

RESTRUCTURING SLOVENIAN FIRMS IN IMPERFECTLY DEVELOPED MARKETS

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1. INTRODUCTION

Recent empirical studies (Djankov, Murrel, 2000; Carlin et al., 2000) show that privatisation in transition countries led to improved firm-level efficiency, but the positive effect was smaller than expected from experiences of developed countries. Stiglitz (1999a, 1999b) argues that the main reason lies in the fact that successful privatisation required an institutional infrastructure that support markets and stresses the role of effective corporate governance. Reforming CEE countries, following different policies in building the effective institutional infrastructure, were more or less successful in applying the reforms. As noted by Estrin (Estrin, 2001), pro-reform policies have been applied more consistently and effectively in the Visegrad countries, the Baltic States and Slovenia than elsewhere, especially in the rest of the former Soviet Union.

Being one of the most successful transitional economies, Slovenia is a country where a gradual approach to a market economy was chosen (Mencinger, 2000). The most important reforms were stabilisation of the economy, liberalisation of trade and increased product market competition. Price stabilisation was primarily achieved through restrictive monetary and fiscal policies that brought inflation down from 21.5% per month in October 1991, when Slovenia launched a new currency, to an annual rate on about 6-7% in the late nineties. The country also adopted a policy of a dirty (managed) flexible exchange rate. Although the proximate target for the exchange rate had not been declared, the Bank of Slovenia decided to issue its own short-term bills in order to sterilise the effect on money circulation caused by foreign exchange purchases. This policy was in effect till the year 1999. Real appreciation of the tolar was less intense, thereby relieving the worsening situation on the trade sector. Slovenia minimized or even abolished duties for imported industrial products (Pavlič, 1996), that together with a small sector development led to higher competitiveness on domestic market (Prašnikar et al., 1995) All those factors as well as hardening of budget constraint improved competitive position of Slovenian enterprises that were more oriented on Western markets even before transition comparing with firms in other transitional countries. Foreign capital and direct foreign investment didn't play any significant role in Slovenia in nineties.

Less emphasis was put on the efficient operation of capital and labour markets. The capital and labour markets are still underdeveloped similar like the financial system as whole (Ribnikar, 1999). Although the extensive reconstruction of banking sector, based on rehabilitation of two main banks, was carried out, bank financing represents only a small part of all the corporate financing. The capital market's importance in company financing is even

smaller. Primary capital market almost doesn't exist while the secondary market lacks liquidity. Share prices have been declining recently and an individual firm's performance has almost no influence on price level of firm's shares.¹

Privatisation of firms was also carried out gradually. Former socially-owned enterprises were privatised using a combination of voucher and buy-out method.² As shown by Gregorič, Prašnikar, Ribnikar (2000) the present ownership structure in privatised Slovenian firms still reflects the privatisation model chosen and is dispersed among privatisation investment funds, state funds, other non-financial enterprises, employees, former employees and retired people.

Slovenian corporate governance is even more complicated due to the Law on Workers' Co-Determination (1993). Pursuant to this Law, in companies with up to 500 employees at least one-third, while in companies with over 1,000 employees at least one-half, of Supervisory Board members must be workers' representatives³. Due to the Supervisory Board's important role in supervision of a company's affairs and elections of a company's management, monitoring by outsiders is relatively limited (Prašnikar, Gregorič, 1999).

The latter is also reflected in collective bargaining for wages. In terms of wage setting, Slovenia had a layered system of agreements since 1990 that permitted wages to vary across firms and defy government attempts to reign in real wage growth. In August 1990 an "umbrella" general collective agreement was signed between the Slovenian Chamber of Commerce (representing all employers) and Trade Union Organization (representing all workers). This agreement set initial wages for each category of workers and it was supplemented by industry-specific agreements that effectively converted the initial wages in the umbrella agreement into minimum wages at the level of industries. Moreover, at the level of each firm the union and management bargained in the context of the firm's annual plan further to adjust the industry-level wages. The multi-layer bargaining structure resulted in

¹ More about the recent development on Slovenian capital markets, see Gregorič, Prašnikar, Ribnikar, 2000.

² The 1992 Privatisation Law allocated 20 percent of a firm's shares to insiders (workers), 20 percent to the Development Fund that auctioned the shares to investment funds, 10 percent to the National Pension Fund, and 10 percent to the Restitution Fund. In addition, in each enterprise the workers' council or board of directors (if one existed) was empowered to allocate the remaining 40% of company shares for sales to insiders (workers) or outsiders (through a public tender). Based on the decision on the allocation of this remaining 40 percent of shares, firms can be classified as being privatised to insiders (the internal method) or outsiders (the external method).

³ The Slovenian Companies Act (1993) introduces a two-tier governance structure with the Supervisory Board as the intermediate body between the management and the Shareholders' Assembly.

wage dispersion, rapid wage growth and attempts by the government to limit these tendencies.⁴

In this paper we report findings from a study into the restructuring of privatised Slovenian firms. We deal with a panel data set incorporating 130 big and middle-sized enterprises in the period 1996-1998. Our study is of special interest for several reasons. First, our paper describes firms' restructuring in the country that successfully carried out some of reforms while slacked the others as already described. The investment activity of firms might depend on internally generated funds due to underdeveloped financial system and capital markets. However, important role of employees in decision-making process might introduce bargaining for funds that can be used either for paying higher wages to employees or to finance necessary investments.

Second, when we talk about restructuring of the firms we don't only consider investment in fixed capital as being important. Restructuring normally applies to defensive (cost-related) and strategic (revenue-focused) restructuring. While the first, defensive restructuring, deals with loss-making activities, the second includes investment in developing firms' main capabilities to gain comparative advantages (Roland, 1996; Grosfeld, Roland, 1997). Due to this, it makes sense to distinguish between investment in fixed (buildings, equipment) and 'soft' capital of a firm (research and development, marketing, management, human resources). The latter can play equally important role as investment in fixed capital (Prašnikar, Svejnar, Domadenik, 2000) as it was clearly evidenced in the case of Slovenian firms when they lose almost over the night on average more than 40% of the markets in ex-Yugoslavia at the beginning of transition.

Third, mass privatisation in reforming countries usually led to dispersed ownership and didn't solve the problem of corporate governance in newly privatised firms. This problem is acute especially in Czech Republic, Poland, Slovenia in Slovakia, where shares ended in the hands of concentrated intermediate agents rather than the general public (Simoneti, Estrin, Bohm, 1999). In the case of Slovenia this implies to Authorized Investment Funds governed by Management Companies and State funds which usually enforced rent seeking behaviour (Gregorič, Prašnikar, Ribnikar, 2000). Moreover, if we take into account that internationally

⁴ Wages grew faster than productivity in 1993 and 1994. Due to this, in 1994 the government started considering the acceptability of an Israeli-type social agreement that would limit wage increases and link them to productivity growth. However, the agreement was not strictly followed, real wages continued to grow and exceed productivity in 1995, and especially in the 1996 election year. In July 1997, a new collective agreement was signed for the non-government (business) sector, but no social agreement was reached that year. Paradoxically, this 'breakdown in negotiations' prevented the government agencies and firms increasing their

successful firms mostly chose prevalent internal ownership as the privatisation method and internal owners in those firms didn't take actions that would worsen the competitive position of firm on foreign markets (Prašnikar, Gregorič, 2001), impact of ownership structure on restructuring of Slovenian firms became unclear.

And fourth, as noted by Prašnikar, Svejnar, Domadenik (2000), the employees' participation in Supervisory Board might slower the process of restructuring in Slovenian firms. This is especially dangerous for large firms where employees enter Supervisory Board as the owners' representatives on one side and workers' council's representatives on other.

Although Slovenia is usually considered as being one of the most developed countries in transition, it deviate from legal system and institutions development that would be highly conductive for the functioning of a market economy. However, if the adequate institutional changes are accomplished, it can become the good example how to form functioning market system and generate rapid and sustainable rates of economic growth that will enable to interact with more advanced market economies. Our study shows how the institutional structure drawbacks influence restructuring activities of Slovenian firms.

In the next section the analytical model of defensive and strategic restructuring will be presented. On the basis of this model, we apply a labour demand equation (used to test defensive restructuring) and an investment equation (for testing strategic restructuring) that, together, represent the basis of our empirical model. In the third section, we describe the data and variables used in the study. The fourth section presents the results of empirical testing. At the end we set out conclusions.

2. ANALYTICAL FRAMEWORK OF DEFENSIVE AND STRATEGIC RESTRUCTURING

Frydman et al (1999) analyse the defensive (cost-related restructuring) and strategic (revenue-focused) restructuring of privatised firms on the basis of movements in revenue and different costs related to the privatisation methods applied. We will deal with the problem of restructuring by using labour demand and investment analyses. The labour demand analysis is intended to explain the defensive restructuring of firms, while the investment equations should explain strategic restructuring. Original firm-level data should enable us to test how

wages, and in 1997 and 1998, real wages growth finally fell behind productivity increases. In 1999 the growth of real wages again grew faster than productivity growth.

firm-specific factors, as the ownership structure, employees' participation on the Supervisory Board, the chosen method of privatisation (internal vs. external) and the percentage of sales in the domestic market, affect the restructuring activities of firms. Based on theoretical arguments and empirical evidences from other transitional countries (Aghion, Blanchard 1996; Barberis et al., 1996; Blanchard, 1990, 1997, Frydman et al., 1999; Djankov, Murrel, 2000, Estrin, 2001), one can expect that firms that chose external privatisation method and have a higher percentage of external ownership restructure faster than others. We can also expect faster restructuring in the firms with lower percentage of employees' participation on the Supervisory Board (Prašnikar, Gregorič, 1999) and a higher share of sales in foreign markets (Walsh, Whelan, 2000).

2.1. Defensive restructuring

After declaring independence and losing the ex-Yugoslav market, Slovenian firms had to reduce the number of their employees. Introduction of hard budget constraints forced them to adjust the number of employees to the demand for their products considering the technological requirements and markets circumstances. Employment adjustment is usually seen as being the key indicator of early restructuring of the formerly socialist enterprises (see for example Basu et al., 1997, Svejnar, 1999). Accordingly, we can measure the success of defensive restructuring with the labour demand model.

The theory of standard dynamic labour demand is based on rational expectations of economic subjects. In reality the best employers can do is take account of the amount of labour currently employed and the likely future path of demand for labour. Expected movements in labour demand are modelled on the basis of all relevant information (past movements in prices, wages and other shocks). Along with the inherited stock of labour, these forecasts determine the current-period demand for labour. During the next period (or the next instant if the problem is solved in continuous time) the forecasting and maximisation are repeated. (Hamermesh, 1993).

The labour demand model assumes profit maximising firms producing in the framework of Cobb-Douglas production function and facing product demand constraint. This means that profit maximisation also yields cost minimisation. We also assumed that there is a

long-term equilibrium and firms face quadratic adjustment costs (of labour and capital) in their transitory period to achieve a long-term equilibrium.⁵

If the production function is linearized in its neighbourhood and the logs of labour, wages and production are assumed to follow second-order autoregression AR(2) process, the dynamic specification of the labour demand model can be illustrated with the following equation:⁶

$$\begin{aligned} \ln L_{it} = & \alpha_0 + \alpha_1 \ln W_{it} + \alpha_2 \ln W_{it-1} + \alpha_3 \ln Q_{it} + \alpha_4 \ln Q_{it-1} + \alpha_5 \ln L_{it-1} + \alpha_6 \text{FUNDS}_{it} + \\ & \alpha_7 \text{OTHER_FIRMS}_{it} + \alpha_8 \text{MISCEL_OWN}_{it} + \alpha_9 \text{EXTSUP}_{it} + \alpha_{10} \text{HM}_{it} + \alpha_{11} \text{EXT}_{it} + \\ & \alpha_{12} \text{'(YEAR}_{it}) + \alpha_{13} \text{'(IND}_{it}) + \varepsilon_{it} \end{aligned} \quad (1)$$

In equation (1), L represents the number of employees, W is the wage and Q the revenue of the firm, both in 1996 constant prices. Variable FUNDS represents the state funds' and investment firms' ownership level, OTHER_FIRMS the proportion of other firms' ownership and MISCEL_OWN the share of other owners after funds', other firms' and insiders' (workers, managers and retired workers) shares have been deducted. EXTSUP indirectly measure the influence of external owners in the decision-making process as the percentage of non-employee representatives on the Supervisory Board. HM is the level of sales in the domestic market as a proportion of total sales. The dummy variable EXT is introduced to test the effect of internal privatisation (EXT=0) versus external privatisation (EXT=1). YEAR is the vector of annual dummy variables, IND is the vector of industry dummy variables and ε is the error term.

Obviously the underlying assumptions do not all apply to firms operating in transition economies. For the socialist and transition period the labour demand model is rather interpreted as a partial adjustment model. However, transition is assumed to lead to the neighbourhood of a long-run market equilibrium path where the major assumptions of the presented model apply. We can expect higher coefficients of short-run employment elasticity with respect to sales and wages and uncertain long-run elasticities in the transitory phase⁷

⁵ Unless one assumes a quadratic production function and quadratic costs of adjustment, it is exceedingly difficult to derive an explicit solution for the labour demand. (Hamermesh, 1993)

⁶ The important empirical question is if the distributed lag model, specified in equation (1), is more appropriate than other models of labour demand. However, on the basis of F-test in our estimation we conclude that the general distributed lag model is preferred to the partial adjustment model ($\alpha_2 = \alpha_4 = 0$) and a traditional static model ($\alpha_2 = \alpha_4 = \alpha_5 = 0$).

⁷ During transition process excess employment is eliminated in redundancies unrelated to output and wage changes. The explanatory power of the labour demand model in these circumstances may be significantly lower.

compared with the values before privatisation and probably with those after environmental stabilisation (Körösi, 1998).

2.2. Strategic restructuring

Roland (1996) claims that in the phase of defensive restructuring the majority of firms perform only the most important investments that enable short-term survival. In order to achieve better competitiveness in the domestic and foreign markets, a firm should increase its investments in fixed and 'soft' capital. While fixed capital investment is easy to argue in terms of economic theory, "soft" capital investment, such as R&D expenditures, marketing expenditures and training expenditures, is not so common in investment literature and needs additional argumentation.

Many Slovenian firms introduced transactional management in the period of early transition that led to lower R&D expenses and the closing down of R&D departments. After firms were privatised, R&D expenditures increased, especially to exchange "old-fashioned" products with new ones and to improve technology. We can include R&D expenses in the framework of the production function if the output is framed as the homothetic function of physical capital and technology acquired by R&D activities (Mairesse, Sassenou, 1991). Output in the production function can also be replaced by sales due to the fact that the important part of R&D expenses represents the development of new products (Griliches, 1986).

Chandler (1993) puts significant emphasis on investment in new markets especially for firms in the process of internationalisation. They should invert sales from 'undemanded' to 'demanded' markets and this should lead to higher investments in market research, development of new market routes, promotion (designing trademarks) and sales. Similarly, Batra (1996) stresses the importance of marketing expenses in firms that operate in transition countries. Investments in new markets, market research, development of new market routes and promotion (designing trademarks) are the most important factors for firms to become competitive compared to established trademarks in domestic⁸ and foreign markets.

Slovenian firms were forced to reorient their business activities in the transition period from the 'undemanded' ex-Yugoslav market to the 'demanded' European market

⁸ It is evident that products bearing the established trademarks of Western European producers are usually sold at higher prices than domestic products in transition countries but, in spite of that, the established products still sell well. (Batra, 1996)

where they compete for a market share with competitors from all over the world. On the other hand, with the liberalisation of the foreign trade, the competition on the domestic markets increased, too. Thus, Slovenian firms had to increase their expenses in marketing that in the form of developing new trademarks represented an investment in marketing. We can include marketing expenses in the framework of the production function if the output is replaced by sales revenue. In this context, the marketing expenses (including conquering of new markets and the suitable positioning of established products in existing markets) may be treated as an investment, too.

Hubbard (1998) reports that in special circumstances labour demand also behaves like demand for fixed capital. Since internal privatisation was the prevalent method of privatisation chosen by Slovenian firms, the number of employees can be treated as a quasi-fixed factor (Farmer, 1985). Management in firms should adjust to the requirements of the market economy or they will be replaced. Radical reorganisation of the human resources area should lead to an internal labour market with a system of internal promotion, remuneration and possibilities of workers education and qualification that allows employees to become a source of comparative advantage (Pinto et al., 1993, Carlin et al., 1997). However, we have to take into account the time lag between investment in this factor of production and higher output (Greenwald, Stiglitz, 1988).

We will tackle strategic restructuring of Slovenian firms by constructing the investment equation describing the best the investment behaviour of Slovenian firms. In the investment equation, we extend the usual approach that examines the relative importance of firm's output demand (demand side) and internal funds (supply side) by adding labour cost as determinant of investment⁹ Our basic hypothesis is that labour cost should have a negative effect on investment, *ceteris paribus*, in firms where workers appropriate part of value added that would otherwise be used for investment.

The investment demand of firms can be represented by the equation that fits into the neo-classical and accelerator models, as developed and used by Koyck (1954), Jorgenson (1966) and others, and links the investment-capital ratio with output-capital ratio. These models are internally consistent and widely used in the empirical research. They allow us to

⁹ On the demand side, much of the literature has focused on establishing the relative merits of the dynamic structural, Tobin's q, neoclassical, and accelerator models of investment, while studies on the supply side examined links between the firm's availability of internal finance and its investment (reflecting the effects of transaction costs and other market imperfections on the supply of capital). See e.g., surveys in Fazzari et al. (1988), Kaplan and Zingales (1997) and Hubbard (1998) We follow this approach but stop short of casting our analysis in terms of Tobin's q framework because the Slovenian capital market was undeveloped during the 1990s.

check if the behaviour of firms is consistent with the profit maximization hypothesis inherent in these models

Our basic firm-specific investment demand equation is hence in the form (Prašnikar, Svejnar, 2000):

$$\frac{I_{it}}{K_{i,t-1}} = \alpha + \sum_{k=1}^m \gamma_k \frac{Y_{i,t-k}}{K_{i,t-1}} + \varepsilon_{it} \quad , \quad (2)$$

where the explanation of γ 's depends on whether we are dealing with the neo-classical or accelerator model and m is the number of lag periods, I investment of the firm, Y output and K capital. In the empirical part we also have to take into account the differences in product prices followed by the special position of the firm in the market (HM), industry (IND) or proceeding year (YEAR).

Equation (2) implicitly assumes that we are dealing with a perfectly elastic investment supply curve. Underdeveloped capital markets in Slovenia and existence of informational costs between banks as the major supplier of the funds and the firms¹⁰, makes the supply curve less elastic meaning that firms face restrictions in obtaining external investment financing. The usual approach in investment literature is to introduce the variable that measures the disposable amount of internal funds, for example the profit of the firm. In order to introduce bargaining between workers and management over the allocation of internally generated funds between investment and workers' compensation (underdeveloped labour market), we include as a regressor an extended specification of the cash flow that the firm can use either as internally generated funds for investment or for paying wages higher than those agreed in collective agreements.

We define value added as profit plus labour costs plus depreciation or alternatively revenue (R) less non-labour costs (H) for all inputs ($VA=R-H$). Internally generated funds (π^a) used either for investment or excessive wages can be approximated by the difference between value added and reservation labour costs. Accordingly, $\pi^a = VA - y^aL = R - H - y^aL$ where y^a represents the reservation level (best alternative) income per worker and L the

¹⁰ See also Bole (1999), for describing how banking system in Slovenia, confronted with short-term bank deposits, is bound to allocate these resources on a long-term basis.

number of employees. π^a is the surplus that can be used for paying dividends, investments or higher wages to employees.¹¹

Finally, in order to capture the complete bargaining process between management and workers focused on splitting the extended value added π^a , we include as an explanatory variable labour costs (yL), determined in the bargaining process within the firm, lowered by reservation labour costs (y^aL), $yL - y^aL$. In terms of the relevant literature, we include sales revenue as an explanatory variable in order to measure the impact of product demand and assess the relative importance of the neo-classical and accelerator models of investment.

Our empirically tested investment equation can be represented as follows:

$$\begin{aligned}
 I_{it}/K_{it-1} = & \alpha_0 + \alpha_1\pi_{it}^a/K_{it-1} + \alpha_2(yL-y^aL)_{it}/K_{it-1} + \alpha_3R_{it-1}/K_{it-1} + \alpha_4FUND_{it} + \\
 & \alpha_5 OTHER_FIRMS_{it} + \alpha_6 MISCEL_OWN_{it} + \alpha_7EXTSUP_{it} + \alpha_8HM_{it} + \\
 & \alpha_9EXT_{it} + \alpha_{10}'(YEAR_{it}) + \alpha_{11}'(IND_{it}) + \varepsilon_{1it}, \quad (3)
 \end{aligned}$$

In equation (3), I represents investment, π^a value added less alternative labour costs and R the sales revenue of the firm, all in 1996 constant prices. L represents the number of employees, y the labour costs per employee and y^a the alternative labour costs per employee calculated on the basis of industry and region specific characteristics.

Similar as in the previous, labour demand specification, $FUND_{it}$ represents the state funds' and investment firms' ownership level, $OTHER_FIRMS_{it}$ the proportion of other firms' ownership and $MISCEL_OWN_{it}$ the share of other owners after funds', other firms' and insiders' (workers, managers and retired workers) shares have been deducted. $EXTSUP_{it}$ measure the percentage of non-employee representatives on the Supervisory Board. HM_{it} is the level of sales in the domestic market as a proportion of total sales. The dummy variable EXT_{it} is introduced to test the effect of internal privatisation ($EXT=0$) versus external privatisation ($EXT=1$). $YEAR_{it}$ is the vector of annual dummy variables, IND_{it} is the vector of industry dummy variables and ε is the error term.

In terms of our conceptual framework, the neo-classical and accelerator models are consistent with the hypothesis $\alpha_3 > 0$ while the credit rationing theory (the model of underdeveloped capital markets) implies $\alpha_1 > 0$. Finally, if workers are able to appropriate

¹¹ In our study we focus only on the allocation of surplus between investments and excessive wages because there was only a negligible percentage of firms that paid dividends in the studied period.

part of the firm's surplus in terms of their wages and fringe benefits, one should find support for the hypothesis $\alpha_2 < 0$.

The power of workers in the decision-making process in many transition economies calls into question the usefulness of profit as the goal of the firm. An investment equation such as (3) is carried out on the assumption of inter-temporal profit maximisation with the cost of capital adjustment and this yields the Euler equation in the per capital form with all non-categorical variables divided by the capital stock. (See, for example, Bond and Meghir, 1994, Lizal, 1996, Lizal and Svejnar, 1998, Prašnikar and Svejnar, 2000) However, if we carry out the dynamic maximisation of income per worker in the presence of the cost of capital adjustment, we obtain the Euler equation that is analogous to that obtained from profit maximisation except that all non-categorical variables are scaled by the number of employees.

In a linear form, the per worker specification of the equation provides an alternative specification to investment equation (3):

$$\begin{aligned}
 I_{it}/L_{it} = & \beta_0 + \beta_1(\pi^a_{it}/L_{it}) + \beta_2(y-y^a)_{it} + \beta_3(R_{it}/L_{it}) + \beta_4FUND S_{it} + \beta_5 OTHER_FIRMS_{it} + \\
 & \beta_6 MISCEL_OWN_{it} + \beta_7 EXTSUP_{it} + \beta_8 HM_{it} + \beta_9 EXT_{it} + \beta_{10}' (YEAR_{it}) + \\
 & \beta_{11}' (IND_{it}) + \varepsilon_{2it},
 \end{aligned}
 \tag{4}$$

where ε_2 is the error term corresponding to this specification and the predictions about the signs of α_1 , α_2 and α_3 carry over directly to β_1 , β_2 and β_3 , respectively.

Our research strategy was to estimate both equations, (3) and (4). If the per capital form (3) appears to fit the data better, we can conclude that Slovenian firms behave more like profit-maximising firms. If the per worker form (4) fits the data better, we will assign this to the maximising the income per worker motive.

By set up of the models presented in the specifications (1), (3) and (4) we are able to test the differences between various treatments groups and the control group (firm that were privatised by the internal method, owned by insider owners, had only employees' representatives in the Supervisory Board and sold their products only on domestic markets). The method goes beyond a simple comparison of means by controlling for the relevant factors (ownership, supervisory board structure, industry, method of privatisation) that might have influence on the behaviour of firms.

Using micro-level panel data enabled us to eliminate bias introduced by aggregation (e.g., Abel and Blanchard, 1986), reduce measurement error and take into account the heterogeneity across firms and over time (e.g., Bond and Meghir, 1994). One of the most important potential sources of bias is the heterogeneity bias arising from unobserved heterogeneity related to RHS variables that causes the inconsistency in the OLS pooled regression. Fixed effects model by its specification capture all time-constant characteristics. But, on the other hand, LSDV approach sweep out all, unobservable and observable, fixed effects. However, if we suppose that individual specific constant terms are randomly distributed across cross-sectional units and there is no correlation between the individual effects and regressors, the random effects model is reasonable approach. Hausman (1978) devised the specification test. It is based on the idea that under the hypothesis of no correlation, both models are consistent, but OLS in the LSDV model is inefficient, whereas under alternative, OLS is consistent, but GLS in the RE model is not. We report the results of the test in the footnotes to the tables.

The next important issue is the possibility that regressors might be endogenous. The problem is usually solved by using any method based on the instrumental variables' technique (IVs) ranging from simple instrumenting to more sophisticated GMM method. As the RHS variables in our specifications are probably influenced by some unobserved random firm's characteristics, OLS estimates are likely to be inconsistent. In order to assess the sensitivity of our results to this problem, we report instrumental variables' (IVs) estimates using current values of regressors (IV levels)¹² If one selects appropriate instrumental variables in the levels specification, one eliminates the problem of the fixed component in the error term. The second way of doing it is to do IV on first differences.

Since the methods based on instrumental variable technique are necessary to obtain consistent estimates, let us briefly justify the instruments we have used in our estimations. As noted in the econometric literature, the selection of valid instruments crucially depends upon the assumptions behind the nature of the error process, possible measurement errors or correlation of exogenous variables and individual effects. As the most appropriate instruments the lagged levels of instrumented RHS variables were selected.¹³ However, our potentially endogenous variables are calculated from data obtaining from two sources,

¹² In theory, maximum-likelihood estimation (MLE) is proved to be more efficient, but in our model it requires numerical integration and is sensitive to misspecification. As MLE being the large sample estimator and our sample only includes 130 observations or even less in each year, we decided to use more robust IV approach.

¹³ However, it is not surprising that assumption of correlation between RHS variables and individual effects was proven to be the correct one.

questionnaires and Statistical Office. As we dispose only with 3-year series of questionnaire data, we calculate proxies for lagged values of instrumented variables from Statistical Office data. Thus we were able to avoid substantial loss of degrees of freedom. After all, the estimates based on real lagged values of instruments but on substantially smaller number of observations were very similar to those on proxy instruments.

3. DESCRIPTION OF THE DATA AND VARIABLES

The sample encompasses 130 big and middle-sized Slovenian enterprises in the period 1996-1998 that were privatised in the 1993-1995 period. They are mostly large- and medium-sized Slovenian firms. In 1998, these firms generated 15 percent of the total income and employed 16 percent of all the employees of the Slovenian firms registered at the Slovenian Agency of Payments. Most privatised Slovenian firms have opted for the form of joint-stock companies. As a rule, this means that they have introduced a two-tier system of corporate governance with a Supervisory Board. Our data set falls into the period when firms established this system of corporate governance.

A list, description and yearly summary statistics of the variables are found in Table A_1 in the Appendix. Variables that are measured in constant prices form the year 1996. As is evident from the figures, the representative firm cut the number of employees from 573 in 1996 to 562 in 1998. Capital stock (tangible assets in constant prices from 1996) rose by 2.6% per year on average. The representative firm had average sales revenue of SIT 6.4 billion in 1996 and SIT 6.7 billion in 1998 in constant 1996 prices. The average sale per worker grew from SIT 10.2 million in 1996 to SIT 10.9 million in 1998 (average growth of 3.4% per year), while the average labour costs rose by 2.1% per year.

The average ownership share of internal owners (employees, managers, retired employees) dropped insignificantly in the period under study from 37.4% in 1996 to 36.27% in 1998. The average share of employees fell from 24.86% to 22.87%, while the managers' share rose on average from 1.81% to 2.78%. In the same period, the average share of state funds went from 23.85% to 17.82%, but on the other side the investment funds' share increased from 14% to 17.88% on average. Other non-financial firms also significantly increased their share in the representative firm from 10.72% to 17.21%¹⁴, whereas the average ownership share of banks remained the same (1.3%).

¹⁴The main reason for increased average level of shares owned by non-financial firms is in the processes of acquisitions. Investment Funds increased their shares through portfolio widening strategy in the big and middle-

Figure 2 presents the average values of selected expenses relative to sales revenue that are crucial in our strategic restructuring analysis and will be explained in more detail in the next chapter.

Figure 1: Ratios of investment in fixed capital, marketing expenses, R&D expenses and training expenses relative to total sales revenue for a representative firm in the sample

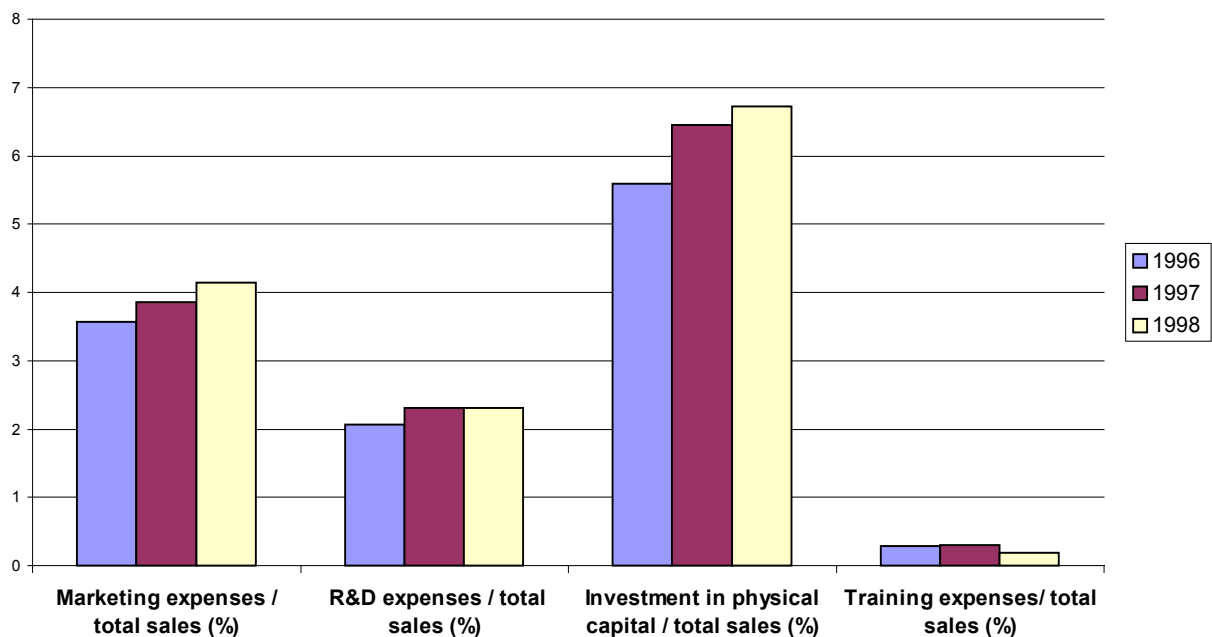


Figure 1 shows the increasing pattern of investment in physical capital relative to total sales. Ratios of R&D expenses and marketing expenses also increased in the studied period. However, in the opposite direction, training expenses dropped from 0.28% of total sales in 1996 to 0.19% in 1998. Expenses for training in our analysis only include payments for the services of external educational institutions that represent a cost to the firm. Many firms usually run programmes of internal training that are not included in our data set. Therefore, we underestimated the level of training expenses in the firms. In spite of that, the expenses for external training are surprisingly small.

seized firms in order to control them. State funds presumably follow the strategy of ownership concentration in some specific firms and this led to smaller average share in ownership structure of studied firms. (Gregorič, Prašnikar, Ribnikar, 2000; Pahor, Ferligoj, Prašnikar 2000).

4. EMPIRICAL RESULTS

4.1. Estimating the labour demand equation (defensive restructuring)

Our primary interest was to estimate the dynamic representation of the labour demand function on the basis of yearly data although short time panel was available. However, there are some disadvantages comparing estimates on the basis of yearly data versus monthly data. Yearly data represent the average of monthly data within one year and do not reflect the short-term movement of variables, for example number of employees (Basu et al., 1997). On the contrary, Singer (1995) reported very low wage elasticity with respect to revenues in his study based on monthly data for Czech firms in 1992-1993 period. The results improved when other researchers (see for example Basu et al., 1997) in the same country used yearly data for wages and revenues. One possible explanation for this inconsistency is that firms set employment annually rather than at shorter (monthly) time intervals. (Svejnar, 1999) However, it makes sense to assume that in the presence of high adjustment costs due to tough labour market legislation there are no much variation in the number of employees in the short run. In our analysis, value added was used instead of revenues. This means that we did not consider material costs in the production function specification.

In Table 1 summary statistics of the variables used in the labour demand estimation are presented. On average, firms employed 568.2 workers in the studied period. Net fluctuation of employees (newly-employed workers - dismissed workers relative to all workers) was -5% in 1996, -5.1% in 1997 and -3% in 1998. The number of employees fell on average in all three years. Setting the control group of firms as those owned by insiders, the impacts of state funds and investment companies versus other firms will be addressed. We can expect that labour demand is determined on the basis of the various motives of the prevailing owners.

Table 1: Summary statistics for variables used in estimating the labour demand equation

Variable	N	Mean	Standard deviation	Description
L	645	568.2	765.5781	Number of employees
W = y/L	626	2026.368	766.6213	Labour costs per employees
VA/L	632	2662.449	1585.398	Value added per employees
FUNDS	368	37.01854	17.77338	Ownership share of state funds and investment companies
OTHER_FIRMS	368	13.78842	27.80885	Ownership share of other firms
MISCEL_OWN	368	11.55673	16.66376	Ownership share of banks, small shareholders, state + unrealised internal buy-out+others
EXTSUP	369	42.62746	21.22323	Share of non-employees' representatives on the Supervisory Board
HM	298	60.49465	34.18295	Sales on domestic market relative to total sales
EXT	640	0.46875	0.499413	Privatisation dummy (1=external; 0=internal)

Table A_2 in Appendix presents the results of the estimated regression model. The value of the adjusted R^2 in all estimated models confirms that the labour demand equation adopted fits well to the data. The impact of the number of employees in the previous period is large and this points to the slow adjustment of firms to changes in the business environment. Short run elasticity of employment relating to changes in the labour costs per employee has similar values across the estimated methods, with the values ranging around -0.6 except in the case of IV (levels) method where the value is -1.09 . Hausman test points to the fixed effect specification to be the consistent one. Calculated long run elasticity are higher than short run varying from -0.93 to -1.87% except in the case of fixed effects model. Similar differences are in the case of employment elasticity relating to change in value added. A 1%-rise in value added was followed by a 0.18 to 0.47%-rise in employment in short period, depending on the estimation method. Long run estimation of elasticity varies between 0.99 and 1.93% except in the fixed effects model where the elasticity is much lower.

Due to the transition period a higher short run elasticity of labour demand with respect to value added and wages was expected.¹⁵ The defensive restructuring of Slovenian firms was

¹⁵ For example, the short run elasticity of labour demand with respect to wages for the Czech Republic was estimated between -0.6 and -1.0 , -0.8 for Poland, between -1 and -2.3 for Hungary and -0.3 for Slovak Republic. The short run elasticity of labour demand with respect to revenues for the Czech Republic was estimated between 0.5 and 0.6, 0.4 for Poland, 0.3 for Slovak Republic and between 0.7 and 0.8 for Hungary. (Basu et al., 1997)

relatively weak¹⁶ in the studied period comparing with other transition countries, mainly due to organisation of the labour market and existing labour legislation. High variability of long run elasticities across estimations indicate the uncertainty of those estimates as there was no stable equilibrium in the studied period. The ownership structure, share of internal owners on the Supervisory Board and other explanatory variables do not explain the employment level in the sample firms in a way that is statistically significant.

4.2. Estimating the investment equations (strategic restructuring)

Traditionally, investment literature suggests that all non-categorical variables should be scaled. We explained in section 2.2 that we will select that model (of two) that fits the data better. In this study we have examined equations (3) and (4). They provide broadly similar findings but the “per capital” form appears to fit the data better. As a result, in the paper we report estimates on equation (3). Only in the case of investment in employees’ training we report also estimates on equation (4).

In Table 2, summary statistics of the variables included in the investment equation estimations are presented. All variables are scaled by the value of tangible assets in the previous year. This transformation enables us to compare the values of non-categorical variables between firms and different years. We use the accounting values of tangible assets because the reproduction value of fixed capital is not publicly available.

¹⁶ Brezigar (1999) found slightly different results in her estimation of labour demand for all Slovenian firms in the period 1992-1998. The estimated labour demand elasticity with respect to wages was -0.2% , while the estimated coefficient of labour demand with respect to revenue between 0.3 and 0.5%. Differences in estimated coefficients could be due to different specification of crucial regressors (she took gross wage instead of labour costs per employee and revenue instead of value added) and sample used in the analysis.

Table 2: Summary statistics for variables used in the investment equation estimation

Variable	N	Mean	Standard deviation	Description
K_{-1}	374	2985148	5492053	Value of tangible assets in the previous year in 1000 SIT in 1996 prices
I_{FK}/K_{-1}	317	0.1473741	0.1711862	Investment in fixed capital / capital ₋₁
I_{RR}/K_{-1}	350	0.0762994	0.188009	R&D Investment/ capital ₋₁
I_T/K_{-1}	311	0.1544139	0.51373	Marketing expenses -total/ capital ₋₁
I_{TD}/K_{-1}	305	0.1250018	0.511142	Marketing expenses on domestic market/ capital ₋₁
I_{TT}/K_{-1}	305	0.0308893	0.0698556	Marketing expenses on foreign markets/ capital ₋₁
I_U/K_{-1}	270	0.007702	0.0248935	Investment in training/ capital ₋₁
$(\pi^a + I_{RR} + I_T + I_U) / K_{-1}$	275	0.4612835	0.653519	Value added less reservation labour costs plus R&D expenses, marketing expenses and training expenses, per capital ₋₁
$(yL - y^aL) / K_{-1}$	367	0.0524691	0.830624	Labour costs less reservation labour costs per capital ₋₁
R/K_{-1}	367	2.8423	2.661828	Sales revenue per capital ₋₁
FUNDS	368	37.01854	17.77338	Ownership share of state funds and investment companies
OTHER_FIRMS	368	13.78842	27.80885	Ownership share of other firms
MISCEL_OWN	368	11.55673	16.66376	Ownership share of banks, small shareholders, state + unrealised internal buy-out+others
EXTSUP	369	42.62746	21.22323	Share of non-employees' representatives on the Supervisory Board
HM	298	60.49465	34.18295	Sales in domestic market relative to total sales
EXT	640	0.46875	0.499413	Privatisation dummy (1=external; 0=internal)

In order to address the important issue of credit rationing hypothesis we create the composed variable representing the value of internally generated funds that can be allocated between different investments, excessive wages and dividend payments according to the decision of economic subjects within the firm. Variable $(\pi^a + I_{RR} + I_T + I_U) / K_{-1}$ has in the numerator the expanded cash flow measured by value added, less reservation labour costs added to expenses for R&D (I_{RR}), expenses for marketing (I_T) and expenses for training (I_U). The surplus $(\pi^a + I_{RR} + I_T + I_U)$ is distributed among investments (investment in fixed capital, investment in R&D, investment in marketing, investment in training), excessive wage payments and dividend payments. As firms mostly don't pay dividends, the real trade-off

exists only between investment and above-average wages. The average value of the wage differential (actual labour costs less reservation labour costs) is not negligible as is shown in Table 2. In year 1996 the actual wages were on average 37% higher than alternative while in 1998 the difference fell on 17% of average alternative wage.

In line with the explanation in the previous paragraph we can reformulate equation (3) as follows:¹⁷:

$$\begin{aligned}
 I/K_{it-1} = & \alpha_0 + \alpha_1(\pi^a + I_{RR} + I_T + I_U)_{it} / K_{it-1} + \alpha_2(yL - y^a L)_{it} / K_{it-1} + \alpha_3 R_{it} / K_{it-1} + \alpha_4 FUNDS_{it} + \\
 & \alpha_5 OTHER_FIRMS_{it} + \alpha_6 MISCEL_OWN_{it} + \alpha_7 EXTSUP_{it} + \alpha_8 HM_{it} + \alpha_9 EXT_{it} + \\
 & \alpha_{10}' (YEAR_{it}) + \alpha_{11}' (IND_{it}) + \varepsilon_{it}, \tag{3a}
 \end{aligned}$$

Investment in fixed capital

In Table_A3 the estimated coefficients on investment equation in fixed capital are reported. The estimated regression coefficients across different estimation methods indicate that investment in fixed capital is, *ceteris paribus*, positively linked to expanded cash flow ($\alpha_1 > 0$), negatively to excessive labour costs ($\alpha_2 < 0$) and positively to sales revenue ($\alpha_3 > 0$). The coefficients have the predicted signs, except in the case of unconvincing fixed effects assumptions. The fixed effects specification is taken as less efficient in the context of Hausman test indicating that major differences are across different firms and only part of the variation is due to the differences within one firm in observed period.

The expanded cash flow coefficient indicates that the cash flow generated by the firm after paying suppliers and other claimants (including the workers' reservation wage) has a positive effect on investment. However, the relationship is statistically significant only in the case of IVs estimation. Taking together with the non-significant value of the coefficient on the excessive labour costs per capital we can claim that cash-flow hypothesis and bargaining hypothesis can't be generalized. This finding is different to that obtained by the empirical investment study of Slovenian firms in the 1991-1995 period where both variables, cash flow variable and labour cost, are significant and have expected signs (Prašnikar, Svejnar, 2000).

The statistically significant and positive value of the coefficient on sales revenue per capital supports the neo-classical and accelerator models of investment, where sales revenue

¹⁷ If we consider the extended cash flow as the variable, we have to reformulate equation 4:

$$\begin{aligned}
 I/L = & \beta_0 + \beta_1(\pi^a + I_{RR} + I_T + I_U) / L + \beta_2 (y - y^a) + \beta_3 R/L + \beta_4 FUNDS_{it} + \beta_5 OTHER_FIRMS_{it} + \\
 & \beta_6 MISCEL_OWN_{it} + \beta_7 EXTSUP + \beta_8 HM + \beta_9 EXT + \beta_{10}' (YEAR) + \beta_{11}' (IND) + \varepsilon_{it}, \tag{4a}
 \end{aligned}$$

per capital is treated as the most important explanatory variable. Slovenian firms are evidently close to normal investment behaviour where the investments are determined by demand-side and firms follow the goal of profit maximization.

However, we can't ignore the fact that the firms are still very limited in their possibilities to get external financing due to under-developed financial system and capital markets. Internally generated funds (depreciation and retained profit) prevail in investment funds' structure of representative firm.¹⁸ More profitable firms have access to higher loans provided by domestic and, especially, foreign banks.¹⁹ This might be the main reason why random effects model is confirmed to be more efficient than fixed effects model. Only successful firms can get loans to realize bigger investments. In those firms cash flow and labour costs variables don't play significant role in explaining investment level anymore. When we take this into the consideration and try to control for it by estimate IV model, the credit-rationing hypothesis works.

Other firms' ownership played the important positive (also significant in the case of IV) role in investment decision while funds and other owners had negative impact comparing with the control group-inside owners. But results are not statistically significant.

Investment in research and development (R&D)

Information asymmetry and the moral hazard problem are even more serious in the case of investing in R&D than in the case of investing in fixed capital because it is difficult to evaluate the results of these investments. (Arrow, 1962) This is especially important when external investors are taken into consideration. Accordingly, we should find strong support for the hypothesis that investment in R&D depends mostly on the internal funds of the firm (Himmelberg, Peterson, 1994).

The figures for Slovenian firms reveal that 90% of R&D investment in the typical firm in the 1996-1998 period was financed from internal sources. Loans represented only a 3% share of total R&D funding sources, less than 2% of the total funds firms received from the Fund for Technology and Development, 2% of the total amount is represented by other partners' financing. On average, more than 40% of the total funds firms used in new product

¹⁸ The sample firms reported that the average firm financed more than 60% of investments in fixed capital by depreciation in the 1996-1998 period. Retained profit represented 10% of total investment funds, short-term loans 5%, long-term loans 10% and the issue of ordinary shares less than 1%. (see table A_1.3 in Appendix).

¹⁹ Slovenian banks are in their investment activity bounded by the terms of deposits. They use the credit scoring and finance only investments carried out by the most successful firms (Bole, 1999). At the end of nineties the loans to Slovenian firms served by foreign banks increased by substantial amount. (Bole, 2001).

development, 30% in improving current products and technologies, 10% in developing new production methods and processes and 10% for basic research regarding new products and technologies (see Table_A1.4 and A1.5 in Appendix).

The estimated regression coefficients, reported in table A_4, indicate that investment in R&D is positively linked to expanded cash flow ($\alpha_1 > 0$), negatively to the excessive labour costs ($\alpha_2 < 0$) and positively to sales revenue ($\alpha_3 > 0$). The relevant specification is fixed effects model. As shown by some studies (e.g. Himmelberg, Petersen, 1994), because of high R&D adjustment costs (high fixed costs of researchers who cannot be employed and dismissed in line with mere market fluctuations), R&D may not respond much to transitory fluctuations in cash flow, thereby reducing the value of the conventionally estimated within-firm coefficient. This is probably not true in our case. As we already mentioned, Slovenian firms reduced R&D expenses by substantial amount in the period of early transition. In the studied period R&D expenses still fell behind similar figures in developed countries but the share in total revenue is increasing. Expenditures for R&D are obviously related to some unobservable time-constant characteristics within the firm (management characteristics, R&D department existence before the studied period and specific knowledge of the employed people) that are swiped out of model by first differencing.

The estimated value of the coefficient on expanded cash flow is between 0.09 and 0.29 indicating that the calculated short run elasticity of R&D investment per capital with respect to cash flow per capital is between 0.54 and 1.8. This means that a 1%-rise in cash flow per capital is followed by a between 0.54 and 1.8%-rise in R&D investment per capital. Similarly, 1%-rise in labour costs per capital is followed by a between 0.10 and 0.88%-drop in R&D investment per capital. 1%-rise in total sales per capital caused in between 0.44 and 2.52% rise in R&D investment per capital.

As may be seen from table A_4, selected firm-specific characteristics do not have evident influence on R&D investment level. They are significant only in the OLS and IV estimations. The significance of coefficient disappears when panel data analysis is applied or when we run IV on first differences. The coefficient of determination is quite high for panel data set based on firm level data and this means that a large proportion of variations in dependent variables is explained by variations in the explanatory variables.

Investment in marketing

Usually, marketing expenses are split into expenses for research, market communication, sales and distribution (Preisner, 1996, Wilson, 1996). In our analysis, we only took into consideration expenses for advertising, market research and sales employees, excluding salespersons employed in retailing positions. This enables us to compare firms from different industries with respect to data availability.

In the studied period marketing expenses defined as described in the previous paragraph represented 4.84% of total sales revenue in the typical firm. On average, 2.79% of total sales revenue was spent on marketing in the domestic market, and 1.05% in foreign markets. Also on average firms divided their marketing expenses in the domestic market with around 8% for market research, 56% for salespersons' remuneration and 34% for advertising. In the 1996-1998 period, a rising trend of advertising and market research at the expense of salespersons' remuneration can be seen. Marketing expenses in foreign markets were divided on average with around 14% going for market research, 63% for salespersons' remuneration and 22% for advertising. Expenses for market research experienced the highest growth in the structure. (See Table_A1.6).

Data show the increasing trend of the share of new buyers and sales to new buyers compared to all buyers and total sales, respectively. (See Table_A1.7) In 1996, the typical firm had 11.2% of new buyers, in 1998 there were 14.01% new buyers in the total number of buyers on average. Sales to new buyers represented 7.87% of all sales revenues in 1996 and rose to more than 10% in 1998 on average. Correspondingly, the share of permanent buyers and sales to permanent buyers fell significantly in the 1996-1998 period. One could get the impact that firms lost permanent buyers and exchanged them with new buyers in the period studied. As number of new buyers and sales to new buyers increase fast, the permanent buyers' proportion falls although their absolute number doesn't change. Unfortunately, we don't have data to control for this effect. However, with increasing competition firms will have to put in more effort to keep their permanent buyers. In this context, marketing expenses play an important role.

The estimated regression coefficients reported in Table A_5 indicate that investment in marketing is highly positively linked to expanded cash flow. If we also consider the average values for marketing expenses per capital and expanded cash flow per capital, reported in Table 4, the calculated elasticity of marketing investment per capital with respect

to cash flow per capital is between 0.59 and 1.24 across different estimation methods.²⁰ This implicates that a 1%-rise in cash flow per capital is, ceteris paribus, followed by 0.59 to 1.24%-rise in marketing expenses per capital. However, a 1%-rise in excessive labour costs, ceteris paribus, lower the marketing expenses by 0.03 to 0.08% on average. The statistically significant coefficient on sales revenue per capital confirms that the neo-classical and accelerator models also apply to investment in marketing with coefficient of elasticity between 0.02 and 0.55.

The detailed analysis, reported in tables A_6 and A_7, shows that bargaining over the expanded cash flow is more likely when the marketing in the domestic market is taken into the consideration. Also the link between marketing expenses and sales revenue in the domestic market is stronger than the link between marketing expenses and sales revenue in foreign markets. Our investment model is more likely to apply to marketing expenses in the domestic market what is seen also from the statistically significant and positive sign in the variable sales in the domestic markets as a percentage of total sales (HM) in the table A_5. The sample firms presumably put higher emphasis on marketing in the domestic market than on marketing in foreign markets. This might be justified also by simple statistical fact that random effects model is considered as more efficient estimator than fixed effects in the case of marketing on foreign markets. Obviously, there are important differences in marketing on foreign markets between firms. In the case of marketing on domestic market the higher emphasis is put on the variability within the firms (fixed effects model yields consistent estimates). Higher elasticity of investment with respect to expanded cash flow and labour costs above reservation wage indicate their higher volatility to market conditions.

Also in the case of investment in marketing the impact of ownership and Supervisory Board structures on investment level is statistically significant only in the case when the more simple structure of the model was imposed (coefficients estimated by OLS). However, as the results were not confirmed in the case of panel data estimations, we have to doubt in the results obtained by OLS. However, investment in marketing is in all three equations significantly higher in those firms that chose the external privatisation method. Since those are in general large firms²¹, it seems that the size of the firm does have the influence on investment in marketing.

²⁰ In this case, the random effects model provides better results than the fixed effects models.

²¹ See Prasnikar, Svejnar, 2000.

Investment in employees' training

The investments made by firms in training employees (human capital) are seen as an important source of acquiring competitive advantages in the world of global competition (Williamson, 1982, Milkovich, Bloom, 1998). External training of employees encompasses especially the acquiring of knowledge for improving working processes, developing chains with suppliers on one side and buyers on the other (improving business processes) and learning on the basis of the best practice experiences. This is especially important for firms operating in transition countries, as they need radical reorganisation of the human resources area (Pinto et al., 1993, Carlin et al., 1994).

As seen from the data in Table 1 show that Slovenian firms on average invested significantly less in employees' training than in marketing, R&D or fixed capital in the 1996-1998 period. This feature makes us sceptical that the investment model is really the right one for describing this kind of expenses.

In addition, the regression estimates, reported in Table A_8, and extremely low determination coefficients prove our doubt that firms do not treat training expenses as an investment component. Empirically tested equation (3a), where all the non-categorical variables are scaled by capital, does not lead to statistically significant results that could confirm our hypotheses ($\alpha_1 > 0$ and $\alpha_2 < 0$). We could find weak support for hypothesis that neoclassical model of investment works ($\alpha_3 > 0$). However, if we use the equation (4a) instead of equation (3a) and we scale all the non-categorical variables by labour, a positive, statistically significant, link between excessive labour costs per employee and training costs per employee is exhibited. (See Table A_9) Slovenian firms apparently treat employees' training as an element of additional remuneration in profitable firms where above-average wages are already paid.

The model of investment behaviour led to similar results if we take different variables of human resource restructuring as the dependent variable (for example, share of employees employed for variable time periods, net fluctuation of employees, share of employees with university education, working time utilisation). However, the investment model also did not work when we used management turnover as the dependent variable. These results contradict the findings of other researchers in transition countries. Claessens and Djankov (1999), for example, found that management turnover positively influenced a firm's profit. In our case, a firm operated better if the share of replaced top managers was lower and the share of older managers was higher. These findings demand a deeper analysis of human resource

management in Slovenian firms. The investment model that was tested in the paper is not suitable for analysing management and employees' movements.

5. CONCLUSIONS

Restructuring of Slovenian firms is performed in the conditions of imperfectly developed markets and undeveloped institutional structure that would be highly conducive to the functioning of a market economy. As Svejnar already noticed (Svejnar 2001), Slovenia belongs among the countries, that successfully introduced Type I reforms (macroeconomic stabilisation, price liberalization, reduction of direct subsidies, breakup of SOEs and monobank system, adequate foreign trade and competition policies), but they are late in Type II reforms, that include establishment and enforcement of a market-oriented legal system and accompanying institutions and further (in depth) development of a commercial banking sector and capital and labour markets regulations.

Although Slovenia had advantages at the beginning of transition due to early experiments with market reforms in former self-management system, the under-developed financial system remains one of the major problems. Banks, faced with short-term deposits on liability side, are constrained in their investment activity. Moreover, they operate with high costs. Primary capital market almost doesn't exist, while secondary market faces liquidity problems and drop in share prices. Due to the fact that external financing is bounded by all the factors already described, investment activity of the firms mostly depends on ability of generating internal funds. This represents the background for cash-flow (credit rationing) hypothesis, carried out in our investment analysis. Investment equation in our paper represents the tool for analysing strategic restructuring of Slovenian firms.

Slovenian firms still face substantial involvement of employees in decision-making process. First, this is the consequence of specific understanding of decision-making process introduced by the former workers' self-management system. It implies to established regulative mechanism represented by Co-Determination Law, accepted in 1993, that determines obligatory presence of Workers Council representatives in Supervisory Boards in all big and middle sized firms, wage bargaining system, that was put in force in the early nineties, and rigid labour legislation. All those facts reflect the understanding of decision-making process. Second, involvement of employees in decision-making process is one of the main outcomes of Slovenian privatisation that made employees the important owners of the

firms. On this background we formulate bargaining hypothesis in the investment function. According to the hypotheses managers and employees bargain over the allocation of internally generated funds between wages and investments. The above mentioned characteristics of labour market were also included as the main variables in labour demand equation used for defensive restructuring of the analysed firms.

Our study into the restructuring of 130 big and middle-sized privatised firms in the period 1996-1998 in some sense confirm the above mentioned institutional characteristics of Slovene economy. Labour demand estimation confirms relatively slow defensive restructuring. After the period 1993-1994 when the major wave of labour adjustment on new economic circumstances took place due to early retirement possibility enabled by legislation, the adjustment lose its dynamic. Short-term elasticity of labour demand with respect to wages and value added are lower than in developed markets and other transitional countries. Employment level in current year is very well explained by employment in previous year. Net fluctuation of employees show decreasing pattern in all period under study. However, high variability in long-run elasticity estimations indicate high level of uncertainty, characterised by excessive employees' influence in decision making process and rigid labour legislation, that make the adjustment of Slovenian firms to steady state equilibrium more difficult.

Our empirical study represents the new approach in analysing restructuring activities within the firm. When we talk about strategic restructuring we don't take into consideration only investment in fixed capital but also investment in soft capital as investment in R&D, marketing and training. The results justified our specification. For firms operating in transition countries investment in soft capital play the role as important as the investment in fixed capital.

Our analysis confirms credit rationing and bargaining hypothesis in all types of investment except in the case of training. Similarly, the proven accelerator model hypothesis implies that Slovenian firms started to behave similar as the firms from developed countries with profit maximization goal as the most important one. However, as we already noticed they are constrained with under-developed financial markets. This is clearly evident, for example, in fixed capital investment function estimation where credit rationing and bargaining hypotheses aren't confirmed in the case of random effects specification which was proven to be more efficient than fixed effects model. It means that there exist significant differences among firms in the level of investment activity proving our doubts that some firms in Slovenia face easier access to external funds, provided by domestic and foreign

banks. Those firms exhibited the highest investment activity in the studied period. Although those firms probably represent the most successful Slovenian firms we have to stress that the institutional drawbacks in the form of under-developed capital and financial markets eliminate an important part of economy and, consequently, the important part of domestic product is being lost. How to develop the market functioning bank sector and capital markets remains one of the fundamental problems in Slovenia.

R&D and marketing investment function estimation confirmed our expectations. Cash flow hypothesis and bargaining hypothesis in both cases play important role. Similarly, existed empirical evidences (Himmelberg, Peterson, 1994, Hubbard, 1998, Chandler, 1993, Batra, 1996) suggest that financing of those investments crucially depends on ability of creating internal funds within the firms. However, it should be noticed that in the case of marketing Slovenian firms put much higher emphasis on marketing in domestic market. The reason that fixed effects specification is the consistent estimator in the case of marketing in domestic market and R&D expenses might be in the fact that those expenses show increasing patterns within the firms. The unobserved firm-level characteristics like quality of management presumably play an important role in determining the level of those expenses. The opposite conclusion can be draw for marketing in foreign markets where random effects model was proven to be more efficient comparing with fixed effects specification indicating, that only some, presumably big, firms systematically take interest in marketing on foreign markets.

The human resource management area is obviously the weaker part in restructuring process of Slovenian firms. We didn't find support for the hypothesis that firms treat training expenses as necessary investment. They more likely represent additional source of remuneration in those firms where employees are already paid higher wages. Moreover, it is not surprising that random effects specification of equation (4a) is more efficient than fixed effects specification.

Additional explanatory variables describing specific firm-level characteristics, as ownership and Supervisory Board structure, privatisation method and proportion of sales on domestic market, didn't show the statistically significant influence on defensive and strategic restructuring in the studied period. However, insignificant influence of ownership structure can be partly assigned to ownership dispersion on one side and its structure on the other. Ownership dispersion in the circumstances of less liquid capital market usually leads to insufficient monitoring of firm's management usually driven by wrong incentives. Ownership structure reveals that the most important external owners are Authorised Investment Funds

and State Funds while employees, retired workers and their relatives form the group of internal owners. If we consider external owners as characterised by rent-seeking behaviour already described by Gregorič et al. (2000) and Pahor et al.(2001) due to weak control and political involvement and if we deny the explicit assumption that internal owners only follow short-term interest to rise wages on the expense of investment (Prašnikar, Gregorič, 2001) especially in the best firms privatised at the beginning of privatisation process, the result sounds reasonable. The main question of corporate governance in Slovene reality remains how to ensure the concentration of ownership rights. Free trading of ownership rights performing on liquid secondary capital market sounds to be a reasonable solution. Therefore, the problem of illiquid capital market should attract full attention of Slovenian policy-makers.

In our analysis we didn't confirm the hypothesis that Supervisory Board structure plays significant role in the process of restructuring although being an important decision making board in the firm that, after all, plays an important role in supervision of a company's affairs and elections of a company's management. But we can't be satisfied with the result that there is no significant influence. The employees enter in Supervisory Board through two different channels, as representatives of owners and Workers' council. And if the structure of the Supervisory Board doesn't have any negative influence, it doesn't have positive either. The rigidity set by Co-Determination Law should be abolished as well as major restrictions set by labour legislation that impede the labour market flexibility.

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APPENDIX

Table A.1.1: Summary statistics for variables used in the analyses for the 1996-1998 period

Variable	Year	N	Mean	Standard deviation	Description
L	1996	130	572.8692	771.1771	Number of employees
	1997	130	584.8462	800.4173	
	1998	130	561.9462	745.6513	
K	1996	124	3005229	5644666	Tangible assets (Capital) in 1000 SIT
	1997	129	3090264	5651655	
	1998	128	3162600	5587442	
R	1996	124	6414682	1.26E+07	Sales revenue in 1000 SIT
	1997	130	6948631	1.40E+07	
	1998	129	6739663	1.23E+07	
VA	1996	124	1568394	2513839	Value added in 1000 SIT
	1997	129	1667513	2764518	
	1998	128	1594465	2627907	
YL	1996	124	1171681	1691805	Labour costs in 1000 SIT
	1997	130	1181578	1741419	
	1998	129	1150335	1624690	
Y^aL	1996	130	826547.3	1104464	Reservation labour costs in 1000 SIT
	1997	130	865640	1161577	
	1998	130	844629.7	1087413	
R/L	1996	124	10253.42	6971.956	Sales revenue per employee in 1000 SIT
	1997	130	10897.55	7506.717	
	1998	129	10944.78	7025.453	
VA/L	1996	124	2607.826	1610.585	Value added per employee in 1000 SIT
	1997	129	2785.395	1753.862	
	1998	128	2799.94	1710.641	
Y/L	1996	124	1985.558	687.0935	Labour costs per employee in 1000 SIT
	1997	130	2029.793	785.6604	
	1998	129	2069.451	780.4646	
Y^a/L	1996	130	1442.001	148.5787	Reservation labour costs per employee in 1000 SIT
	1997	130	1613.585	163.0485	
	1998	130	1769.875	181.826	
I_{FK}	1996	117	389675.4	825449.3	Investment in fixed capital in 1000 SIT
	1997	96	504845	1095825	
	1998	97	500970.8	1015099	
I_{FK}/R	1996	122	5.596967	5.675432	Investment in fixed capital relative to sales revenue (%)
	1997	96	6.445729	7.11991	
	1998	98	6.726429	7.603601	
I_{RR}	1996	121	132058.1	318352.7	R&D expenses in 1000 SIT
	1997	116	146625.4	437367.2	
	1998	117	152936.3	472734.2	
I_{RR}/R	1996	127	2.065386	2.507908	R&D expenses relative to sales revenue (%)
	1997	116	2.314655	2.774368	
	1998	118	2.303559	2.863521	
I_T	1996	109	180540.8	453596.6	Marketing expenses in 1000 SIT
	1997	105	242241.6	607308.9	
	1998	103	263607.4	718305.2	

Variable	Year	N	Mean	Standard deviation	Description
I_{T/R}	1996	116	3.575655	4.412636	Marketing expenses relative to sales revenue (%)
	1997	105	3.85279	4.686142	
	1998	104	4.147644	4.946508	
I_U	1996	108	13327.84	32344.81	Training expenses in 1000 SIT
	1997	91	16033.58	45623.62	
	1998	90	13020.19	37155.08	
I_{U/R}	1996	103	0.282174	0.659716	Training expenses relative to sales revenue (%)
	1997	91	0.296791	0.597901	
	1998	89	0.189507	0.325633	
Z_{UI}	1996	118	9.409897	7.805324	Employees with university education (%)
	1997	74	10.035	8.354911	
	1998	108	9.013301	8.638553	
VM/L	1996	117	3.343894	6.986454	Top managers relative to all employees (%)
	1997	89	2.991497	3.48153	
	1998	93	3.028831	3.73358	
M_{U/L}	1996	117	59.35998	30.4969	Top managers with university education (%)
	1997	74	63.45488	27.74119	
	1998	90	58.79252	29.62078	
VM_{Z/L}	1996	116	0.1820914	0.3106108	Replaced top managers relative to all employees (%)
	1997	93	0.2558814	0.7372976	
	1998	92	0.2107478	0.3714924	
M_{5let/L}	1996	119	16.34599	23.51371	Top managers with working period less than 5 years relative to all employees (%)
	1997	72	15.95874	21.68425	
	1998	91	13.29967	23.54221	
INTSUP	1996	122	52.86297	20.78901	Employee representatives in the Supervisory Board (%)
	1997	123	52.35189	21.0586	
	1998	123	49.54702	20.15525	
HM	1996	100	62.85945	34.7331	Sales revenue on domestic market relative to total sales (%)
	1997	99	59.0603	34.24529	
	1998	99	59.5403	33.77943	

* All absolute figures are represented in 1996 constant prices.

Table A.1.2: Ownership structure for the 1996-1998 period

Variable	Year	N	Mean	Standard deviation	Description
STATE_FUND	1996	127	23.85701	13.82376	Ownership share of state funds (%)
	1997	121	20.26215	13.41738	
	1998	120	17.82017	11.96284	
INV_FUND	1996	127	14.00373	11.0177	Ownership share of investment funds (%)
	1997	121	17.17521	13.44091	
	1998	120	17.88475	15.37414	
OTHER_FIRMS	1996	127	10.72197	25.69503	Ownership share of other firms (%)
	1997	121	13.61116	27.53837	
	1998	120	17.2125	29.9881	
BANKS	1996	127	1.312205	6.240424	Ownership share of banks (%)
	1997	121	0.840579	3.832095	
	1998	120	1.342417	4.885139	
SMALL	1996	127	4.182835	9.735816	Ownership share of small shareholders (%)
	1997	121	3.86281	8.959303	
	1998	120	3.44375	8.397352	
STATE	1996	127	1.666457	10.2596	Ownership share of the state (%)
	1997	121	1.749091	10.50603	
	1998	120	2.053583	11.21596	
MUNICIP	1996	127	0.226142	1.219282	Ownership share of the municipalities (%)
	1997	121	0.237355	1.248317	
	1998	120	0.182583	1.097881	
INTERNAL	1996	127	37.40118	19.08385	Ownership share of internal owners (%)
	1997	121	37.82	19.3752	
	1998	120	36.27167	20.95008	
WORKER	1996	115	24.86043	15.18854	Ownership share of internal owners-workers (%)
	1997	109	24.36156	15.05925	
	1998	108	22.87591	16.13291	
MANAG	1996	115	1.813304	4.254355	Ownership share of internal owners-managers (%)
	1997	109	2.177706	4.983952	
	1998	108	2.780759	5.82953	
RETIRED	1996	115	10.27835	9.415762	Ownership share of internal owners-retired workers (%)
	1997	109	10.92817	9.593763	
	1998	108	10.29056	9.434347	
UNREAL	1996	127	4.820598	9.392179	Unrealised internal buy-out (%)
	1997	121	2.881074	5.864065	
	1998	120	1.628333	4.58126	
OTHERS	1996	127	1.774646	6.031326	Others –denationalisation claimants, etc (%)
	1997	121	1.560579	5.642729	
	1998	120	1.993583	7.185507	

Table_A.1.3: Sources of investment in physical capital

Variable	Year	N	Mean	Standard Deviation	Description
PROFIT_ INV	1996	116	11.20431	21.51553	Retained profit (%)
	1997	92	8.513152	20.66466	
	1998	94	8.403511	16.85028	
ORD_ SHARES	1996	116	0	0	Issue of ordinary shares (%)
	1997	92	1.080435	7.725628	
	1998	94	0.404255	3.919401	
PREF_ SHARES	1996	116	0	0	Issue of preferential shares (%)
	1997	92	0	0	
	1998	94	0	0	
BONDS	1996	116	0.327586	3.528211	Issue of bonds (%)
	1997	92	0	0	
	1998	94	0	0	
LOANS_ INV	1996	116	13.62931	24.06966	Long-term bank loans (%)
	1997	92	12.79261	22.67677	
	1998	94	11.4834	22.93272	
DEPR	1996	116	62.60086	35.52937	Depreciation (%)
	1997	92	59.87261	37.88535	
	1998	94	62.65415	37.13564	
DISINV	1996	116	3.513793	12.54014	Disinvestment (%)
	1997	92	6.142283	18.41985	
	1998	94	4.964787	13.13698	
CREDITS	1996	116	5.62931	12.75831	Short-term credit (%)
	1997	92	5.142391	13.69254	
	1998	94	5.866489	14.12887	
OTHER	1996	66	2.469697	12.12654	Other sources of investment (%)
	1997	92	4.608696	20.12486	
	1998	94	5.755319	21.29601	

Table_A.1.4: Structure of investment in R&D

Variable	Year	N	Mean	Standard Deviation	Description
BASIC_ RESEARCH	1996	107	9.831776	15.50866	Basic research into new products and technologies (%)
	1997	92	8.271739	13.72741	
	1998	90	12.02778	19.21469	
PRODUCTS_ IMPROV	1996	107	36.40187	27.70357	Research into product improvement (%)
	1997	92	31.125	27.21845	
	1998	90	29.83333	26.13158	
NEW_ PRODUCTS	1996	107	36.82243	28.191	New products' development (%)
	1997	92	40.88587	29.19695	
	1998	90	42.18889	28.52001	
NEW_ METHOD	1996	107	10.85981	12.62107	New production method development (%)
	1997	92	10.79348	11.99775	
	1998	90	10.07778	12.44695	
LAB_ ACTIVITY	1996	107	6.084112	8.040137	Laboratory activities (%)
	1997	92	6.75	10.80153	
	1998	90	5.872222	9.612013	

Table_A.1.5: Sources of investment in R&D

Variable	Year	N	Mean	Standard Deviation	Description
PROFIT_R&D	1996	107	88.04112	23.92649	Internal funds (%)
	1997	91	89.71527	20.26816	
	1998	92	91.62391	17.9205	
LOANS_R&D	1996	107	5.420561	15.603	Loans (%)
	1997	91	2.967033	10.24635	
	1998	92	2.391304	8.53172	
PARTNER	1996	107	2.654206	10.60269	Partners' financing (%)
	1997	91	1.527473	8.454244	
	1998	92	2.630435	10.5692	
F_FIRMS	1996	107	0.747664	4.698642	Foreign firms(%)
	1997	91	0.43956	4.193139	
	1998	92	0.48913	4.197054	
D_FIRMS	1996	107	0.093458	0.966737	Domestic firms (%)
	1997	91	0.164835	1.166797	
	1998	92	0.141304	1.08518	
MINISTRY	1996	107	0	0	Financed by Ministry of Science and Technology (%)
	1997	91	0.214835	1.42323	
	1998	92	0.043478	0.293259	
FUND	1996	107	2.014953	5.252759	Financed by Fund for Technology and Development (%)
	1997	91	3.872088	10.57462	
	1998	92	2.647826	7.527787	

Table_A.1.6: Marketing expenses' partition

Variable	Year	N	Mean	Standard Deviation	Description
EXPENSES ON DOMESTIC MARKET					
RESEARCH	1996	88	7.484432	12.81061	Market research (%)
	1997	88	7.567955	13.38546	
	1998	87	8.528966	15.13587	
SALE	1996	88	56.40375	31.64963	Salespersons' remuneration (%)
	1997	88	56.38409	30.78504	
	1998	87	55.24977	30.65343	
ADVERTISING	1996	88	32.70273	30.62009	Advertising (%)
	1997	88	32.63886	28.87543	
	1998	87	32.77299	28.75815	

Variable	Year	N	Mean	Standard Deviation	Description
EXPENSES ON FOREIGN MARKETS					
RESEARCH	1996	53	13.71887	18.26967	Market research (%)
	1997	56	14.39786	19.87484	
	1998	56	14.69268	18.07132	
SALE	1996	53	64.3766	29.3513	Salespersons' remuneration (%)
	1997	56	61.41214	31.6248	
	1998	56	62.63179	30.51539	
ADVERTISING	1996	53	21.90453	28.31238	Advertising (%)
	1997	56	22.76143	29.45377	
	1998	56	22.67482	30.02931	

Table_A.1.7: Buyers

Variable	Year	N	Mean	Standard Deviation	Description
NEW_B	1996	112	11.22589	10.41336	New buyers relative to all buyers (%)
	1997	100	12.8892	14.88949	
	1998	98	14.01102	15.15648	
SALE_NEW	1996	112	7.875893	7.755036	Sale to new buyers relative to total sale (%)
	1997	99	8.947778	12.51468	
	1998	97	10.67237	13.14928	
PERMANENT_B	1996	98	68.02959	23.12695	Permanent buyers relative to all buyers (%)
	1997	99	67.46869	22.13201	
	1998	97	67.13814	21.68546	
SALE_PERM	1996	97	74.36785	21.99042	Sale to permanent buyers relative to total sale (%)
	1997	99	73.03283	22.58164	
	1998	96	71.82167	22.26518	

TABLE A_2: LABOUR DEMAND EQUATION

Dependent variable: InL

	OLS Levels		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
LnW	-0.6513***	0.1715	-0.6173***	0.1066	-0.6668***	0.0745	-1.0981***	0.4064	-0.5904	0.4554
LnVA	0.2523***	0.0506	0.1815***	0.0365	0.2357***	0.0291	0.4726***	0.1668	0.4107	0.2939
lnL(-1)	0.9001***	0.0306	0.3713***	0.0749	0.8739***	0.0320	0.8608***	0.0515	0.8096***	0.3011
lnW(-1)	0.4954***	0.1705	0.3363***	0.0947	0.4939***	0.0711	0.8367**	0.3722	0.4125**	0.1787
LnVA(-1)	-0.1492***	0.0547	-0.0463	0.0420	-0.1108***	0.0343	-0.3317*	0.1704	-0.0426	0.0770
FUNDS	0.0000	0.0004	-0.0004	0.0009	0.0001	0.0005	0.0000	0.0005	-0.0004	0.0011
OTHER_FIRMS	0.0006	0.0003	-0.0006	0.0009	0.0005	0.0004	0.0003	0.0004	-0.0006	0.0009
MISCEL_OWN	-0.0001	0.0004	0.0003	0.0011	-0.0001	0.0005	0.0002	0.0006	-0.0015	0.0009
EXTSUP	-0.0005**	0.0002	-0.0001	0.0006	-0.0005	0.0003	-0.0001	0.0003	0.0007	0.0006
HM	-0.0001	0.0002	-0.0008	0.0013	-0.0001	0.0002	-0.0003	0.0002	0.0000	0.0019
EXT	-0.0054	0.0101	(dropped)		-0.0053	0.0164	0.0124	0.0176	(dropped)	
Y97	-0.0045	0.0119	-0.0082	0.0109	-0.0044	0.0113	0.8409**	0.3444	(dropped)	
Y98	0.0235*	0.0137	-0.0024	0.0123	0.0197*	0.0115	0.8583	0.3425	0.0307	0.0235
Cons	0.3336	0.3182	3.9953***	1.0548	0.3207	0.2141	(dropped)		-0.0178	0.0229
Industry dummies	Yes		No		Yes		Yes		No	
S-run E(L/W)	-0.6513***	0.0784	-0.6173***	0.1066	-0.6668***	0.0745	-1.0981***	0.4064	-0.5904	0.4554
L-run E(L/W)	-1.5605**	0.7213	-0.4469**	0.2319	-1.3711**	0.7874	-1.8778***	0.1944	-0.9343	7.0809
S-run E(L/VA)	0.2523***	0.0291	0.1815***	0.0365	0.2357***	0.0291	0.4726***	0.1668	0.4107	0.2939
L-run E(L/VA)	1.0320**	0.4590	0.2150***	0.0911	0.9904***	0.0310	1.0122	4.5203	1.9332	3.2985
Adj.R2	0.991		0.9749		0.9915		0.9922		0.1333	
N	268		268		268		170		158	
N of groups			106		106					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we instrumented values (and differences) of lagged labour, current value added and labour costs by using second lag values of labour, value added and labour costs and their second lag differences.
4. S-run E(.) and L-run E(.) indicate short and long run elasticity, respectively.
5. F test (Ho: all $U_i=0$): $F(105,150) = 2.78^{***}$
6. Hausman: Tests Chi2-value FE vs RE:2762.51***.
7. All estimates are corrected for heteroskedasticity.

TABLE A_3: INVESTMENT IN FIXED CAPITAL EQUATION

Dependent variable: $I(FK)/K_{i,t}$

	OLS Level		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
$(p^a + I_{RR} + I_T + I_U) / K_{i,t}$	0.0311	0.0426	0.2298**	0.0953	0.0312	0.0339	0.1828**	0.0813	0.5167**	0.2233
$(yL - y^a L) / K_{i,t}$	-0.0659	0.0672	0.1029	0.2003	-0.0660	0.0840	-0.5616	0.5171	0.1255	0.2302
$R / K_{i,t}$	0.0185**	0.0072	0.0398**	0.0154	0.0185***	0.0060	0.0153	0.0222	0.0343*	0.0117
FUNDS	-0.0008	0.0007	-0.0002	0.0029	-0.0008	0.0010	-0.0001	0.0009	0.0004	0.0022
OTHER_FIRMS	0.0011	0.0009	0.0022	0.0027	0.0011	0.0008	0.0018*	0.0010	0.0029	0.0022
MISCEL_OWN	-0.0005	0.0005	0.0014	0.0025	-0.0004	0.0009	0.0003	0.0009	-0.0001	0.0026
EXTSUP	-0.0006	0.0003	0.0003	0.0014	-0.0006	0.0005	-0.0007	0.0004	0.0005	0.0005
HM	-0.0000	0.0003	-0.0012	0.0026	-0.0000	0.0004	-0.0000	0.0004	0.0013	0.0037
EXT	-0.0041	0.0196	(dropped)		0.0038	0.0276	-0.0316	0.0280	(dropped)	
Y97	0.0216	0.0214	0.0048	0.0267	0.0215	0.0248	0.0110	0.0263	(dropped)	
Y98	0.0172	0.0221	0.0140	0.0285	0.0172	0.0245	0.0166	0.0246	0.0437	0.0417
Cons	0.0621	0.0484	-0.0384	0.2359	0.0615*	0.0601	0.0145	0.0802	-0.0260	0.0200
Industry dummies	Yes		No		Yes		Yes		No	
Adj.R2	0.1573		0.1245		0.2109		0.0194		...	
N	237		237		237		237		139	
N of groups			98		98					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we used lagged levels (or differences) of value added, labour costs and sales per capital, and regional dummies as instruments.
4. F test (Ho: all $U_i=0$): $F(97, 129) = 1.22$
5. Hausman: Tests Chi2-value FE vs RE: 10.65
6. All estimates are corrected for heteroskedasticity.

TABLE A_4: INVESTMENT IN R&D EQUATION

Dependent variable: $I(RR)/K_{i,t}$

	OLS Level		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
$(p^a + I_{RR} + I_T + I_U) / K_{i,t}$	0.1600***	0.0427	0.0976***	0.0162	0.1257***	0.0132	0.2988**	0.1241	-0.0009	0.0515
$(y_L - y^a L) / K_{i,t}$	-0.3281***	0.0859	-0.1590***	0.0340	-0.1875***	0.0316	-1.2862***	0.4093	-0.1697*	0.0913
$R / K_{i,t}$	0.0421***	0.0082	0.0182***	0.0026	0.0227***	0.0024	0.0678***	0.0219	0.0119*	0.0062
FUNDS	0.0014**	0.0005	-0.0007	0.0005	-0.0003	0.0004	0.0012	0.0013	-0.0002	0.0008
OTHER_FIRMS	0.0012***	0.0004	-0.0002	0.0004	0.0000	0.0004	0.0017**	0.0008	-0.0001	0.0008
MISCEL_OWN	0.0015***	0.0005	-0.0000	0.0004	0.0002	0.0003	0.0028**	0.0011	0.0005	0.0008
EXTSUP	-0.0001	0.0002	-0.0003	0.0002	-0.0002	0.0002	-0.0000	0.0005	-0.0001	0.0001
HM	-0.0008***	0.0002	-0.0000	0.0004	-0.0003	0.0003	-0.0007*	0.0004	-0.0004	0.0008
EXT	-0.0353**	0.0159	(dropped)		-0.0288	0.0239	-0.0699**	0.0407	(dropped)	
Y97	-0.0104	0.0167	0.0061	0.0045	0.0033	0.0046	-0.0286	0.0269	(dropped)	
Y98	-0.0027	0.0163	0.0111**	0.0048	0.0089*	0.0048	-0.0026	0.0270	-0.0140*	0.0072
Cons	-0.0587	0.0424	0.0331**	0.0401	0.0605	0.0369	-0.1427**	0.1022	0.0139**	0.0060
Industry dummies	Yes		No		Yes		Yes		No	
Adj.R2	0.6601		0.5988		0.6436		0.1603		0.1757	
N	237		237		237		237		139	
N of groups			98		98					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we used lagged levels (or differences) of value added, labour costs and sales per capital, and regional dummies as instruments.
4. F test (Ho: all $U_i=0$): $F(98,129) = 38.7***$
5. Hausman: Tests Chi2-value FE vs RE: 32.07***
6. All estimates are corrected for heteroskedasticity.

TABLE A_5: INVESTMENT IN MARKETING EQUATION

Dependent variable: $I(T)/K_{-1}$

	OLS Levels		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
$(p^a + I_{RR} + I_T + I_U) / K_{-1}$	0.4174***	0.0935	0.2724***	0.0201	0.2988***	0.0164	0.1984***	0.0648	0.2815***	0.0661
$(yL - y^aL) / K_{-1}$	-0.2461	0.1790	-0.2072***	0.0424	-0.1799***	0.0395	0.0994	0.4368	-0.1139	0.0916
R / K_{-1}	0.0015	0.0121	0.0301***	0.0032	0.0275***	0.0030	0.0225*	0.0117	0.0280***	0.0041
FUNDS	-0.0013	0.0009	0.0008	0.0006	0.0003	0.0005	-0.0031***	0.0011	0.0003	0.0004
OTHER_FIRMS	-0.0019***	0.0006	0.0001	0.0005	-0.0003	0.0005	-0.0032***	0.0010	0.0000	0.0004
MISCEL_OWN	-0.0012	0.0007	0.0002	0.0005	-0.0001	0.0004	-0.0024*	0.0013	-0.0001	0.0005
EXTSUP	0.0012***	0.0004	0.0000	0.0003	0.0001	0.0002	0.0016***	0.0005	-0.0000	0.0001
HM	0.0009***	0.0003	0.0010*	0.0005	0.0010***	0.0003	0.0010***	0.0003	0.0011*	0.0007
EXT	0.0817***	0.0241	(dropped)		0.0825***	0.0287	0.1304***	0.0469	(dropped)	
Y97	0.0017	0.0202	-0.0113**	0.0056	-0.0112*	0.0058	0.0113	0.0241	(dropped)	
Y98	0.0228	0.0205	0.0028	0.0060	0.0045	0.0061	0.0245	0.0224	0.0235***	0.0067
Cons	-0.0907*	0.0616	-0.1502***	0.0500	-0.1588***	0.0451	-0.0327	0.0609	-0.0100*	0.0054
Industry dummies	Yes		No		Yes		Yes		No	
Adj.R2	0.7600		0.6576		0.7278		0.6941		0.6201	
N	237		237		237		237		139	
N of groups			98		98					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we used lagged levels (or differences) of value added, labour costs and sales per capital, and regional dummies as instruments.
4. F test (Ho: all $U_i=0$): $F(97,129) = 37.95***$
5. Hausman: Tests Chi2-value FE vs RE: 14.93
6. All estimates are corrected for heteroskedasticity.

TABLE A_6: INVESTMENT IN MARKETING ON DOMESTIC MARKET EQUATION

Dependent variable: $I(TD)/K_{i,t}$

	OLS Levels		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
$(p^a + I_{RR} + I_T + I_U) / K_{i,t}$	0.3300***	0.0628	0.2459***	0.0206	0.2786***	0.0166	0.2203***	0.0739	0.2945***	0.0636
$(yL - y^aL) / K_{i,t}$	-0.2440**	0.1149	-0.2010***	0.0433	-0.1957***	0.0409	-0.2378	0.4055	-0.1364*	0.0824
$R(TD) / K_{i,t}$	0.0272***	0.0100	0.0314***	0.0039	0.0333***	0.0037	0.0430***	0.0164	0.0298***	0.0047
FUNDS	-0.0018*	0.0009	0.0007	0.0006	0.0003	0.0005	-0.0033***	0.0012	0.0006	0.0004
OTHER_FIRMS	-0.0017**	0.0006	0.0002	0.0005	-0.0000	0.0005	-0.0027***	0.0010	0.0004	0.0004
MISCEL_OWN	-0.0013	0.0008	0.0003	0.0005	0.0000	0.0004	-0.0022**	0.0013	0.0001	0.0004
EXTSUP	0.0015***	0.0004	0.0001	0.0003	0.0002	0.0002	0.0017***	0.0005	0.0000	0.0001
EXT	0.0716***	0.0266	(dropped)		0.0512*	0.0311	0.0896*	0.0460	(dropped)	
Y97	-0.0019	0.0227	-0.0132**	0.0056	-0.0147***	0.0056	0.0024	0.0240	(dropped)	
Y98	0.0131	0.0216	-0.0056	0.0060	-0.0054	0.0059	0.0143	0.0225	0.0225***	0.0066
Cons	-0.0577	0.0521	-0.0785*	0.0413	-0.0871	0.0439	0.0182	0.0547	-0.0141***	0.0053
Industry dummies	Yes		No		Yes		Yes		No	
Adj.R2	0.6860		0.6527		0.6845		0.6471		0.4715	
N	232		232		232		232		137	
N of groups			96		96					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we used lagged levels (or differences) of value added, labour costs and sales per capital, and regional dummies as instruments.
4. F test (Ho: all $U_i=0$): $F(95,127) = 46.47***$
5. Hausman: Tests Chi2-value FE vs RE: 27.13***
6. All estimates are corrected for heteroskedasticity.

TABLE A_7: INVESTMENT IN MARKETING ON FOREIGN MARKET EQUATION

Dependent variable: $I(TT)/K_{-1}$

	OLS Levels		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
$(p^a + I_{RR} + I_T + I_U) / K_{-1}$	0.0234**	0.0100	0.0402***	0.0084	0.0282***	0.0057	0.0313	0.0232	-0.0090	0.0361
$(yL - y^aL) / K_{-1}$	-0.0231	0.0196	-0.0156	0.0136	-0.0268**	0.0117	-0.0461	0.0726	-0.0023	0.0371
$R(TT) / K_{-1}$	0.0213***	0.0030	0.0176***	0.0030	0.0201***	0.0022	0.0179***	0.0037	0.0242***	0.0082
FUNDS	0.0002	0.0002	0.0003	0.0002	0.0002	0.0001	0.0002	0.0002	-0.0000	0.0001
OTHER_FIRMS	-0.0000	0.0001	0.0001	0.0002	0.0000	0.0001	-0.0000	0.0001	-0.0002	0.0001
MISCEL_OWN	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	-0.0000	0.0001
EXTSUP	-0.0002*	0.0001	-0.0000	0.0001	-0.0001	0.0001	-0.0002*	0.0001	-0.0000	0.0000
EXT	0.0231***	0.0071	(dropped)		0.0182**	0.0076	0.0214***	0.0077	(dropped)	
Y97	0.0008	0.0051	0.0032	0.0022	0.0034	0.0021	0.0006	0.0053	(dropped)	
Y98	0.0066	0.0054	0.0091***	0.0023	0.0097***	0.0022	0.0067	0.0054	0.0002	0.0037
Cons	-0.0193	0.0122	-0.0219	0.0160	-0.0267**	0.0127	-0.0159	0.0126	0.0047*	0.0028
Industry dummies	Yes		No		Yes		Yes		No	
Adj.R2	0.5538		0.4821		0.5720		0.5471		0.2946	
N	232		232		232		232		136	
N of groups			96		96					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we used lagged levels (or differences) of value added, labour costs and sales per capital, and regional dummies as instruments.
4. F test (Ho: all $U_i=0$): $F(95,127) = 18.00***$
5. Hausman: Tests Chi2-value FE vs RE: 7.23
6. All estimates are corrected for heteroskedasticity.

TABLE A_8: INVESTMENT IN TRAINING EQUATION

Dependent variable: $I(U)/K_{-1}$

	OLS Levels		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
$(p^a + I_{RR} + I_T + I_U)/K_{-1}$	-0.0012	0.0015	-0.0027	0.0024	-0.0009	0.0014	-0.0010	0.0025	-0.0031	0.0040
$(yL - y^aL)/K_{-1}$	0.0082**	0.0041	0.0043	0.0050	0.0069*	0.0037	-0.0073	0.0251	0.0045	0.0040
R/K_{-1}	0.0004**	0.0002	0.0006	0.0003	0.0005*	0.0002	0.0011	0.0011	0.0004*	0.0002
FUNDS	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000
OTHER_FIRMS	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000
MISCEL_OWN	-0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000
EXTSUP	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000
HM	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000
EXT	-0.0001	0.0007	(dropped)		-0.0005	0.0018	-0.0003	0.0011	(dropped)	
Y97	0.0010	0.0015	0.0002	0.0007	0.0002	0.0006	0.0007	0.0018	(dropped)	
Y98	-0.0003	0.0012	-0.0013*	0.0007	-0.0012*	0.0006	-0.0003	0.0012	-0.0014*	0.0008
Cons	0.0059*	0.0041	0.0089	0.0062	0.0046	0.0035	0.0054	0.0039	0.0000	0.0006
Industry dummies	Yes		No		Yes		Yes		No	
Adj.R2	0.0655		0.0146		0.1193		...		0.0222	
N	212		212		212		212		119	
N of groups			93		93					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we used lagged levels (or differences) of value added, labour costs and sales per capital, and regional dummies as instruments.
4. F test (Ho: all $U_i=0$): $F(92,109) = 8.75^{***}$
5. Hausman: Tests Chi2-value FE vs RE: 6.65
6. All estimates are corrected for heteroskedasticity.

TABLE A_9: INVESTMENT IN TRAINING EQUATION

Dependent variable: $I(U)/L$

	OLS Levels		Fixed Effects		Random Effects		IV Levels		IV First Differences	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
$(p^a + I_{RR} + I_T + I_U) / L$	-0.0001	0.0028	-0.0003	0.0026	0.0006	0.0020	-0.0065	0.0081	0.0102	0.0087
$y - y^a$	0.0152*	0.0081	-0.0120	0.0107	0.0075	0.0059	0.0316	0.0220	-0.0858	0.0584
R/L	0.0003	0.0002	0.0013	0.0013	0.0003	0.0006	0.0008	0.0005	0.0067	0.0049
FUNDS	0.0064	0.1614	-0.1258	0.2500	-0.0998	0.1871	-0.0933	0.2144	-0.2537	0.3331
OTHER_FIRMS	0.0792	0.1266	0.0025	0.2237	-0.0049	0.1595	0.0033	0.1581	-0.1377	0.3116
MISCEL_OWN	-0.0527	0.1591	0.0740	0.2169	0.0029	0.1611	-0.1272	0.2054	0.0099	0.3496
EXTSUP	-0.0956	0.0885	0.0083	0.1235	-0.0095	0.1005	-0.0227	0.0925	0.0810	0.0782
HM	-0.1495*	0.0979	-0.1925	0.2218	-0.1147	0.1033	-0.1614*	0.0939	-0.4835	0.8186
EXT	-4.8100*	2.6718	(dropped)		-4.8650	7.1281	-1.8440	3.4954	(dropped)	
Y97	3.9829	5.3450	1.4302	2.3214	1.8152	2.1866	5.4682	5.1576	0.1264	4.0746
Y98	-1.9813	4.9104	-4.3821*	2.4871	-4.0150*	2.2828	-0.6894	4.5285	(dropped)	
Cons	16.6516	14.6606	28.3869	22.7440	16.4465	12.7052	17.6187	14.8163	-5.7702	2.8697
Industry dummies	Yes		No		Yes		Yes		No	
Adj.R2	0.1080		0.0054		0.1504		0.0697		...	
N	245		245		245		235		137	
N of groups			99		99					

Note:

1. ***, **, * statistically significant values at 1%, 5% and 10% on a two tail test, respectively.
2. Firms serving as a base (constant) (a) were privatised by the internal method, (b) 100% owned by insider owners, (c) had only employees' representatives in Supervisory Board and (d) sold their products only on domestic market.
3. In the IV models we used lagged levels (or differences) of value added, labour costs and sales per labour, and regional dummies as instruments.
4. F test (Ho: all $U_i=0$): $F(98,136) = 13.42^{***}$
5. Hausman: Tests Chi2-value FE vs RE: 7.01
6. All estimates are corrected for heteroskedasticity.