is the seventh lowest in EU (6% on GDP (Figure 12)). While there is not much work done on revenue collection in general, a study on Slovenian pension system (Wiesse 2004) indicates that pension system has a high contribution compliance rate. VAT revenue collection also seems to be in line with a rule of thumb that attributes 1% of GDP VAT tax revenue to two percentage points of VAT rates. In the case of PIT, the low revenue collection can be attributed to relatively low tax rates applied to the bulk of personal income taxpayers (90%) up to 167% average production wage earner (APW). In particular, Figure 13 shows that the effective tax rates up to 167% APW in Slovenia are below the EU average.[5]

Despite the fact that effective tax rates for individuals earning a wage up to 167% APW are relatively low in Slovenia, the top statutory and marginal rates are high (Figure 14). This is also a distinctive feature of the Nordic social policy model. Notice also in Figure 14 that among EU countries-members of the OECD there is no country except Slovakia (after the flat tax reform) with a top statutory PIT rate lower than 40%.

With regard to progressivity of personal income tax system up to 167% APW Figure 15 shows that the degree of progres-sivity in the Slovenian tax regimes, calculated for each country by standardizing

[5] The Slovenian effective tax rates ranked according to multiples of APW among EU-25 in 2003 as follows: eleventh lowest on 67% APW; sixth lowest on 100% APW and; fifth lowest on 167% APW.

the tax schedules by their respective tax rate on an individual earning 67% AWP, is not exceptionally high or extreme. The degree of progressivity of the Slovenian PIT is slightly higher than the simple arithmetic average of the EU-15 countries and is lower than the degree of progressivity in Ireland. In the case of Nordic countries the progressivity is lower but the effective tax rates are more than double (Figure 13).

The distribution of PIT payers in Slovenia shows that about 69% of taxpayers earning up to the average APW pay 20% of tax revenue and the bulk of taxpayers (90%) earning up to 167% APW pays up to half of personal income tax revenue (Figure16). The concentration of income tax on the top of the income distribution might look abnormal but data on the US show that for example the top 5% of taxpayers pay about 54.5% of total tax revenue while in Slovenia the top 10% of taxpayers pay 55.5% of total tax revenue. The top 1% in the US pays 33% of PIT while the top 1.2% in Slovenia pays 19.8%. It is likely that after the introduction of a reduced rate on personal income tax on capital in 2005 the burden on top income payers will be reduced (Table 1).

Before assessing the potential impact of the flat tax reform two key tax reform measures taken in 2005 affecting tax on labor deserve attention: the transformation of the PIT system from a system that taxed all income at progressive rate into a so-called split-system by which labor and pension income are taxed at progressive rates while income from capital is taxed at single lower rate of 20% (Table 2). Such a system is now similar to that of Norway.

The other important change mentioned above is the gradual phasing out of the payroll tax (the progressive levy on employers paying social security contributions for their employees). While a thorough analysis of the impact of the recent change in PIT system on average and marginal tax rates, savings and investments has to be made, in the case of the payroll tax the impact of reducing total labor cost is clear. In particular, the tax wedge taking into account the total labor cost before the reform, including total social security contributions and personal income tax for individuals earning above the threshold upon which the payroll tax is paid, will be reduced by more than three percentage points depending on wage level (Figure 17). Since the payroll tax is not part of employees' income, but a direct cost to the employer, its elimination will not affect labor supply but will reduce the absolute cost of labor and relative cost of high skilled labor with potential positive effect on labor demand and employment.

In relative terms the tax wedge for a 100% APW in Slovenia comparing with EU countries members of the OECD and US will be reduced as percentage of new labor cost from being the highest ninth (43.9%) to the highest thirteenth (Figure 18). The tax wedge as percentage of the labor cost before the reform (Figure 17) will be close to those in Mediterranean EU countries (Figure 18). Notice also that the share of payroll tax in GDP is about 2% of GDP. The financing of its reduction as foreseen in the Slovenian Convergence Program 2005 will result in a decline of total tax revenue of about 1% of GDP by 2008. Such a reduction can not be considered as negligible if we take into account that the tax burden in Slovakia after the major flat tax reform dropped by approximately 0.5% of GDP in 2004 (Krajčír and Ódor 2005).

Further reduction of labor tax in Slovenia, particularly employers' social security contributions, without reducing health and pension benefits and hindering the financial position of Health and Pension funds, can be carried out by reducing personal income tax rates (i.e. increasing net wage) and, in the extreme by eliminating it. After such policy scenario employers' social security contributions will be still positive (5.4% of gross wage) while the risk of financing pension and health will be transferred to individuals (Figure 19). From that point onwards, further reduction of the payroll tax can be done only by cutting pension and health benefits beyond what the ageing of population already demands. Such a policy will result in reducing the collective insurance against globalization resulting from risk pooling of the population.

3. The Flat Tax Proposal and Its Impact

To date there is no formal government proposal regarding the specific features of the flat tax rate regime (e.g. the level, the size of the single allowance and other). There is only the government decision of introducing a proportional (flat tax rate) on personal income, subject to impact assessment of its introduction, social consensus and alternative better options. The available information as to the specific features of the personal income flat tax system can be inferred only from the paper written by Messrs Damijan and Polanec (2005). This section looks at that proposal in terms of the key objective it pursues with the aim to enrich the research agenda, highlight the key policy issues and policy implications.

The purpose of the flat tax proposal is to unburden the Slovenian economy and establish conditions for increasing its competitive power on the world's

markets. The flat tax rate on income will: i) reduce substantially the gross labor costs of Slovenian businesses thus increasing business profits that will be spent on enhancing their technological capacity and increase employment and; ii) reduce the relative price of high skilled employees with respect to low skilled employees enhancing the employability of high skilled workers.

A single flat tax rate of 20% on income and a single tax allowance of 19.5% APW will be introduced replacing the current progressive PIT split-system with its five tax brackets, tax allowances including a general tax allowance of 17.7% APW. The reforms rests on the key assumption that net wages will not change after the reform, thus the reform will improve the profitability of enterprises employing high skilled workers. The constant net wage feature makes the Slovenian flat tax reform different to standard flat tax reforms (e.g. Estonia, Russia, Slovakia) in which gross wage remains constant while net wage adjusts as a consequence of the replacement of tax brackets by a single tax rate.

The Slovenian flat tax reform is conceived to be revenue neutral by means of offsetting the reduction in PIT revenues with the revenues resulting of introducing a single VAT rate of 20% (the VAT reduced rate will increase from its current level of 8.5% to 20%).

The analysis of the flat tax proposal focuses on the key objective of the reduction of gross labor costs, as the aim of enhancing the employability of high skilled workers is less of a policy issue given the fact that most of skilled individuals are already employed. In looking at whether the flat tax reform will result in reducing gross labor cost, the Slovenian flat tax reform and a standard flat tax reform are compared in order to evaluate whether they produce different outcomes (efficiency and equity) and to determine the relative effectiveness in delivering the objective the flat tax reform pursues.

The starting point of the analysis is the impact of the flat tax reform on gross wage in the short and long run when the adjustment in labor market has been completed. In the case of Slovenian flat tax reform proposal, leaving aside the implementation issues related to assuring that the net wage remains unchanged, the resulting gross wage - when applying the new 20% tax rate and taking into account the general tax relief and employee's social security contributions -, will vary according to wage level. From the theoretical point of view the change in gross wage resulting from keeping constant net wages will be equivalent to inducing disequilibrium between gross wage and productivity levels. On average the gross wage will increase for individuals earning low incomes up to 100% APW while it will decline for individuals earning higher wage than the average (Figure 20). In this case some enterprises, but only those enterprises employing high income earners, can in fact reduce labor cost while those enterprises employing low income earners will have to increase their labor cost.

In the case of a standard flat tax reform that leaves the gross wage at its pre-reform level but adjusts net wages, the result of the 20% tax rate will be the reduction of average net income for those individuals earning up to 100% APW (Figure 21). On the other hand, net income for those individuals earning above the 100% APW will increase.

The impact on gross wage in the case of the Slovenian proposal or on net wage in the case of flat tax proposal, besides income level, will also depend on individual's status. In the first case and in the short run the gross wage will increase particularly for individuals with one child earning up to 100% APW (Figure 22). On average, the gross wage will increase for low skilled labor force and decrease for high skilled labor force (Figure 22).

A further insight on the impact of the flat tax reform can be obtained by looking at the labor supply and demand responses to changes in the tax system and to the adjustment of the labor market to the new equilibrium.

The effect of the flat tax reform on the labor supply response can be assessed by looking at the average tax rate (total taxes divided by pre-tax income) or effective tax rate and the marginal effective tax rate (taxes due from an additional tolar of income) which both affect labor supply decisions. The average rate (extensive margin of labor supply) affects decisions regarding labor market participation, while the marginal tax rate (intensive margin) affects decisions regarding working hours for those who are working. Further and more comprehensive insight on the impact of the flat tax reform on labor supply decisions can be obtained from looking at the composite marginal tax rate which considers labor taxes as a composite of income, payroll, and consumption taxes (Moore 2005).[6] This is particularly

[6] According to Nickell (1997) the relevant tax rate for the labor market is the sum of the payroll, personal income, and consumption tax rates; and that payroll taxes will be shifted onto workers assuming capital is mobile internationally. Consumption taxes including the VAT may be regarded as labor taxes in the long run, because neither a tax on consumption nor a tax on labor income directly affects the return that can be achieved on savings.

relevant because the 20% flat tax reform is not revenue neutral (i.e. total tax revenue is reduced) and as a consequence it is envisaged the increase in the VAT reduced rate to 20% to offset the tax revenue short-fall. The change in PIT tax rate and increase in effective VAT tax rate will affect worker's income net of all taxes and thus labor supply. Thus a comprehensive assessment of the reform should look at overall tax incidence and labor supply incentives as captured by the composite marginal tax rate. [7]

The effect of the tax reform on average tax and effective marginal tax rates can be analyzed also under the light of the two types of flat tax reforms: Slovenian flat tax reform and standard flat tax reform. In the first case, although the average tax rate changes due to the recalculation in gross wage this change does not have impact on labor supply decisions as the net wage remains constant (Figure 23). The impact of the increase of average tax rate affecting gross wages is born by labor demand though changes in gross wages. Figure 24 shows the effect of changes in average tax rate for all tax payers according to their income as percentage of the pre-reform wage level. The average tax rate increases for 70% of tax payers, particularly for those that are unskilled workers.[8]

In the case of the standard flat tax reform, the average tax rate will increase for low skilled workers up to 100% APW depending on individual status (e.g. individual with one child) but the average tax rate for high income earners or skilled workers will be reduced (Figure 23). In this case, given the fact that net wages will change the labor supply incentives and decisions will be also modified.

With respect to marginal tax rates, in the case of the Slovenian flat tax reform, given that net wages will remain constant, there will be perceived by the labor force as if no changes on marginal tax rates will have taken place (Figure 25). The effect of changes in gross wage (i.e. higher for low skilled workers and lower for high skilled workers) will not affect net income and will thus not affect labor supply decisions.

In the case of a standard flat tax reform the marginal tax rate will decline for all tax payers except for low skilled workers. The adverse impact on low skilled workers' labor supply effort will depend on their status. For example, the marginal tax rate will increase more for unskilled workers with one child than for a single individual (Figures 26 and 25). Skilled workers will benefit from reduced marginal rates and could increase labor supply effort.

If the impact of the flat tax reform on income and the VAT increase is considered as captured by the composite marginal tax rate, then under the Slovenian flat tax reform the composite marginal rate will increase for all workers and proportionally more for low skilled workers (Figures 27 and 28). This will be the case because the effective VAT tax rate faced by low income earners is higher than for high income earners. In this case the effect of the reform will also be more adverse for individuals with one child. The overall impact of the upward shift in composite marginal tax rates could result in labor supply reduction (labor participation and effort).

In the case of a standard flat tax reform the composite marginal tax rate will be reduced for high skilled workers but increased for low skilled workers (Figures 27 and 28).

Depending on whether the net wage will remain constant at the time of implementing the flat tax reform, two scenarios for the labor supply response can be envisaged. In the case of the Slovenian flat tax reform, where the average and marginal tax rates will not change from the point of view of labor, the overall labor supply should not be affected. However, the increase in the composite marginal tax rate due to VAT increase could discourage effort across all taxpayers.

Alternatively, under a standard flat tax reform the labor supply response would be mixed. The higher average tax on low skilled labor force will deter labor participation and high marginal rates could reduce their labor effort. On the other hand, low average and marginal rates could increase labor supply of high skilled workers (particularly the effort). The overall response of labor supply will be undetermined. According to the theory the extensive margin of labor supply (whether to work or not at all) is more important than the intensive margin (additional working hours of those working). Empirical evidence shows that the participation elasticity is largest at the bottom of the distribution (Eissa and Liebman (1996); Meyer and Rosenbaum (2001); Immervoll et al (2005). In practice, the overall response will depend on whether high skilled workers have flexibility to set their hours worked and whether there are enough forms of flexible work.

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[7] In the case of the Slovenian flat tax reform the employers' social security contribution will have to increase. This would further increase the labor cost of unskilled workers but only offset the gains of reducing PIT on skilled workers.

[8] It is assumed that income level is associated with the skilled level. Low income level relates to low skills while high income level to high skills.

For the labor demand response we can also identify two scenarios depending on whether the net wage remains unchanged. Under the Slovenian flat tax reform the relative price of low to high skilled workers will increase. Therefore, low wage intensive industries will reduce labor demand as it depends on gross wage.[9] On the other hand, industries employing high skilled workers could increase labor demand or –as the envisaged reform proposes-- enterprises could enhance their technological capability by investment. This in turn could reinforce the skill biased policy orientation of the underlying policy.

Under a standard flat tax reform the labor demand will remain in equilibrium (gross wage equals marginal productivity). The effect of the increase in VAT on wages and on labor demand in both types of reform remains undetermined as it is the result of wage negotiations.[10]

Depending on the type of PIT tax flat tax reform chosen, the adjustment of the economy, the transition to the new Slovenian policy model (i.e. with lower employment rate but biased in favor of high skilled labor) will be different and with different degree of certainty. In the case of the Slovenian flat tax reform, labor demand will be the driving force in the labor market adjustment towards the equilibrating gross wage (pre-reform level) and to lower employment of unskilled workers (ceteris paribus). In the case of the standard flat tax reform, labor supply will drive the adjustment dynamics on the labor market towards the new employment rate level with potentially lower number of unskilled workers.

In the case of the Slovenian flat tax reform the transition in the labor market to the new equilibrium is likely to be as follows: The higher gross wage will reduce labor demand for low skilled workers driving gross wages to the pre-tax reform gross wage level. The output in low skilled industries is likely to decline.[11] On the other hand, the excess labor demand for high skilled workers depending on their labor supply elasticity will drive gross wages to the pre-reform gross wage level and increase labor supply effort (Figure 29). As a result of these conflicting labor supply responses, the overall economy could enter into an uncertain adjustment path –short term adjustment of labor market conditions and activity in labor intensive industries– towards the new Slovenian social policy model.

Under a standard flat tax reform scenario, the transition is likely to be as follows: the participation of low skilled workers could decline as net wage will be reduced. On the other hand, high skilled labor supply effort could increase depending on labor supply elasticity. Overall effect on output will depend on high skilled labor supply response (relatively scarce (Figure 5)), offsetting the adverse impact on low skilled labor supply. Under this scenario, the transition to the new Slovenian social policy model could be less uncertain as the net income level of high skilled workers will increase instantaneously over-compensating the loss of real purchasing power due to increase in VAT.

Disregarding practical-legal issues of implementing the Slovenian flat tax reform proposal, even if the tax reform starts from an induced disequilibrium position in which gross wage is different than productivity level, the market mechanisms will drive the economy to a similar outcome as in the case of the standard tax flat tax reform in which the gross wage will remain at the pre-reform level. Thus, the gross labor cost in equilibrium will not be reduced as a result of implementing the Slovenian flat tax reform proposal (Figure 29). Such an outcome is in line with the theory (which indicates that in a market economy gross wage equals marginal productivity; if not, government could be able to tax infinitely) and with the empirical evidence that suggests that there is a lack of significant long-term influence of the tax wedge on wage costs (Arpaia and Carone (2004)). The Slovenian 2004 PIT reform and Slovakian flat tax reform also indicate that net wages change after a personal income tax reform.

While in equilibrium there will be no gross labor cost unburdening in the process of adjustment to the new equilibrium the performance of labor intensive industries is likely to be adversely affected. Notice in particular that under the Slovenian flat tax reform the employment-weighted labor cost after the reform will increase in the industrial sector which is the sector that generates about 50% of value added in the economy (Figure 30).

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[9] In a standard neo-classical world, where firms are maximizing their profits, the demand for labor is a function of the price of labor.

[10] In the case of rising VAT labor will try to protect its purchasing power by raising nominal wage rates, while firms facing unchanged prices for their output will be very reluctant to concede such a wage rise. In this case the outcome, in terms of wage inflation, must depend on the strength of the different parties to the bargaining process.

[11] The adverse impact of VAT on prices of labor intensive industries is not taken into account here.

Besides the issue of efficiency the other important dimension to consider when assessing the impact of the tax reform is equity. The impact of the flat tax reform on equity can be assessed first, by looking at the distribution of the tax burden on wages once they have reached their equilibrium and second by looking at the effect of the single VAT rate on consumption according to individuals' purchasing power (net wage). Figure 31 shows the net tax burden after the flat tax reform per individual ranked in terms of multiples of the average gross wage in the economy. It indicates that after the reform the tax burden per individual will be higher for those taxed up to the average gross wage in the economy while it will decline for those taxed above the average gross wage (AW). In particular, the average tax burden per individual will change as follows: for 525.750 individuals earning up to 100% AW the tax burden will increase by EUR 117; for 174.414 individuals earning above AW to 200% AW the tax burden will decline by EUR 445 and; for 40.838 individuals earning above 200% AW the tax burden will decline by EUR 4187.

Figure 32 shows the total net tax burden per total number of individuals ranked by size of their wage. It indicates that the tax burden will increase for about 70% percent of tax payers and decrease for the rest. The total net tax burden will decrease by SIT 45 billions which should be financed by raising the reduced VAT rate to the level of 20% (single VAT rate).

The introduction of a single VAT rate will also have welfare effects. The single VAT rate will increase the effective VAT rate (i.e. the tax rate weighted by structure of consumption) facing individuals according to their income level. Figure 33 shows the current VAT (made up from two rates) and the single VAT effective tax rates for individuals classified in five income quintiles. It shows that the effective tax rates rise for all individuals but more adversely for those in lower quintiles. The impact of changing the effective VAT on consumption will depend on the short run on which type of flat tax reform is considered. Under the Slovenian proposal, the consumption for all individuals (earning a salary or other type of income (e.g. pensions) will decline. This could have a negative impact on aggregate demand in the short-term compounding the adverse effect on labor demand for low skilled workers. Figure 34 shows in particular the impact on consumption measured in tolars for individuals earning different multiples of APW. In the case of standard flat tax reform the consumption of those earning up to 100% APW will be reduced while it will substantially increase for those individuals earning above the average wage. At aggregate level private consumption and aggregate demand could increase. However, given high income earners' lower propensity to consume, the final outcome could be higher savings and, potentially, investment.

In summary, there are six issues that should be carefully assessed when introducing the flat tax reform as planned: i) the cost of labor for the employer is not likely to change in equilibrium, thus there will be no competitive gains in absolute terms (no reduction of gross labor cost); ii) the labor supply response is undetermined as the tax reform can discourage labor participation and distimulate additional labor effort of low skilled workers while create incentives for additional work effort of high skilled workers; iii) output could potentially expand in medium to long run depending on labor supply response (high elasticity of low skilled labor supply while relatively low elasticity of high skilled labor supply). If net wage is enforced administratively, severe adjustment can take place in labor intensive industries; iv) the tax burden will shift from high income earners (high skilled) to low income earners (low skilled) or about 70% of tax payers; v) incentives for higher education attainment will improve (with unclear effect on education attainment particularly in short-term); vi) the reduction (elimination of progressive taxes) and the single VAT rate will increase inequality in the distribution of income and consumption, thus the current Slovenian social policy model will be abandoned.

4. The Way Forward: Searching For a Win-win Situation

The Slovenian economy does not have major structural problems beyond the long-term issue of the ageing of population. Structural reforms can contribute to enhance growth potential and the capacity of response of the economy to the challenges of globalization and the need of increased productivity. Slovenian industry is very much integrated to those in EU and because of that the pace of overall industrial change is primarily determined by our trading partners and technological progress that is skill biased and mainly demand driven. Thus the transformation of the Slovenian economy towards a high skilled economy should be balanced and carefully planned. Education and training, efficient financial system and SMS enterprises' access to financing are among the policies at the hart of this process. Thus the economic transformation of Slovenia does not deserve shock therapy that will result in undermining current welfare situation but policy reforms that build on status quo thus aiming at a win-win situation.

Radical changes can unnecessarily push vulnerable segments of the economy that require transformation off the cliff. The experience of other countries in the EU on tax reform for example the Danish reform, despite of starting from very high tax rates, can come handy. The Danish economy has undergone 12 years of systemic reform aiming at reducing labor tax burden but at the same time not hurting labor participation and labor incentives (Figures 25 and 26). Progressive average and marginal tax rates have been reduced carefully and gradually based on tax broadening and alternative taxes other than labor (e.g. Green taxes).

The way forward in PIT tax reform in Slovenia should be to look for a win-win situation (i.e. aiming at higher gains in efficiency and equity (Figure 1). This could be pursued by considering the following sequencing: first, the financing and eventual speeding up of the elimination of payroll tax should be ensured without creating fiscal imbalances. The relative size of payroll tax revenue is not insignificant (2% GDP). This measure will effectively unburden enterprises as the payroll tax is their direct cost; second, the impact of the recently adopted personal income tax system (split system) on average and marginal rates on high skilled workers should be thoroughly assessed. Based on such an assessment, further reform directions should be devised; third, the reduction of progressivity of PIT without compromising distributional objectives (i.e. maintaining existing Slovenian social policy model) could be pursued. Such a search should ensure revenue neutrality, avoiding the creation of labor market disincentives. Thus Slovenia should pursue a Lisbon strategy oriented tax reform that would not hinder (i.e. does not burden) low skilled workers but would at the same time increase effort of high skilled workers (increase employment and growth). The gradual lowering of average and marginal tax rates for low and high skilled workers could be pursued taking into account: a) a partially self-financed tax reduction; b) introduction on tax on immovable property and; reduction of general government expenditure.

References

Arpaia, Alfonso and Carone Giuseppe (2004). "Do labour taxes (and their composition) affect wages in the short and the long run?" European Economy N 216.

Boeri, Tito (2002). "Let Social Models Compete and Europe Will Win", paper presented at a conference at the Kennedy School of Government. Harvard University

Damijan, Jože P. and Polanec, Sašo, 2005 "Davčna reforma za povečanje konkurenčnosti slovenskega gospodarstva: Analiza možnosti uvedbe enotne davčne stopnje v Sloveniji"

Daveri, Francesko and Guido Tabellini (2000). "Unemployment, Growth and Taxation in Industrial Countries." Economic policy 30.

European Comission (2005). European Economy. Occasional papers No. 19

Eissa, Nada and Jeffrey B. Liebman (1996). "Labor supply responses to the Earned Income Tax Credit" Quarterly Journal of Economics 111.

Fuchs, Victor R., Alan B. Krueger, and James M. Poterba. (1998). "Economists.Views about Parameters, Values, and Policies: Survey Results in Labor and Public Economics," Journal of Economic Literature, 36(3), (September), 1387-1425

IMAD (2005). "Slovenia: Development report 2005"

Immerovoll, H., Kleven J.H, Thustrup K.C, and Saez E.(2005) "Welfare Reform in European Countries: A microsimulation Analysis". IZA. Discussion Paper No. 1810.

Jensen, Arne H (2001). "Summary of Danish tax policy 1986-2002". Ministry of Finance. Working paper no. 2/2001

Krajčír, Zdenko and Ódor, Ľudovít (2005). "First year of the tax reform or 19 percent at work". Economic analysis 8. Ministry of Finance. Republic of Slovakia.

Kajzer, Alenka, "Pojem fleksibilnost trga dela in stanje na trgu dela v Sloveniji"UMAR 2005

Kranjec, Marko 2005, "Linearna dohodnina", Gospodarska gibanja

Layard, R. and S. Nickell (1999), "Labour Market Institutions and Economic Performance" in Ashenfelter, O. and Card, D., eds Handbook of Labour Economics*, vol.3, 3029-84*

Meyer, Bruce D. and Dan T. Rosenbaum (2001)." Welfare, the Earned Income Tax Credit, and the Labor supply of Single Mothers." Quarterly Journal of Economics 116 (3).

Moore, David, 2005, "Slovakia's 2004 Tax and Welfare Reforms," IMF Working Paper WP/05/133 (Washington: International Monetary Fund).

Nickell, Stephen, 1997, "Unemployment and Labor Market Rigidities: Europe versus North America," Journal of Economic Perspectives, Vol. 11. No. 3, pp. 55-74.

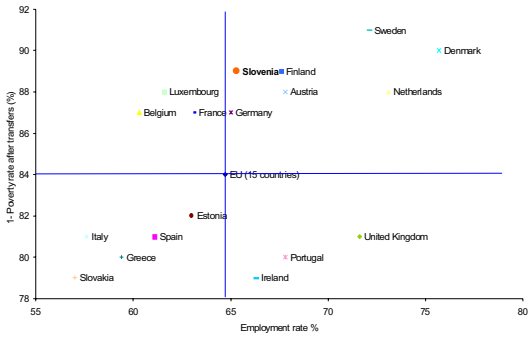
OECD Education at a Glance 2004

Sapir, Andre (2005). "Globalization and the Reform of European Social Models". BRUGEL.

Wiesse. Patrick (2004). "An Evaluation of the Fiscal Stability Of Slovenia's Pay-As-You-Go Pension System"

World Bank (2005). "Special Topic: Labor Taxes and Employment in the EU 8" World Bank EU-8 Quarterly Economic Report, April.

Figure 1



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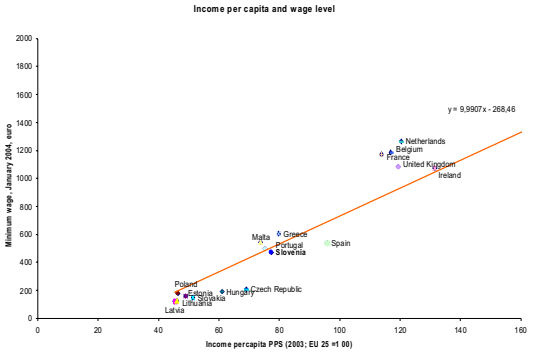

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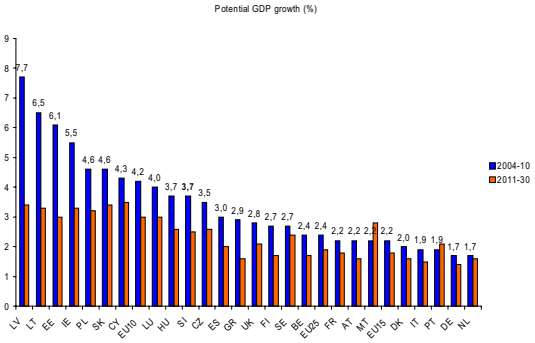

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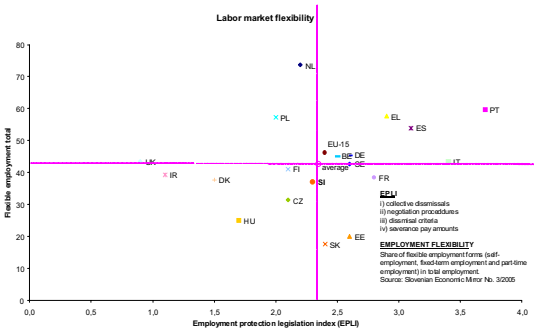

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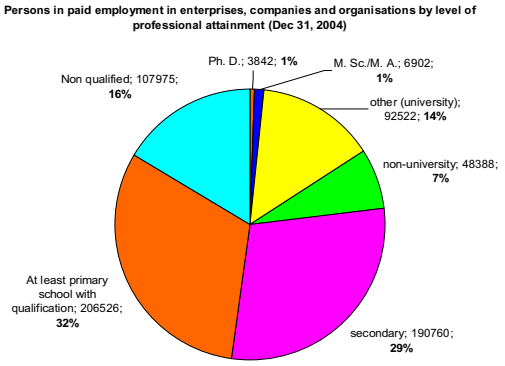

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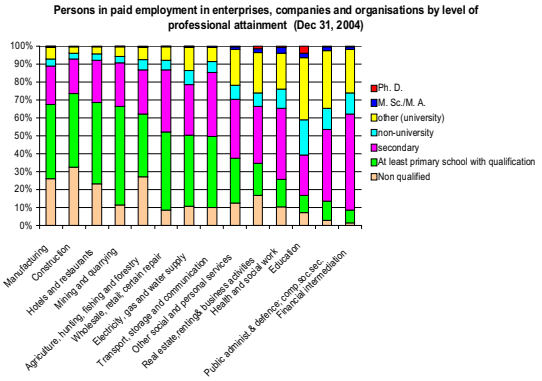

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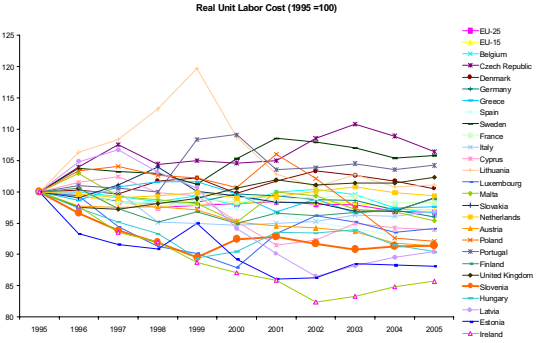

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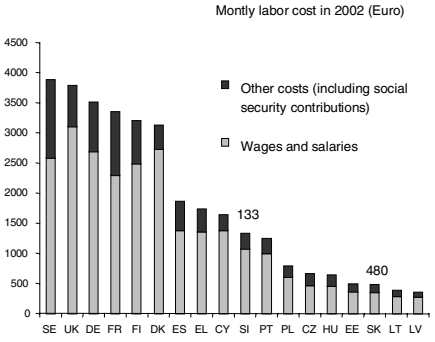

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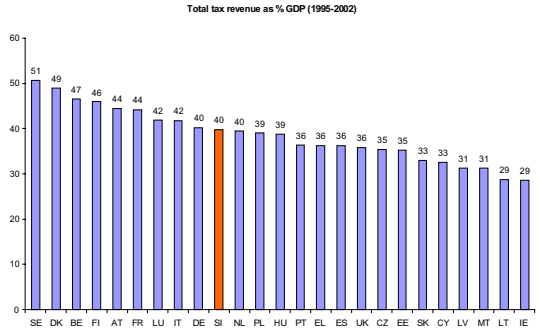

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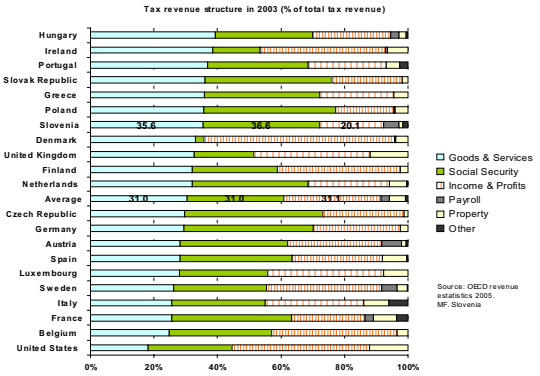

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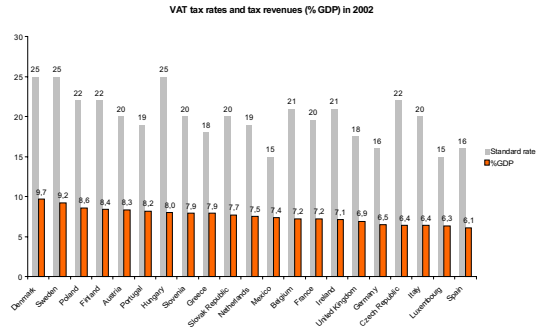

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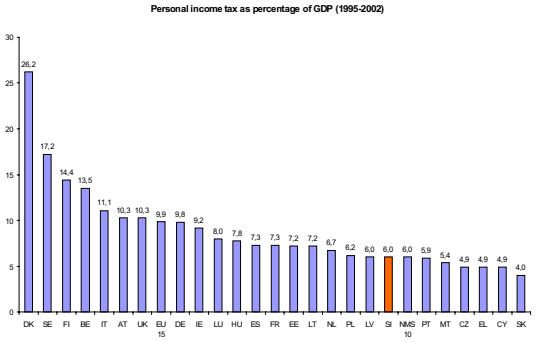

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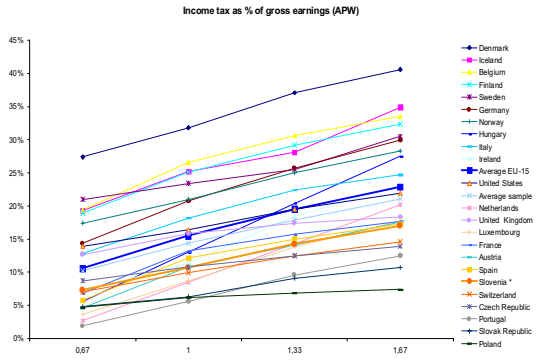

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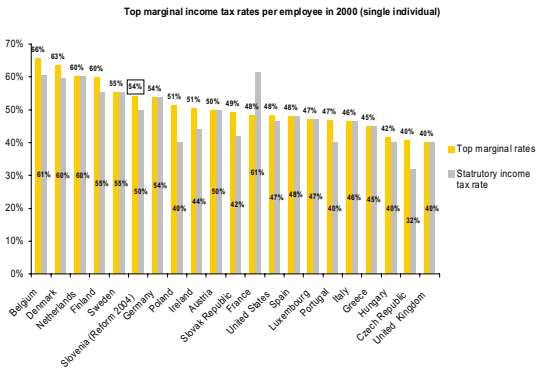

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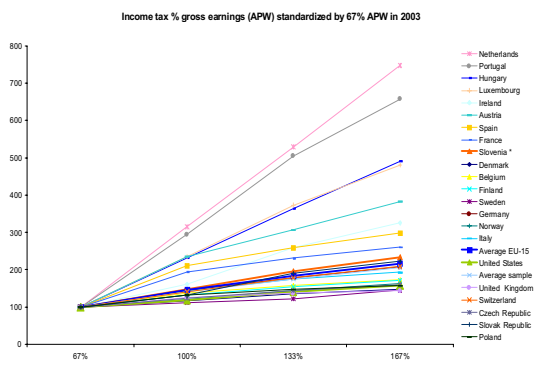

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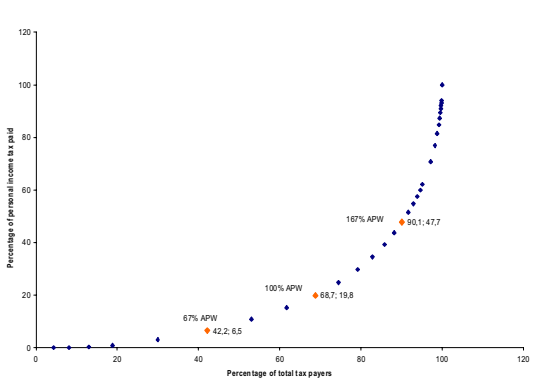


Table 1

	Share of tax payers in total number of tax payers %	Share of income paid %
US	Top 1%	33
Slovenia	Top 1.2	19,8
US	Top 5	54,5
Slovenia	Top 10	55,5
US	Top quintil	82,5
Slovenia	Top quintil	73,8

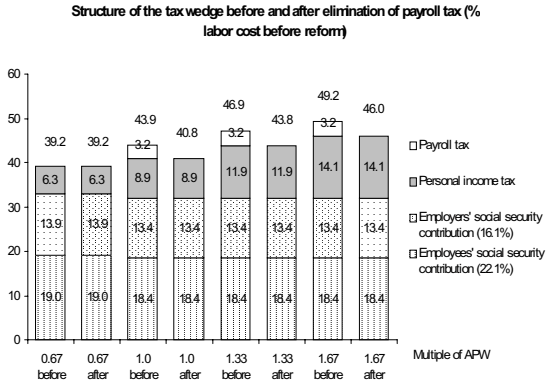
Source: US Congressional Budget Office 2002. MF data for 2003
Note. US 2002 and Slovenia 2003

Table 2

Personal Income tax system before and after the 2005 reform					
Before the 2005 reform			**After the 2005 reform (split-model)**		
1. All types of income			1. All labor income		
Tax brackets (SIT per year)			Tax brackets in 2006 (SIT per year)		
From	To	Tax rate	From	To	Tax rate
	1.327.300	16		1.327.300	16
1.327.300	2.593.340	33	1.327.300	2.593.340	33
2.593.340	5.247.940	37	2.593.340	5.247.940	37
5.247.940	10.546.930	41	5.247.940	10.546.930	41
10.546.930		50	10.546.930		50
			2. Interest, dividends and capital gains		20

Source: MF

Figure 17



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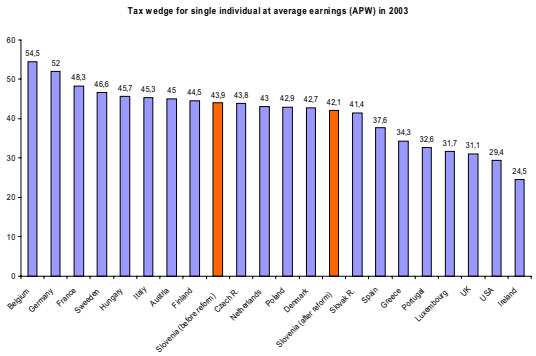

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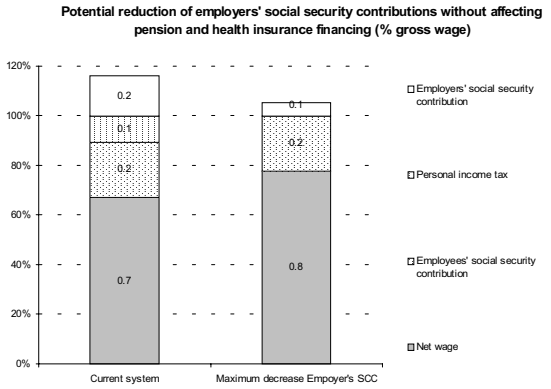

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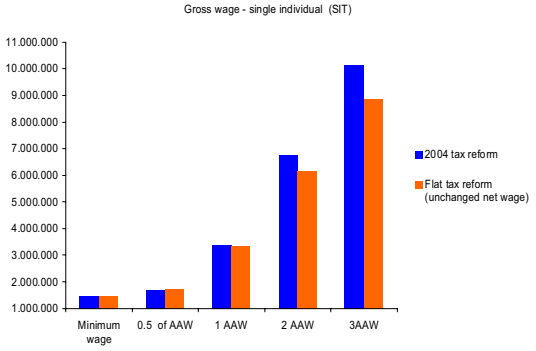

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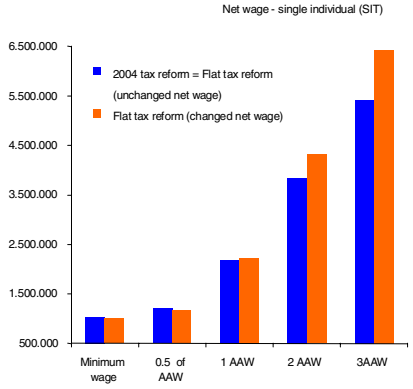

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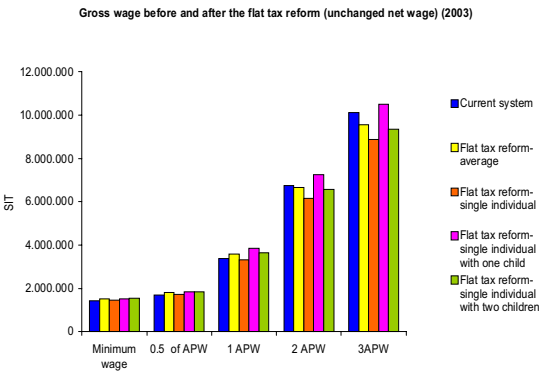

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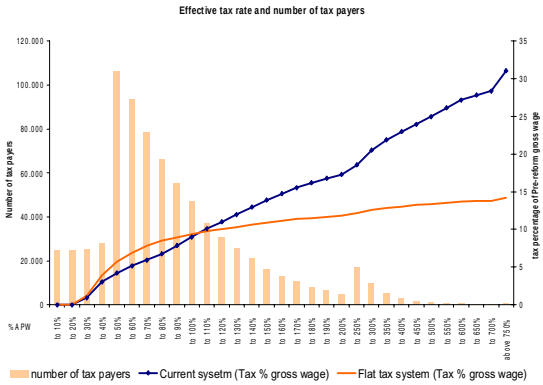

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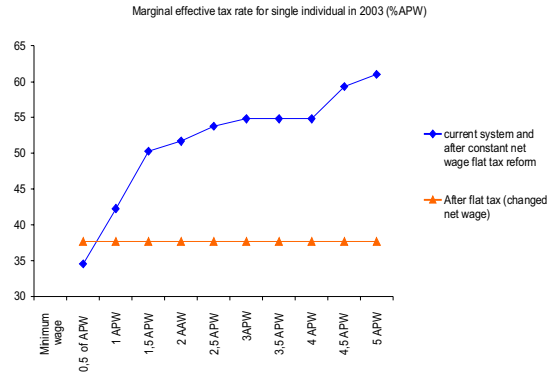

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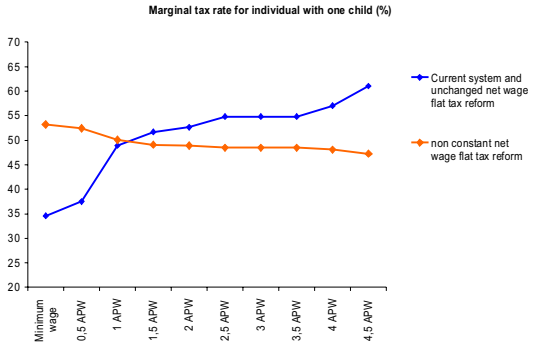

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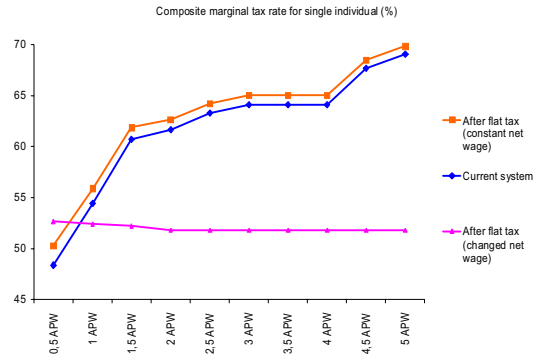

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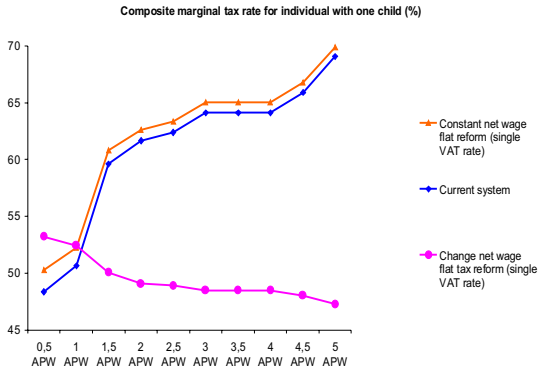

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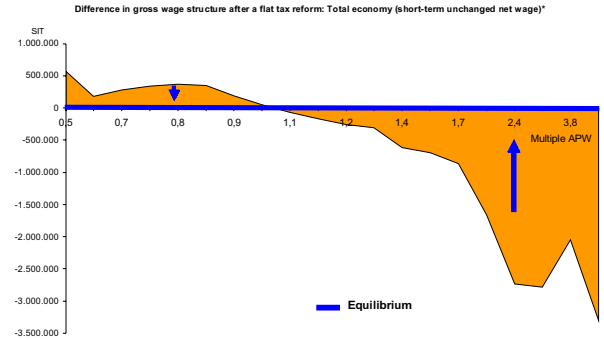


Figure 30

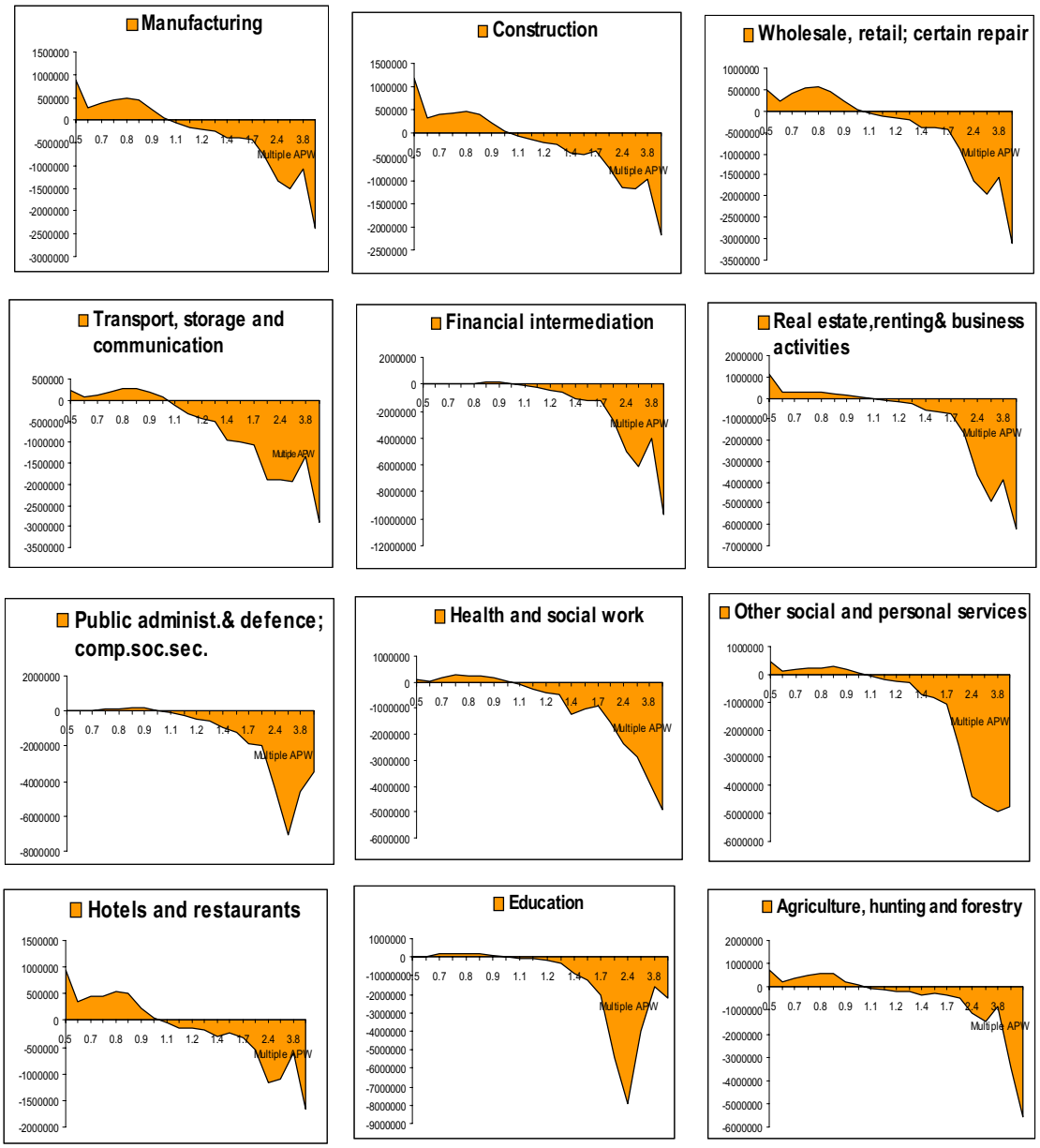

Manufacturing
1500000
1000000
500000
0
-500000
-1000000
-1500000
-2000000
-2500000
-3000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Construction
1500000
1000000
500000
0
-500000
-1000000
-1500000
-2000000
-2500000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Wholesale, retail; certain repair
1000000
500000
0
-500000
-1000000
-1500000
-2000000
-2500000
-3000000
-3500000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Transport, storage and communication
500000
0
-500000
-1000000
-1500000
-2000000
-2500000
-3000000
-3500000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Financial intermediation
2000000
0
-2000000
-4000000
-6000000
-8000000
-10000000
-12000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Real estate,renting& business activities
2000000
1000000
0
-1000000
-2000000
-3000000
-4000000
-5000000
-6000000
-7000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Public administ.& defence; comp.soc.sec.
2000000
0
-2000000
-4000000
-6000000
-8000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Health and social work
1000000
0
-1000000
-2000000
-3000000
-4000000
-5000000
-6000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Other social and personal services
1000000
0
-1000000
-2000000
-3000000
-4000000
-5000000
-6000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Hotels and restaurants
1500000
1000000
500000
0
-500000
-1000000
-1500000
-2000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Education
1000000
0
-1000000
-2000000
-3000000
-4000000
-5000000
-6000000
-7000000
-8000000
-9000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW
Agriculture, hunting and forestry
2000000
1000000
0
-1000000
-2000000
-3000000
-4000000
-5000000
-6000000
0.5 0.7 0.8 0.9 1.1 1.2 1.4 1.7 2.4 3.8
Multiple APW

Figure 31

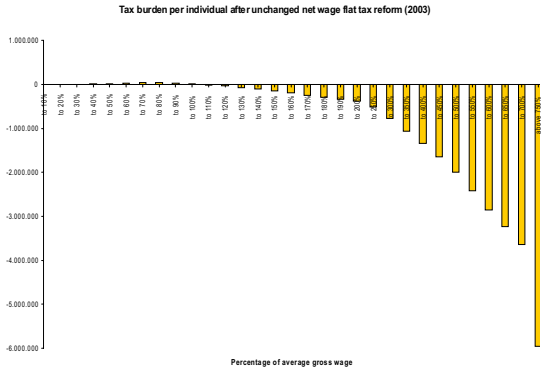


Figure 32

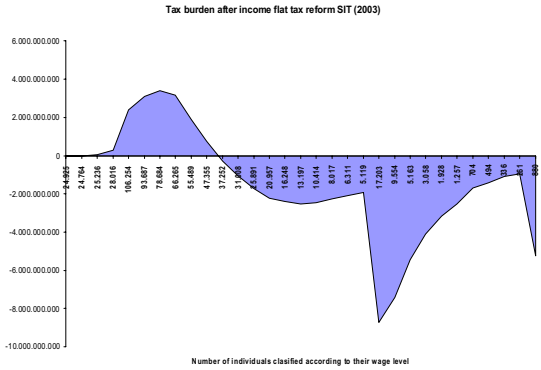


Figure 33

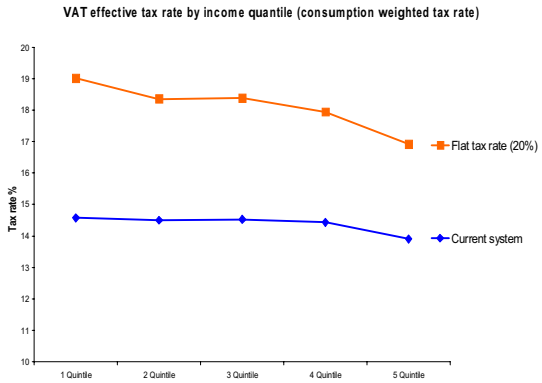
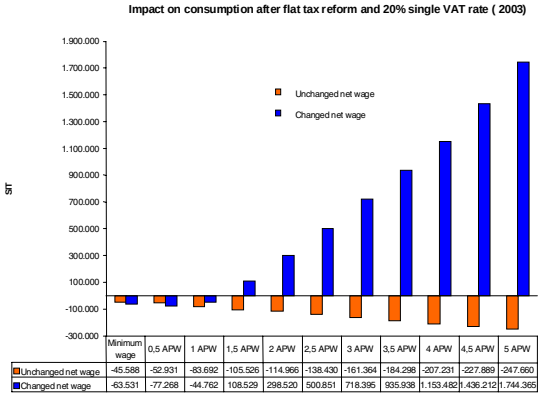


Figure 34



	Minimum wage	0,5 APW	1 APW	1,5 APW	2 APW	2,5 APW	3 APW	3,5 APW	4 APW	4,5 APW	5 APW
Unchanged net wage	-45.588	-52.931	-83.692	-105.526	-114.966	-138.430	-161.364	-184.298	-207.231	-227.889	-247.660
Changed net wage	-63.531	-77.268	-44.762	108.529	298.520	500.851	718.395	935.938	1.153.482	1.436.212	1.744.365

VSEBINSKO KAZALO XXXIX LETNIKA

Znanstveno raziskovalni in strokovni članki

Aleš Berk
Dejavniki zadolževanja največjih slovenskih javnih delniških družb in vpliv novega zadolževanja na donosnost delnic, štev. 3, str. 41-54;

Boris Majcen, Miroslav Verbič, Renger van Nieuwkoop in Jože Sambt
Analiza prihodnjih trendov slovenskega pokojninskega sistema z dinamičnim modelom splošnega ravnovesja, štev.3, str. 54-71;

Tomaž Kraigher
Nekatere možne smeri bodočega demografskega razvoja slovenije in izbira predpostavk za nove projekcije prebivalstva, štev.3, str. 71-85;

Jože Sambt
Dolgoročne projekcije izdatkov za zdravstvo in dolgotrajno oskrbo s pomočjo metode generacijskih računov
štev. 3, str. 85-96;

Slaven Mićković, Andreja Lenarčič
Izračun potencialnega BDP za potrebe izračuna učinkov staranja prebivalstva, štev.3, str. 96-104;

Mateja Slapar
Projekcija izdatkov in prihodkov prostovoljnih kolektivnih pokojninskih zavarovanj, štev. 3, str. 104-111;

Ravbar Marjan
Pogledi na usmerjanje trajnostnega naselbinskega razvoja – težnje, razumevanje in urbani marketing kot instrument usmerjanja poselitve, štev. 4, str. 4-16;

David Bole
Vloga mest v razvojnih dokumentih Slovenije, štev. 4, str.16-26;

Špes Metka:
Pokrajinska občutljivost urbanih ekosistemov v Sloveniji, štev. 4, str.26-36;

Renata Slabe Erker
Razvoj okoljskih dejavnosti v sloveniji, štev. 4, str.36-48;

Plut Dušan
Viri okolja in sonaravni razvoj Slovenije, štev. 4, str.48-60;

Ravbar Nataša
Sodobno ravnanje s kraškimi vodnimi viri in s pitno vodo, štev. 4, str.60-76;

Urbanc Mimi, Breg Mateja:
Gramoznice in dileme sonaravnega razvoja, štev. 4, str. 76-87;

Zorn Matija, Komac Blaž:
Geomorfološke nesreče in trajnostni razvoj, stev. 4, str. 87-98;

Petek Franc:
Povezanost sprememb rabe tal z družbenimi procesi – primer slovenskih Alp, štev. 4, str.98-108;

Nared Janez:
Spodbujanje turizma kot instrument trajnostnega razvoja, štev. 4, str.108-118;

Mesec Staša:
Izvajanje strukturnih skladov v Sloveniji iz vidika trajsnotnega razvoja - prve izkušnje in rezultati, štev. 4, str. 118-124.

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