CENTRAL EUROPEAN UNIVERSITY, BUDAPEST
DEPARTMENT OF ECONOMICS

MA-THESIS

June 2001

Ownership Concentration and Restructuring in Czech Manufacturing Sector

by

Ondřej Vychodil

Submitted as partial fulfillment of the requirements
for the degree of Master of Arts in Economics

Supervisor: Prof. John S. Earle

Motto: "If we are to assume that the desire for personal profit is the prime force motivating control, we must conclude that the interests of control are different from and often radically opposed to those of ownership."

A. A. Berle and G. C. Means, 1932,
The Modern Corporation and Private Property, pp. 114.

INTRODUCTION

An inevitable part of the process of transition in the countries of Central and Eastern Europe (CEE) after the demise of central planning was the privatization of the majority of state-owned assets with the aim of providing enterprises with incentives and skills for so needed restructuring. Thus one of the most frequently raised questions in the context of economic and institutional transition has been: "How does privatization affect restructuring?"

This question has been examined by a number of economists, usually in its more specified modifications asking either how the *identity* of new owners matters, i.e. whether they are state/private, insiders/outsiders, managers/other employees, domestic/foreign (see Carlin *et al.* 1995; Earle and Estrin 1997; Claessens *et al.* 1997; Halpern and Körösi 1998; Earle and Telegdy 2000; Makhija and Spiro 2000), or how the emerged level of ownership *concentration* matters for firm's behavior (Earle and Estrin 1997; Claessens *et al.* 1998; Makhija and Spiro 2000).

This '**transition debate**' on the privatization-restructuring relationship has been largely inspired by a much older economic debate on the ownership-performance relationship in general. The start of this '**general debate**' dates back to 1932 when Berle and Means published their *Modern Corporation and Private Property* in which they argued that higher ownership concentration translates to stronger abilities of shareholders to monitor managers

and thus positively affects a firm's performance. For decades, a number of economists[1], building on Berle and Means' idea of the separation of ownership and control, came up with many alternative hypotheses on the concentration-performance relationship. With the expansion of econometric modeling more and more researchers also tested their hypotheses empirically, usually on data from U.S. companies. The positions of economists in this field range from that of Demsetz and Lehn (1985), who denied the existence of any relationship between ownership concentration and corporate performance, to that of Hermalin and Weisbach (1987), Morck, Shleifer and Vishny (1988), Stulz (1988), or McConnell and Servaes (1990), who discussed different types of a non-monotonous shape of the relationship.

This thesis examines the dependence of restructuring of manufacturing enterprises on private outside ownership concentration in a country that was the pioneer, among the transition economies, in mass applying voucher privatization – the Czech Republic. Out of the contributions to the 'transition debate' that are mentioned above, two have an intimately close relationship to the purpose of this paper. The first is the study of Claessens *et al.*(1998) which, using a sample of 706 Czech companies for the period 1992-1997, finds strong support for a positive and concave effect of ownership concentration on profitability[2] and somewhat weaker support for a similar relationship between concentration and labor productivity[3]. However, when the authors instrument ownership concentration, the obtained two-step results do not infer anything about the concavity/convexity of the function, though the positive effect of ownership concentration on profitability and productivity remains significant. The second is the paper of Makhija and Spiro (2000) which, using the sample of all 988 Czech companies

---

1 Predominantly representatives of the institutional theory of firm, agency theory, transaction costs economics, theory of property rights and other mutually not exclusive fields.

2 Profitability is there defined as gross operating profit over net fixed assets plus inventory.

3 Labor productivity is there defined as value added per employee.

privatized in the first wave of voucher privatization, studies the dependence of the market value (measured by Tobin's Q) of the firms on the identity of owners. Ownership concentration, measured by the Herfindahl index, is included as a control variable and its sign is positive and significant in all reported estimations. Thus both studies document the benefits of ownership concentration.

In this thesis, however, not only the *benefits* but also the *costs* of ownership concentration are discussed in the context of the specific institutional setup. Primary justification for this is the following. Although it was feared that the voucher scheme would create a highly diffuse ownership structure, this result has to a large extent been avoided by introducing investment privatization funds (IPFs) to the scheme. However, due to insufficient complementary regulation of the over-night emerged investment fund industry, combined with the neglected protection of minority shareholders' rights, weak bankruptcy law and other institutional drawbacks including weak system of enforcement, it can be argued that the costs of concentration have been largely present (Coffee 1996; Mejstřík *et al.* 1997; Mertlík 1998 and many others). It is not by chance that the Czech case has contributed to the international economic vocabulary with the word *tunneling*.

As an extremely valuable source for the analysis of the costs and benefits of ownership concentration, the arguments of Morck *et al.* (1988) are used and modified in order to fit the Czech case. Morck *et al.* illustrate the benefits of inside ownership concentration in the U.S. firms of the 1980's by an *incentive effect* and the costs by *the effect of entrenchment*. The **incentive effect** clearly applies to the examination of the private outside ownership concentration in the Czech firms of the 1990's as well. The costs of concentration in the Czech case, however, are viewed as resulting from the combination of a **manager-entrenchment effect**, **outsider-entrenchment effect** and a transition-specific **tunneling effect**. As a result of the analysis of these four effects, a strong and a weak form of a

hypothesis concerning the shape of the concentration-restructuring function are derived. The hypothesis – that the function, otherwise increasing, has a negative (strong form) or at least attenuated (weak form) slope in an inner part of its domain – is tested on an unbalanced panel of 90 Czech manufacturing companies for 1991-1998, using ordinary least squares (OLS), random and fixed effects (RE and FE), and instrumental variables (IV) estimations to remove possible selection bias.

The paper consists of three parts. Chapter 1 describes the character of ownership structure in the Czech Republic after privatization and relevant features of the overall institutional setup. Special attention is devoted to the role of investment privatization funds and to the residual property of the state. Chapter 2 starts with a brief summary of the 'general debate' and the 'transition debate' and then uses their main accomplishments for developing the hypothesis about the actual dependence of restructuring on ownership concentration in the Czech conditions. The third chapter tests this hypothesis on the firm-level panel data in four steps. First, it discusses the problems of measuring both restructuring and ownership concentration, then it specifies the models to be applied, after that it describes the data using summary statistics and, finally, it presents and interprets the empirical results. At the end of the paper, the main contribution and implications are briefly discussed.

1. PRIVATIZATION AND THE CZECH MANUFACTURING SECTOR

Until 1989, Czechoslovakia represented one of the most state-controlled socialist economies with only a negligible private sector employing 1.2% of the labor force and producing not more than 4% of the GDP. The process of privatization of state-owned productive capacities started immediately in 1990 in both logically and morally the most acceptable part, *property restitution*. This program was designed to return mostly agricultural land, apartment buildings and some shares of industrial enterprises nationalized after 1948 to the initial owners or their heirs and was vigorously pursued during 1990 and 1991. In total, it comprised property of the value of almost 200 billion crowns[4] (Mládek 1994).

The second part, *small-scale privatization*, proceeded between April 1991 and December 1993 by public auctions of about 22,000 small economic units out of which 18,000 were sold during the first twelve months of the program. Only domestic citizens could participate and bid for these shops, restaurants, hotels, small factories and so forth. The value of all the assets, which the state disposed of through the small-scale privatization, as reflected by the final prices within the auctions, was about 30 billion crowns (Earle *et al.* 1994).

Furthermore, state-owned productive assets worth 350 billion crowns were *municipalized* and *co-operatives* worth 150 billion crowns were *transformed* through various ways (Mládek 1994). Almost all these assets of the overall value of approximately 730 billion crowns were just small economic units. The real core of the economy was still to be privatized through mass (*large-scale) privatization*.

[4] Term "crowns" is used in this paper to denote Czechoslovak korunas or crowns (CSK) in the period until January 7, 1993, and Czech korunas or crowns (CZK) after January 8, 1993, when the currencies of the Czech and Slovak Republics separated. In the period 1990-1996, the exchange rate was more or less fixed at approximately 28 crowns per US dollar.

1.1. Mass Privatization

Large industrial enterprises and banks, together with other economic units not privatized through any of the above-mentioned programs entered *mass privatization*, launched in the spring of 1991. These firms, worth approximately 1,200 billion crowns were either liquidated[5] or privatized within one of two waves of large-scale privatization, or their privatization – if any – was postponed for later. The methods of mass privatization included both *standard methods* (represented by public auctions, public tenders and direct sales) and a special innovation based on Milton Friedman's suggestions from the 1970's and the Polish academic debate from the 1980's – *voucher scheme*.[6] Out of these two options, the latter played a substantially stronger part in the Czech mass privatization program than the former. In fact, the architects of the privatization initially planned to exclusively use the voucher method[7] but, finally, they were forced to abandon this idea and to use standard methods as well, though on average for smaller and less important companies.

There is a large amount of literature describing the process of mass privatization in the Czech Republic. The vast majority of this literature starts with an identification of the voucher scheme as the principal method and continues with the description of this scheme. This is usually accompanied by some tables showing that the book value of the assets privatized through vouchers was 370 billion crowns and/or that the overall value of the 1,664 companies that entered the voucher scheme was 550 billion crowns. When reading these numbers, one might ask what happened to the other 2,000 companies worth approximately 650 billion

---

5 The assets of the liquidated firms were usually sold in public auctions.

6 Leaving aside gratuitous transfers of residual shares mostly of utility companies to municipalities.

7 For a structured argumentation about the reasons for preferring voucher privatization see Ježek (1997).

crowns. Is it really true that the voucher scheme was so crucial for the resulting ownership structure? What about the use of standard methods in the Czech privatization?

It *is* true that the voucher scheme was the most crucial and it *is* true that the standard methods did not play a very significant role, but the above-mentioned numbers might be very misleading. Therefore this paper, using various sources of sometimes less and sometimes more exact numbers, tries to present an explicit overall digest clearly illustrating the crucial role of the voucher method in order to justify the focus on the voucher privatization and Investment Privatization Funds (IPFs). This 'privatization tree' is presented in Table 1 and commented on below. More specific attention will be devoted to these numbers in the following two sections when talking about the role of IPFs and that of the state.

- *Table 1: Czech Privatization in Numbers – Mass Privatization Tree*

As is obvious from the Table, in 1993 the state decided to keep, either forever or temporarily, 100% shares in companies representing 25% of all the assets in mass privatization. These were mostly large enterprises, usually with a certain degree of monopoly power and/or strategic importance (oil and energy industry, mining, steel industry etc.). Companies worth 45% of the 1,200 billion crowns were privatized through vouchers and other companies worth 15% through standard methods. The remaining 15% include companies that were liquidated, companies which were partly or entirely transferred for free to municipalities and companies which were partly or entirely restituted to their pre-nationalization owners or their heirs.

This implies that 60% (in terms of the book value) of all the enterprises the state decided to dispose of were privatized through voucher privatization. To put it in other way, the ratio of the assets of the companies that entered the voucher scheme to those that were sold by one of the three standard methods was 3:1. These numbers highlight the role voucher privatization played in the creation of new ownership structures in the post-socialist Czech

economy. This role is just somewhat mitigated by two facts. First, assets worth 730 billion crowns had already been privatized through other methods before the mass privatization, and second, the state still maintained a strong position in many companies – both as an absolute owner and as a blockholder of usually 34%, 51% or 67% shares. However, when attention is focused on the manufacturing sector in particular, as is the case of this paper, the importance of vouchers seems even larger because these mitigating factors become weaker – both previous privatization and the state presence (at least the one of the absolute form) concern mostly non-manufacturing industries.

The general goal of the reformers with respect to the manufacturing industry was restructuring. The main tool used to achieve this goal was the change in ownership structure. The most significant step toward this change was mass privatization, the most important part of which was the voucher scheme. And as Investment Privatization Funds were eventually the main actors within this scheme, it is natural to start a proper discussion of the post-privatization ownership structure and its effects on industrial restructuring within the manufacturing sector with a description of these newly emerged institutions.

1.2. Voucher Privatization and Investment Privatization Funds

Besides the obvious advantages of the voucher method (such as speed, social justice, political feasibility, limited possibility of abusing political power) its expected costs were limited availability of capital for restructuring. Another, related fear was that the voucher privatization would create such a dispersed ownership that the control would be, in fact, entirely separated from owners and transferred to managers. This was one of the reasons for introducing the status of Investment Privatization Fund (IPF), the role of which would be to constitute an effective link between the dispersed owners and the managers and thus to serve as a monitoring device. In fact, after the first wave of the voucher privatization, it became

clear that the control had been in most of the cases indeed separated from the owners but transferred to over-night powerful IPFs rather than to the managers of the privatized companies. In order to make clear what ownership concentration in the hands of IPFs means, it is necessary to explain the design of this new institution and the development of its regulation. Before doing so, let the paper emphasize that besides fulfilling the monitoring role, IPFs were also supposed to provide individual investors with the possibility of collective investment based on portfolio diversification. Designing IPFs as performers of both these roles, which are in contradiction with each other[8], resulted in the creation of a hybrid institution which is "*neither fish nor fowl*" (Coffee 1996, 183).

The first implementation of IPFs to the legal frame can be seen in the "Large-Scale Privatization Act" of February 1991[9]. This Act, nonetheless, does not specify the role and the function of the funds, it only prohibits them from participating in other than voucher privatization. IPFs are defined precisely in a federal government decree of September 1991[10], according to which the only requirements on an IPF are minimum capital of 100,000 crowns ($ 3,600), professional qualifications of its supervisory board's members, contract with a bank as its depository and license from the Ministry of Finance. The last requirement was rather formal and represented, in fact, no barrier. The government approached the IPFs in an extremely liberal way, allowing almost anyone to establish an IPF and relying on the people's rationality which would lead to the success of the most credible funds (i.e. the bank-affiliated ones) only.

---

8 In western capital markets, the former is usually performed by industrial holdings, while the latter by mutual funds. For a comparative institutional analysis of these two types of institutions and investment privatization funds see Ellerman (1998).

9 Officially called Act on the Consolidation of Transfer of State Owned Property to Other Persons, Act No. 92/1991 Coll.

In October, the Ministry of Finance started its advertising campaign explaining the scheme to a wide public, trying to attract as many citizens as possible. This campaign that, according to sociological researches of that time, succeeded in attracting only 20% of the population, was immediately followed by the aggressive campaigns of various IPFs. Many funds pursued a strategy of promising usually from between ten and fifteen thousand crowns straight after the first wave[11]. The vision of this amount of money "for sure" attracted people's attention considerably more than possibly much higher but uncertain gains from investing vouchers directly in companies. From this time, the tendency of IPFs to play a really significant role in privatization was obvious. Altogether 429 both bank-affiliated and private (i.e. not affiliated with banks) IPFs were established and participated in the first wave – 264 in the Czech Republic and 165 in the Slovak Republic. It is worth mentioning that no state-owned IPF was established[12].

The unexpected boom of IPFs accompanied by their aggressive advertising campaign, especially that of HC&C[13] which was obviously becoming very successful in attracting individuals' vouchers even though it was not affiliated with any bank, seemed dangerous to the government. This fear triggered a legislative reaction in the form of the approval of amendments to some existing legal norms in January 1992[14]. IPFs were required to invest no

---

[10] Federal Government Decree No. 383/1991 Coll.

[11] Some banks promised, alternatively, providing loans to those that invest their vouchers to IPFs founded by the banks' investment companies. For example Investiční banka promised CSK 15,000 loan to those who invested their entire voucher book with IPFs founded by Investiční's investment company PIAS, while PIAS offered to buy a voucher book investment in its funds at CSK 11,000. Thus, anyone who invested his or her all vouchers with any PIAS's fund was offered an option to get the loan, the cash or just the share in the fund. (Coffee 1996)

[12] Nevertheless, Czechoslovak banks where the state still kept controlling shares were permitted to establish their IPFs.

[13] Harvard Capital & Consulting was an investment company with 8 daughter IPFs, established by Viktor Kožený, whom the international financial community later assigned the name 'Pirate from Prague'.

[14] Amendments No. 67/1992 Coll. and 69/1992 Coll. to Federal Government Decree No. 383/1991 Coll.

more than 10% of their capital in any one security and to own no more than 20% of any single issuer. Furthermore, IPFs established by the same parent company could acquire at most 40% of one issuer. Before the first bidding round of the privatization started, several discretionary changes of the IPFs' regulation were approved, including the exclusion of civil servants from boards of directors and supervisory boards of IPFs and imposing a regulation on the portfolio structure.

A complex, but at the same time rather controversial legislative change came in May 1992, immediately before the bidding process started. The Investment Companies and Investment Funds Act[15] codified all the discretionary changes passed until that time and brought new significant elements, some of which could not, however, then influence the first wave. In order to prevent non-transparent cross ownership structures, the law prohibited the "IPFs established by banks" from investing in banks under privatization (the founding bank as well as any other). However, in fact, since the bank-affiliated IPFs were not "established by banks" but by investment companies that were established (and 100% owned) by banks, it became legally possible for cross ownership to emerge. Furthermore, open-ended and closed-end mutual funds were introduced, the licensing procedure became stricter, rules dealing with limiting and spreading risk were implemented etc. But this stricter regulation was only *de iure*; *de facto* the approach to IPFs in the second wave was basically still very liberal. The Investment Companies and Investment Funds Act also determined the maximum compensation that investment companies could get annually from the funds at the level of 2% of the average value of IPF's property or 20% of its profit.

[15] Act No. 248/1992 Coll.

The first wave of voucher privatization succeeded in creating a large capital market which was, by the Securities Act[16] from 1992, run by two organizers – The Prague Stock Exchange and RM-S Securities Exchange. The first and most evident characteristic of the market was unexpectedly high concentration of ownership. Many IPFs, particularly private ones, tended to reach the 20% ceiling. Thus HC&C, which was the third most successful collector of vouchers (after two bank-affiliated funds), diversified its portfolio in 51 companies only[17]. Three funds in alliances often owned majority. The post-privatization ownership structure was highly concentrated, both in the sense that in almost every privatized enterprise only few owners together had a majority of the shares (see Table 2) and that only about ten to fifteen investment groups acquired a majority of all the privatized assets.

- *Table 2: The Concentration of Ownership by Funds after Voucher Privatization*

The discrepancy between the *ex ante* expectations and the *ex post* reality is of a great significance because there are many features connected with the unanticipated shifts in control, especially those concerning incentives for IPFs, which would have been better treated during the implementation of the privatization legal framework, if such shifts in control had been anticipated. The Czech voucher privatization to outsiders with the presence of investment privatization funds was, in a simple language, equivalent to the transfer of ownership from the state to 6 million dispersed shareholders and of control from the state[18] to

---

[16] Act No. 591/1992 Coll.

[17] IPFs affiliated with the biggest Czech banks, in contrast, diversified their portfolios in hundreds of companies. This was, according to some observers, due to the irrational behavior of the banks during the bidding rounds stemming from their fear that they would not be able to allocate all the vouchers that they acquired. Others argue that the broad diversification was fully rational, aimed to acquire at least toe-hold stake in the highest possible number of companies. The thing is that 10% share was usually enough to achieve a seat on the managing board. Why should then a bank seeking to get leverage for its business interests (not to restructure actively its firm) invest more than is necessary? (Coffee 1996)

[18] One can oppose that it was not the state but the managements that in many cases executed a factual control over the SOEs. Nevertheless, it is not a subject of this paper to discuss the position of control in the pre-privatization period.

a small number of IPFs. Thus, many of the privatized enterprises were owned by millions of minority individual shareholders, controlled by IPFs and managed by managers appointed by the IPFs. The state, nonetheless, still remained very important player. In some of the voucher-privatized companies, it owned a controlling block of shares.

1.3. Residual State Property

This section starts with the description of direct state ownership after the mass privatization (subsection A). After that, the character of the Czech type of cross-ownership is introduced (subsection B) and then used for some inference about indirect state ownership (subsection C).

1.3.A. Direct State Ownership

As was noted in the Section 1.1., companies worth 300 billion crowns remained entirely in the state property even after the two waves of mass privatization. In addition, the state retained partial control in many of the privatized companies. This can be inferred again from the Table 1. In the first wave of voucher privatization, only 61.4% of the assets of the 988 included companies were privatized through vouchers, while 23.3% remained in the NPF and the remaining 15.3% were privatized by other means (predominantly gratuitous transfers to municipalities). The second wave of the voucher privatization concerned not only 676 other enterprises but also 185 companies that were already included in the first wave. This means that out of the first-wave companies' shares that remained in the NPF, some were privatized in the second wave. Therefore not 23.3% but rather some 15% of the first-wave companies shares should be considered as remaining in the state property. This represents the value of approximately 60 billion crowns. In the second wave of voucher privatization, the state decided to keep around 15 to 20 percent of the shares, worth 30 to 40 billion crowns.

Furthermore, the state retained some blocks of shares in enterprises that were transformed to joint stock companies (corporatized) but not privatized through vouchers. In non-corporatized firms that were either sold by standard methods or transferred to municipalities or restituted, the state did not keep any direct ownership control.

Altogether it can be stated that besides the absolute control over companies worth together 300 billion crowns, the state kept shares worth 110 to 150 billion crowns (i.e. 15-20%) in corporatized companies and no property in other companies included in the mass privatization, representing 150 billion crowns.

Looking at the analysis of the residual direct state property provided by Kočenda (1999), one can observe that the National Property Fund (NPF) had remained largely involved in the ownership structures until the late 1990's. The portfolio of the NPF consisted of 369 companies with 100% shares in 28 of them and with shares between 50% and 100% in 26 of the companies. Thus the state owned at least majority in 15% of the 369 companies, which does not suggest very large influence on the economy. However, when the book value of the companies is taken into account, the picture changes significantly. The overall value of the 369 companies was 440 billion crowns, while that of the 54 companies, where the state owned more than 50%, was 180 billion crowns. Furthermore, there were other companies of the overall value of 153 billion crowns where the state, despite having minority share, could effectively control the corporate boards either through golden shares or through declaring such companies as strategic. Thus it can be concluded that in the end of the 1990's the state directly controlled companies worth 333 billion crowns which represents 76% of the value of all the companies in the NPF's portfolio.

However, this picture is still not complete as there are other, indirect links through which the state affects the privatized enterprises. Before turning the attention at these links, an important specificity of the Czech privatization has to be introduced – cross-ownership.

1.3.B. Cross-ownership in the Banking Sector

The IPFs that participated in the voucher privatization were basically of two types – those affiliated with domestic banks and those established by individuals or financial institutions independent of domestic banks. Only the former type of IPFs was expected to succeed significantly in attracting vouchers due to its reputation, country-wide network etc. Thus the features of universal banking, i.e. a large amount of companies in the property of banks (or at least under their control through bank-managed IPFs), were expected to appear. Indeed, under the newly arisen Czech type of universal banking, the banks provided softer financing, prolonged inefficiency, and delayed bankruptcies of "their" companies. Thus they harmed their depositors and shareholders, increased bad debts, and spoiled the competition on the loan market, discriminating against those companies that could not enjoy such preferential banking treatment.[19]

Together with this more or less expected feature of the banking sector, a problem of highly non-transparent cross-ownership appeared which was, however, attempted to be prevented[20] and thus not really expected to happen. The bank-affiliated IPFs acquired shares in other banks but, more strikingly, also in their founding banks, so that the banks became co-owners of each other[21] and some of them owned indirectly even their own shares. It is worth emphasizing the distinction between ownership and control. If a bank founds an IPF (directly or indirectly), it becomes a pure manager of the fund's property while the fund's shareholders

---

[19] These problems of the universal banking without large shares in the controlled enterprises (by Czech observers often called "banking socialism") are rather softened by the empirical study by Buchtíková and Čapek (1997) who conclude that company panel data from 1993-1995 do not allow to suggest the existence of banks' providing their companies with credits they do not need. Furthermore, Claessens, Djankov, Pohl (1996) attributed to Czech banks a positive role in creating corporate governance in privatized companies.

[20] See the Investment Companies and Investment Funds Act from May 1992 discussed in the Section 1.2. above.

[21] Some bank-affiliated IPFs (in particular Investiční Banka's IPFs) were more active in investing to other banks than the others. Thus, cross ownership was not fully reciprocal. (Coffee 1996)

are its owners. However, the banks became later co-owners of their funds due to the marketing promises from the pre-privatization advertisement campaign of buying-out the IPFs' shares for certain ex ante price. In the ownership structure after privatization, therefore, banks *managed* and *co-owned* most of the funds that became over night powerful owners of large enterprises and banks (including their "grandparent" banks).

1.3.C. Indirect State Ownership

Although the architects of voucher privatization decided to prohibit state and non-commercialized state enterprises from establishing IPFs in order to transfer the state property to really private owners, the state remained significantly involved and locked in the post-privatization ownership structures – not only in the non-privatized companies and shares but also in several companies that were 'fully' privatized. The logic of this lies in the fact that the state kept controlling blocks in the largest banks with the intent to sell them later to strategic investors. These banks controlled some of the most important IPFs. Thus the state retained influence on the companies under the control of these bank-affiliated funds. For illustration, IPFs of three largest banks – Česká spořitelna (ČS), Investiční banka (IB) and Komerční banka (KB) – where the state kept 40%, 45% and 44%, respectively, acquired in the first wave one third of all vouchers that were invested in funds, i.e. 20% of all the first-wave vouchers.

The presence of cross-ownership even strengthened this leverage as the state, being involved in these non-transparent, mutually interlinked structures, had in fact stronger impact on the banks than the numbers about the state's direct shares in them would suggest.[22] Careful analysis of the primary, first degree, second degree and third degree property involvement of the state, as well as that of the most important financial groups in five major banks (including

ČS, IB and KB), representing almost 90% of the total assets of the Czech banking sector, is provided in Turnovec (1998).

The position of the state in the cross-ownership structures started to diminish in 1998 when the privatization of the largest banks was finally launched after the long-lasting *status quo*. The state's blocks of shares of these banks have been already sold to foreign strategic investors, except for that of Komerční banka, the privatization of which is being processed in these months.

1.4. Institutional Setup and Corporate Governance

Mass privatization created a new capital market the main characteristics of which were its enormous size and at the same time very low liquidity and transparency. The majority of share trading (according to most observers, over 90%[23]) took place off the exchange, often in the form of swaps among voucher funds (Pistor and Spicer 1996). Pistor and Spicer see the causes of insider dealings and those of the lack of transparency partly in the large stakes acquired by IPFs during privatization, whose liquidation on official markets would be necessarily connected with steep discounts in prices, and partly in the lack of oversight and law enforcement on the capital market.

According to Coffee (1996), many funds were trading at discounts up to 80% and overall demand for their shares was low. This would normally attract some group that would buy-out the IPF, fire the managers and increase the value significantly but the management companies had long-term non-cancelable contracts with their IPFs (6-10 years). This applies

---

[22] Moreover, as Coffee (1996) suggests, it seems likely that the state was not willing to fight strongly against the cross-ownership because it could serve as an effective defense against the most powerful private fund HC&C, which represented a threat of hostile takeover of one of the biggest Czech banks, namely Česká Spořitelna.

[23] See Coffee (1996).

to IPFs organized as joint stock companies. On the other hand, mutual funds[24] are not legally new entities, but rather joint accounts of their "shareholders" with the management company, so the shares in such funds lack voting rights. These facts eliminate the incentives to hostile takeovers of the funds and thus the high discounts are possible and attainable.

The regulation of the investment fund industry in the first years after voucher privatization was very weak. Nonetheless, it is not only this area of the economy which suffered from this disease. The liberal government followed an *ex-post regulation approach* with the argument that the state should not impose significant regulation from above as the most effective institutions are those that evolve spontaneously 'from below'.[25] Let the paper now briefly describe the development of the regulation of IPFs after the two waves of voucher privatization.

The first important *ex post* change came in mid-1996, when the ICs and IFs Act was modified. IPFs were significantly forced to follow portfolio diversification strategy, but before the legislation became valid, the IPFs were permitted to transform to industrial holdings. In fact, large number of funds did so and escaped thus the diversification requirements (including the 20% ceiling) and the regulation concerning IPFs.[26] Generally, private funds transformed to holdings, while the bank-affiliated ones remained funds and some of them even transformed from the initial type (joint stock fund) to mutual fund or from closed-end to open-ended mutual fund. The Act was modified again in 1998 towards even higher degree of portfolio diversification. In particular, the 20% ceiling of the share of any

---

[24] These emerged before the second wave.

[25] This view has been called by many observers *misunderstood liberalism*. The natural source of the disgust to any kind of regulation can be seen in the painful experience from communist *over-regulation*. Looking back, one of the three 'godfathers' of the voucher privatization, Dušan Tříska (the other two were Václav Klaus and Tomáš Ježek), calls it with a portion of self-criticism *liberalism in extreme* (Tříska 1996)

[26] On the other hand, holdings are taxed more.

single issuer was lowered to 11%. That year brought yet another, qualitatively much more significant, change. Security Exchange Commission, SEC, was established (long 5 years after the emergence of the capital market). Until that time, no special regulatory authority supervised the capital market. The new commission has been given quite high prerogatives and independence. Furthermore, it can levy more efficient sanctions that any court could until that time. The emergence of this regulatory body has undoubtedly contributed to better enforcing of the rules on the capital market.

Besides the improvements 'from above', some positive contributions to the institutional setup came also 'from below' in the form of the emergence of ethical codes and self-regulatory organizations. A representative organization of such kind is UNIS[27], voluntary self-regulatory association of the vast majority of Czech investment funds and companies established in mid-1996 in reaction to the deep crisis of public confidence in the investment fund industry. However, the creation of UNIS does not justify the above-mentioned approach of the liberal government to regulation because it took place only after the largest frauds had been done and the 'most unethically behaving' funds had already cheated their shareholders and left the industry. For the case study of UNIS ČR and its role in improving the institutional environment on the Czech capital market, see Sedláček and Vychodil (2001).

As for the *ex-post regulation approach*, it applied not only to the investment fund industry and capital market in general, but also to the overall business environment regulation. The Commercial Code and Bankruptcy Law were similarly imperfect implying, in particular, low protection of minority shareholders' rights and unfavorable position of creditors towards

[27] UNIS ČR - Union of Investment Companies of Czech Republic.

debtors.[28] The state authorities, following the *ex-post regulation approach*, have been frequently adjusting these norms. The process of the *ad hoc* adjustment of the relevant laws has been rather successful but this has not solved the problems because the Czech economy has still suffered from very low level of enforcement of its rules by the courts. No matter how well a law is written, it is of no use as long as there is no-one to enforce it.

Kudrna *et al.* (2000) present the results of a survey on 'Corporate Governance Risk'[29] in the Czech Republic made among 50 top managers, economic consultants and academicians. The primer output of this survey is the *index of corporate governance risk*, the highest possible value of which is 28 (this represents the lowest level of the risk - G7 countries are assumed to reach values above 21), consisting of four sub-indices – measuring the quality of (1) corporate law, (2) legal processes, (3) regulatory regime and (4) ethical overlay – which may reach at most 7 points each. The level of the overall index in the Czech Republic is 11 (while in Russia 4 and in Poland 16)[30], while the values of the sub-indices are 3.1, 1.5, 4.0 and 2.8, respectively. This supports the statement that the enforcement of laws by the courts (legal processes – 1.5 points out of 7) represents larger problem of the Czech business environment than the definitions of the laws themselves (corporate law – 3.1 points out of 7). The best assessed aspect of the environment is the regulatory regime sub-index (4.0 points out of 7) which reflects especially how the Czech regulatory authorities (the SEC, Central Bank and Antimonopoly Office) and financial auditors fulfill their roles.

---

[28] For the identification of the key problems of the Bankruptcy Law and relevant parts of the Commercial Code and the discussion of the development of these norms, see Kudrna *et al.* (2000).

[29] The concept of 'Corporate Governance Risk Index' has been developed by David Crichton-Miller and Phillip Worman (1999). Their creation of the methodology of measuring this index was based on the OECD Principles of Corporate Governance (1998).

[30] See Crichton-Miller and Worman (1999).

To sum up, the institutional environment of the Czech economy in the first five years after mass privatization was very weak and thus provided a large space for moral hazard and cheating in general. Despite some positive changes (such as the establishment of the SEC in 1998 or the improvement of the wording of some important laws) it has still remained rather weak as some of its crucial gaps have not been removed yet (especially the low speed and cost-efficiency of legal redress). This conclusion is persuasively supported by the fact that the most frequently quoted 'lesson from the Czech transition' is that '*institutions matter*'.

2. THE EFFECT OF OWNERSHIP CONCENTRATION – HYPOTHESIS

The aim of this chapter is to derive a hypothesis about the shape of the function which relates restructuring to ownership concentration in the Czech manufacturing sector after privatization. Prior to the argumentation itself, which comes only in 2.3, two sources of its inspiration are presented – the Western 'general debate' with both its theoretical concepts and empirical results (Section 2.1) and the empirically supported arguments of the 'transition debate' (Section 2.2).

2.1. General Debate

The classical economic paradigm dealt with the firm as a black box, as an individual indivisible agent maximizing profits. In a theory built on this assumption, there is no space for considerations of alternative ownership arrangements within firms. Thus, only when Berle and Means (1932) came with a soundly articulated and empirically supported statement that there is a positive relationship between ownership concentration and corporate performance, did it provoke other economists to examine the importance of corporate ownership for economic behavior. Berle and Means' main argument was that dispersed ownership leaves strong control rights in the hands of managers whose interests are often not aligned with those of shareholders, i.e. with the corporate performance translated to share value.

The most influential argument against the existence of any kind of such a relation so far has been the Coase Theorem[31], which (developed implicitly by Demsetz and Lehn 1985)

[31] The Coase Theorem was explicitly introduced by George Stigler who reformulated an idea stated by Ronald Coase in The Problem of Social Cost from 1960. The theorem has been cited in several ways. Let this paper use the definition offered by Ronald Coase himself in 1994. "In a regime of zero transaction costs - an assumption of standard economic theory - negotiations between the parties would lead to those arrangements being made which would maximize wealth, and this irrespective of the initial assignment of rights" (Coase 1994, 10).

implies that in economies of zero transaction costs connected with alternating ownership arrangements, ownership structure adjusts to such a state which ensures owners enough monitoring ability over managers. Coase (1994) himself emphasized that the implication of the so-called Coase Theorem was that since zero transaction costs assumption is very strong and unrealistic in a variety of cases, positive transaction costs economics has to be developed, in which the importance of ownership (as well as that of the legal system and other institutions) would become immediately clear. Nevertheless, it has been argued that in the most developed market economies, the transaction costs connected with alternating ownership structure are very low which makes ownership concentration strongly endogenous. In this argument the expected gain from monitoring and the costs of alternative ownership structures vary across firms so that the revealed level of ownership concentration is the optimal one for each single firm.

Demsetz and Lehn (1985) provide empirical evidence for this argument, using a sample of 511 large U.S. corporations. They start with the identification of the determinants of ownership structure – size, control potential, regulation and amenity potential – and the regression of concentration variables on them by OLS. Furthermore, recursive estimates of mean accounting profit rates on the endogenous concentration and other variables – capital, advertising and R&D relative expenditures, assets, firm specific risk and dummies for utilities and financial companies – assign slightly negative and insignificant coefficients to all used measures of ownership concentration, which makes the authors convincingly conclude that no relationship can be found between ownership structure and performance in developed market economies.

Those, who oppose this view and claim that there exists a certain relationship between ownership concentration and corporate performance, vary in both theoretically and empirically drawn conclusions about the shape of the function. The initiators of the debate

(Berle and Means 1932) argued for a positive relation without any specification of its shape. Later the question was raised whether the relation is really monotonous. Some economists (Stulz 1988; McConnell and Servaes 1990) answer this question talking about a reversed U-shape of the relationship. Stulz, emphasizing the role of takeovers, developed a model which suggested an increasing value of a firm as the managerial ownership grows from zero to fifty percent and decreasing value of the firm after this point when the probability of takeover disappears. McConnell and Servaes then present an empirical support for Stulz's model, regressing Tobin's Q on insider ownership for two data sets (1,173 U.S. firms for 1976 and 1,093 for 1986).

Some other empirical studies document somewhat more complicated shapes of the curve. Hermalin and Weisbach (1987) examined data on 134 NYSE firms for five years with three-year intervals between 1971 and 1983 and find that Tobin's Q raises as CEO stock ownership increases from 0% and 1%, falls between 1% and 5%, then again rises up to the 20% CEO stock ownership and falls again after this margin. Morck, Shleifer and Vishny (1988) discuss a non-linear shape of the function as a result of two opposing forces – the larger the share the managers own, the more they can allocate the firm's assets in their own interests (entrenchment effect), but at the same time, their interests become more aligned with those of the firm (incentive effect). Analyzing a sample of 371 *Fortune 500* firms for 1980, Morck *et al.* conclude that the relationship between Tobin's Q and insider ownership is positive between 0% and 5%, negative between 5% and 25% and slightly positive after that.

The piece of Morck *et al.* represented a crucial contribution for the further development of the 'general debate' because their clear and structured approach was the first to attract general attention to the existence of the costs of ownership concentration besides its benefits.

No matter how these approaches differ, they all have one factor in common – they see the reasoning behind the ownership-performance relationship in the divergence of ownership

and control, assuming that the latter is in the hands of managers. Cubbin and Leech (1983) try to go further and, besides the degree of control, they emphasize the location of control. They distinguish internal versus external control (with respect to management), where the latter may be of four various types according to the identity of the external agent in control. Thus Cubbin and Leech stress the fact that not only ownership concentration but also the identity of the owners matter. [32]

2.2. Transition Debate

All this 'general debate', including the last-mentioned point, has had a large impact on the 'transition debate'. This impact is of two types as there can be distinguished two types of motivation of the 'transition debate' participants according to the fact whether their main concern lies in the ownership-performance relationship itself or in studying economic transition. For economists who have been involved in the long-lasting 'general debate', privatization in post-communist countries represents an extremely valuable natural experiment. Such researchers see in the analysis of the specific situation of transition countries a valuable contribution to the process of developing the theories of corporate governance. By contrast, the motivation of many other authors (both 'outsiders' and 'insiders' – with respect to the reforming countries) lies predominantly in their strong concern for transition economies. In the privatization-restructuring relationship, they discover an interesting and/or crucial aspect of the reforming process. These researchers often intend to make a contribution to the general economic understanding of transition[33], to assess

[32] An excellent overview of this 'general debate' on the ownership-performance relationship is provided in Shleifer and Vishny's *Survey of Corporate Governance* (1997).

[33] In other words, they try to contribute to the development of the newly emerged fields, such as the 'theory of privatization' or 'transition economics'.

privatization methods, to say their word in the debate on further privatization and restructuring policies and so forth, and they take the Western corporate governance literature as a useful building block for their work.

As can be inferred from its structure and style, this thesis is motivated by the latter type of concern which means that the 'general debate' is here purely used as a valuable source of inspiration for studying the transition-specific type of the separation of ownership and control. Although the 'transition debate' can build extensively on the grounds of the preceding debate, anyone involved in this new discussion, regardless his or her type of motivation, has to be aware of the fact that the case of reforming CEE countries is in many respects different from the one of developed market economies. Not only the 'players of the game' but also the 'rules' are different. The whole institutional environment, including corporate law, corporate governance practices, overall level of law enforcement or the state's attitude, differs significantly from the one that the Western world is used to observing.

This new debate still does not have many participants, at least not many of those working with data and presenting empirical results rather than theoretical hypotheses. This may be attributed to two factors. Firstly, as the data for such studies should describe the ownership structure and performance indicators for some years after privatization and the largest part of privatization was not terminated in any of the transition countries before 1993, the space for empirical work emerged only in the second half of the 1990's. Secondly, it is not an easy task to find firm-level data of this type and it requires quite an effort from the researchers to collect such data, usually through enterprise surveys.

The authors usually study the dependence of the performance or, alternatively, that of the value of the firm on the method of privatization and/or on the identity of the new owners. The results of Earle and Estrin (1997), Halpern and Körösi (1998), Earle and Telegdy (2000), Makhija and Spiro (2000) document the positive effects of privatization in general and

highlight positive or negative effects of individual privatization methods and/or the identity of new owners in Russia, Hungary, Romania and the Czech Republic, respectively. Only two of these studies took into consideration also ownership concentration, in addition to the identity of owners. Another study (Claessens *et al.* 1998) devotes to the concentration issue primary attention. The remainder of this section briefly presents the inferences these three studies made about the effects of ownership concentration.

Earle and Estrin (1997) analyzed post-privatization ownership structure in the Russian manufacturing industry. Their study was based on a survey of 439 industrial enterprises from July 1994, when the voucher privatization program in Russia had just been terminated. The authors examined how several measures of ownership concentration together with variables describing the identity of owners affect restructuring[34]. According to the OLS estimations of linear specifications, the effect of identity outweighs the effect of concentration among all types of outside owners in Russian corporate governance. However, IV estimates showed strong positive effect of concentration. Piece-wise linear regressions, run to account for possible non-monotonicity of the concentration-performance relationship, did not reveal any additional information.

Makhija and Spiro (2000), using the sample of all 988 companies privatized in the first wave of Czech voucher privatization, studied the dependence of the market value (measured by Tobin's Q) of the firms on the identity of owners. Ownership concentration, measured by the Herfindahl index[35], is here included only as a control variable. Always positive and significant estimates of the coefficient for this variable show a positive dependence of the

[34] The authors' proxies for restructuring were labor productivity, 'restructuring index' and some of its components. The composition of the 'restructuring index' is briefly commented on in Section 3.1.B of this thesis.

value of the firm on ownership concentration. As the authors focused their attention on the consideration of the identity of owners, they did not go further in examining the effect of concentration, i.e. they did not check for a specific shape of the generally positive relationship.

Claesens, Djankov and Pohl (1998) analyzed 1993-1997 data about 706 firms listed on the Prague Stock Exchange to study the effect of ownership concentration on (1) Tobin's Q, (2) profitability, (3) labor productivity and (4) the fact whether the firm establishes a new market department. The data set includes only those companies that were chosen for voucher privatization which means that usually at least three of the largest shareholders are IPFs, one might be the state and, in some cases, one is a strategic investor. The authors' OLS, random-effects and two-step estimations provide evidence for positive dependence of all the four performance and valuation variables on ownership concentration measured as the share of top five shareholders (T5). In each of the three estimations of profitability and productivity the squared T5 has negative coefficients, which suggests a concave shape of the concentration-performance function. However, the quadratic relationship is not robust to the change in estimation method, as the negative coefficients, while significant in OLS and Random effect models, are insignificant when instruments are used.

2.3. The Czech Case – Construction of Hypothesis

This section, inspired by both the 'general' and the 'transition' debates, derives the hypothesis about the function relating industrial restructuring to ownership concentration in the case of Czech manufacturing enterprises. The following paragraphs refer to this function

[35] The Herfindahl index is equal to the sum of the squares of the ownership shares: $H = \sum_{i=1}^{N} (share_i)^2$.

as to 'concentration-restructuring function' *R(C)* with the domain between 0% and 100%. First of all, it is necessary to specify the terms restructuring and ownership concentration.

2.3.A. Terms 'Restructuring' and 'Ownership Concentration'

Restructuring is a process of a firm's shift towards such product composition and cost structure, that leads to a long-run competitiveness of the firm. As such, restructuring includes the reallocation of labor, capital, management and other resources (Lieberman 1994). Some economists emphasize that restructuring is an instantaneous process common to enterprises all over the world and that it is, hence, misleading to consider restructuring as something specific for transition economies. The author of this paper understands this interpretation of the term restructuring, nevertheless, there has been no other word found that would more suitably call the specific process of transformation of the former state-owned enterprises to 'normally functioning' firms able to compete in the newly emerging market economy. Unlike the performance of companies in developed market economies, the level of restructuring is, due to its complexity, very hard to measure. The particular problems with measuring restructuring will be discussed in Section 3.1.B.

The term 'ownership concentration' is very broad. Therefore the authors analyzing the effects of this variable usually specify whether they mean the concentration of private ownership, that of managerial ownership, that of outside ownership or some other type. This coincides with the Cubbin and Leech's remark about the two dimensions of control – degree and location. This paper examines the effects of *private outside ownership concentration*, i.e. the concentration of ownership in the hands of owners other than the state and insiders.

2.3.B. Inspiration and the Constraint of its Application

The main inspiration for the argumentation about the shape of the concentration-restructuring function can be seen in the excellent article of Morck, Shleifer and Vishny from

1988 (hereafter MSV), who studied the effect of managerial ownership in U.S. firms on their value measured by Tobin's Q. They analyzed the relationship as consisting of two effects. The first effect, which can be called *incentive effect*, is based on the simple idea that the more shares one owns, the more are his or her incentives aligned with the firm's performance. This effect has been the main transmission mechanism conventionally seen in the concentration-performance relationship by many economists at least since the contribution of Berle and Means. It is exactly this effect that inspired many investors to reward the managers of their companies with the shares of the companies in order to eliminate the principal-agent problem.

The second effect, that of *entrenchment*, represents the major contribution of the article. It stems from the fact that:

'*a manager who controls a substantial fraction of the firm's equity may have enough voting power or influence more generally to guarantee his employment with the firm at an attractive salary*' (Morck *et al.* 1988, 294).

In fact, a note about what MSV called entrenchment can be found in the book written by Berle and Means more than half a century before the MSV's article:

"*If those in control of a corporation reinvested its profits in an effort to enlarge their own power, their interests might run directly counter to those of the 'owners'.*" (Berle and Means 1932, 115-116)

MSV argued that the entrenchment effect is not as simple as the incentive effect because entrenchment does not depend only on the share one owns but also on the specificity one possesses (tenure, status as owner, personality, monopoly on some firm-specific knowledge or skills etc.). However, they contend that the effect decreases corporate value as the managerial ownership grows up to some value (well before 50%) and then the effect disappears as the managers are fully entrenched for all higher shares. Furthermore, it can be logically inferred from the authors' argumentation that conditions necessary for entrenchment are more strongly correlated with increased managerial ownership beyond some small value of board ownership (5%) than before it. Thus, should the entrenchment effect be illustrated by a plot of

managerial ownership and performance (assuming there is no other effect in place), the function would be decreasing and concave in the first band of concentration (until 'well before 50%') and constant afterwards.

The analysis made by MSV for U.S. companies can be applied to Czech firms, but only to a limited extent as in the Czech economy of the 1990's, the 'players of the game' as well as the 'rules of the game' were much different from those in the U.S. of the 1980's. As the result of the mass privatization (see Sections 1.1 through 1.3), the 'players' of the Czech 'game', i.e. the largest private outside owners, were mostly IPFs and much less frequently individuals, domestic firms or foreign investors. The main features specifying the 'rules' of the Czech 'game' consisted mainly of the weak protection of minority shareholders' and creditors' rights, low transparency and liquidity of the market with equities and the insufficient definition of bankruptcy procedures (see Section 1.4). This environment provided a large space for cheating of various forms, the most representative of which was called *tunneling*.

Although the word *tunneling*, introduced by Czech journalists and politicians, had not been known in the international vocabulary of economics and finance until the 1990's, the practice of *tunneling* itself was nothing new. It had been known under terms such as asset-stripping or self-dealing. Again, a note about these practices can be found in Berle and Means' book:

"*(P)rofits may be shifted from a parent corporation to a subsidiary in which the controlling group have a large interest, (...) profitable business may be diverted to a second corporation largely owned by the controlling group*", the controlling group "*may use 'inside information', (...) it may issue financial statements of a misleading character or distribute informal news items which further its own market manipulations*." (Berle and Means 1932, 115)

The use of the term 'tunneling' was, however, not the only aspect distinguishing the Czech way of asset-stripping from unfair practices in the West. As a result of the neglected

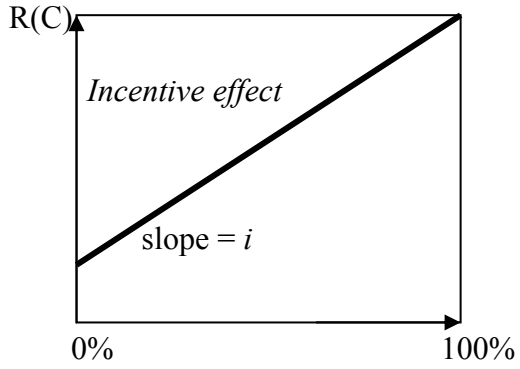
regulation of the Czech investment fund industry, capital market, and business activities as a whole, *tunneling* very quickly spread in the economy and often became even clearly visible because the *tunnelists* were convinced that what they were doing was legal though not ethical. Thus 'Czech *tunneling*' differed from 'Western asset-stripping' in its extent and in that some forms of it were in fact legal and not punishable. Later, when the legal framework was improved, they became illegal but still remained not punishable due to the weak system of enforcement.

2.3.C. The Construction of Hypothesis

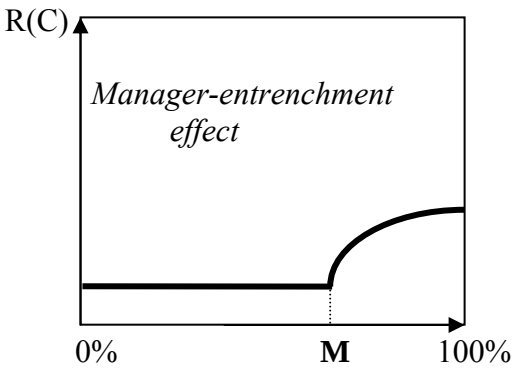
Let the paper now apply the arguments of MSV on the Czech environment of the 1990's and thus derive the hypothesis about the concentration-restructuring relationship, *R(C)*, in the specific territorial and historical context. As was already mentioned, the MSV's analysis has to be modified in order to fit the conditions under examination.

The applicability of the **incentive effect** is not a big problem. Although its shape in the Czech context is distorted by the low liquidity and transparency of the capital market, the effect is definitively positive over the whole domain – higher concentration means higher share for the largest outside investors which in turn makes them more concerned about the value of the shares. For simplicity, it is further assumed that the incentive effect has a constant positive value ($i > 0$) over the whole domain. This means that the function *R(C)* would be increasing over the whole domain with a constant slope (i), if no other effects were in place.[36]

[36] Thus the term 'effect' (be it that of incentives or any of the others discussed below) can be understood as the slope of the function *R(C)* assuming there are no other things that affect *R(C)*.

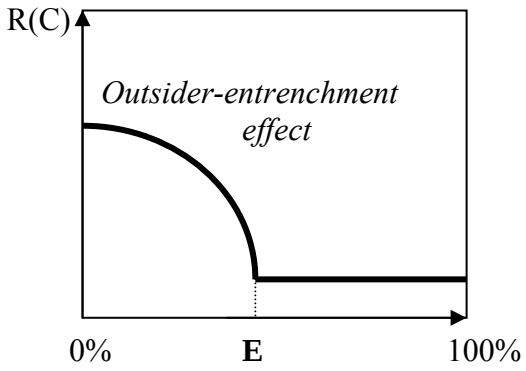


The effect of entrenchment is also present and, indeed, very important in the Czech case but the analysis of the costs of concentration in the Czech Republic cannot consist only in this effect. While MSV studied insider ownership, the concern of this thesis is private outside ownership concentration. Thus one might simply try to revert the effect, arguing that since outside concentration is negatively correlated with insider ownership, higher concentration of ownership in the hands of outsiders translates to lower opportunity for managers to entrench. This would suggest zero effect for the concentration between zero and M – where M>50% is the maximum value of outside ownership concentration that makes the managers fully entrenched – and positive (but decreasing) afterwards, as the managers lose the entrenchment possibilities (with diminishing rate) with increasing outside concentration beyond the margin M. Thus, if there were no other effects, the restructuring level would be constant until the concentration reaches M, and increasing and concave after that (mirrored to the entrenchment effect of MSV). This is hereafter called **manager-entrenchment effect**.

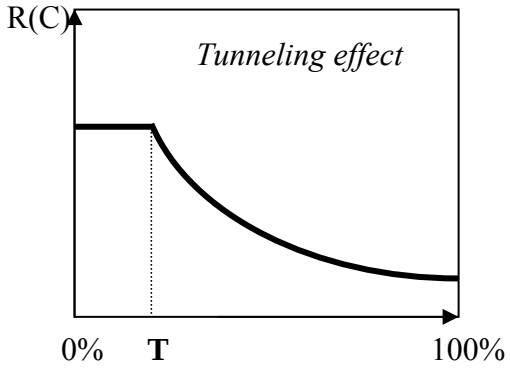


Nevertheless, not only old managers but also (and in the Czech case even more importantly) new owners often tend to entrench. The owners can entrench through appointing themselves to the supervisory board or directly to the board of directors and exploiting private benefits from such a position. These benefits might have the form of high salaries and/or fringe benefits, 'pumping' out the information useful for their other business activities etc. This opportunity to entrench rises with the increase of concentration towards level E<50% when the outside owners are fully entrenched.

The shape of this **outsider-entrenchment effect** is analogous to the MSV's entrenchment effect but it is definitely stronger than the manager-entrenchment effect. This assertion is based on two streams of reasoning – one explaining why the manager-entrenchment effect is weak and the other why the outsider-entrenchment effect is strong. The former stems from the fact that lower private outside concentration does not necessarily mean higher managerial ownership because there might be other agents in the ownership structure, such as production workers or the state. This makes the manager-entrenchment effect weak. The argument why the outsider-entrenchment effect is particularly strong in the Czech case is that the outside owners are mostly investment privatization funds, which are due to the weak regulation under effective control of their managers who, in fact, only benefit from entrenchment, the costs of which are shared by the dispersed funds' shareholders.



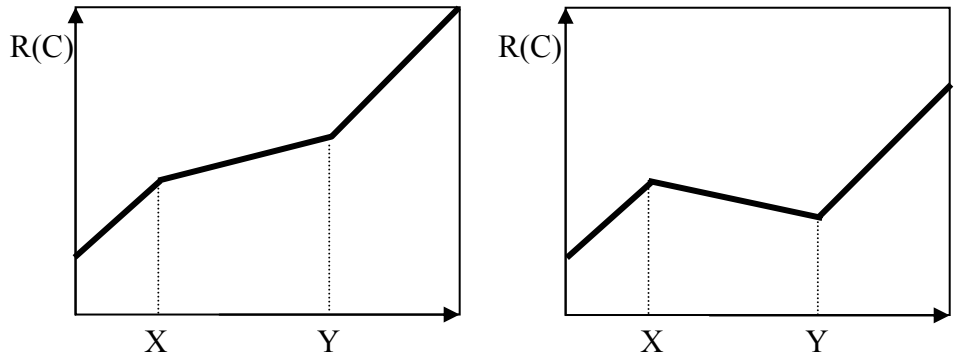
Finally, when possessing at least a certain degree of control, T, the outside owners have the opportunity to reap private benefits from the firm by direct asset-stripping. This opportunity then rises with the increase of concentration after this point towards 100%, because of the decreasing need for creating coalitions, and this negatively affects the firm restructuring. Hence, there can be added another to the three previous effects, which is zero for concentration between zero and T, and negative after that. T<E[37] is defined as the minimum level of outside ownership concentration for which the largest outside owners can, at least in coalitions, exercise control over the company without being effectively monitored by others. If there were no other effects, the restructuring level would be constant until the concentration reaches T and decreasing after that. Moreover, the expected shape of the curve after this point is convex because the tunneling opportunities have likely diminishing returns.[38] As this effect reflects a feature which is so characteristic for the Czech case – *tunneling* – let this paper denote it as **tunneling effect**. The importance of the tunneling effect is again enhanced by the moral hazard situation stemming from the fact that the outsiders in control are predominantly investment funds whose managers might enjoy the fruits of tunneling without bearing its costs.



[37] Thus T < E < M.

[38] In other words, asset-stripping opportunities grow faster between, say, 30 and 50% concentration than between 80 and 100% concentration.

The overall effect of private outside ownership concentration on restructuring can be obtained as the sum of the four effects discussed above. Under some reasonable assumptions about the relative strengths and slopes of the individual effects, the resulting relationship is positive between zero and a certain level X (positive incentive effect and very small negative outside-entrenchment effect) and also between certain value Y>X and 100% (positive incentive effect, positive manager-entrenchment effect, and slightly negative tunneling effect). In the interval between X and Y, the effects representing the costs of ownership concentration – the outsider-entrenchment effect and the tunneling effect – are in their highest power, i.e. the negative components of the slope of *R(C)* reach their highest magnitude. If the incentive effect is strong enough, the overall slope may be still positive, though definitely lower than before the value X. If the negative effects together outweigh that of incentives, the function is decreasing. Thus two basic versions of the simplified illustration of the overall effect of ownership concentration on restructuring are the following.



Two forms of the hypothesis are drawn from this argumentation:

Weak form:

R(C) is increasing in the whole domain but its slope

between *X* and *Y* is smaller than elsewhere.

Strong form:

R(C) is increasing in the whole domain, except for the interval

between *X* and *Y*, where it is decreasing.

3. EMPIRICAL VERIFICATION

The empirical verification of the hypotheses stated in the previous chapter is based on micro-data collected by the Labor Project of Central European University in two enterprise surveys (carried out in 1996-1998 and 1998-1999 using the same sample). The source reports yearly data on 90 Czech manufacturing companies for the period of 1989-1998. Although the data set reports observations starting with 1989, this paper focuses on the period 1991-1998, i.e. on the period after the first companies in the sample had been privatized.

This pool of hypothetically 720 observations suffers, however, from missing values, especially in the case of ownership variables. Therefore, some imputations will be used in order to fill some gaps and thus increase the degrees of freedom. Although these imputations necessarily weaken the conclusions that can be drawn from the econometric analysis, they are based on such assumptions that do not distort the information provided by the data to such extent that would make the effort to increase the number of available observations unjustifiable[39]. However, even after such imputations, the panel remains unbalanced.

3.1. Measuring Ownership Concentration and Restructuring

The first step of the econometric analysis is to decide about the method of the measurement of the two underlying variables. The choice of the proxies in this paper is inspired by some empirical studies from both the 'general debate' and the 'transition debate'.

[39] This is not the only trade-off situation to be optimized in the analysis. Other such trade-offs emerge from the fact that the methodology is not identical for the two surveys. All these problems are carefully treated in the analysis.

3.1.A. Ownership Concentration

Ownership concentration is in general very difficult to measure and each of its possible proxies has its drawbacks. Although the approaches differ from author to author, most of them use the share owned by top *N* investors, where *N* ranges from three (Claessens *et al.* 1998) to twenty (Demsetz and Lehn 1985). This conventional measure, however, is not perfect because it does not take into account the distribution of the top *N* investors. Therefore, there have been developed some alternative proxies such as the Herfindahl index[40] (Demsetz and Lehn 1985, Makhija and Spiro 2000) or 'relative importance' (Mejstřík *et al.* 1997) calculated as the ratio of the share of top *N* investors to the sum of the shares of *K* largest owners[41]. These measures do consider the distribution of the largest shareholders but, on the other hand, they do not sufficiently reflect the total power of these top investors in the company.

Before defining the measure of ownership concentration used in this paper, the following has to be said about the data under examination. Variables describing ownership structure are reported for four dates, different for different companies. Let this paper denote these dates as A, B, C and D. *Date A* is the date of the first shareholders' meeting after privatization (ranging from 1991 to 1995, most frequently 1993), *date B* is the date of the first shareholders' meeting with more than 50% of the shares in private hands (mostly coinciding with the previous date), *date C* is the date of the interview within the first survey (ranging from 1994 to 1996, most frequently 1996) and *date D* is 1998. The values of the ownership variables for the date D are obtained from the second survey.

The measure of ownership concentration used in this paper is close to the conventional one, but not the same. Due to the limitations imposed by the character of the data, the measure

[40] See the definition of the Herfindahl index in the Section 2.2, footnote 35.
[41] In Mejstřík *et al.* (1997), $K = 18$ and N alternates between 1 and 5.

of *ownership concentration in the hands of private outside shareholders*, CONC, is defined as follows. For dates A, B and C, it is computed as:

CONC = TOP4bank + TOP4firm + TOP4if + TOP4ind + TOP4for,

where "TOP4..." denotes the share concentrated in the property of 4 largest shareholders of the respective identity – domestic bank, domestic non-financial firm, investment fund, individual, and foreign entity. In fact, in a vast majority of companies, the TOP4 variable for other groups than investment funds is zero (especially for the dates A and B)[42], implying that CONC often coincides with TOP4if.

For date D, i.e. for 1998, this measure is not available because of the change in the methodology between the two surveys. Therefore, for this date, it is replaced by:

CONC = TOP6outblock,

i.e. the share concentrated in the hands of 6 largest private outside blockholders (defined as shareholders with share above 5%).

Since this procedure can deliver the values of the concentration measure for at most four different dates for each company and the examined period contains eight years, there remain many observations for which the values of this measure are missing. Moreover, dates A and B often coincide and the data describing ownership are not complete. Thus, in order to fill the gaps, the paper employs following imputations of the missing values:

1) CONC = 0 for all years prior to date A. This naturally assumes that there were no private outside owners before privatization (see Table 3, 1991-1992).

[42] At the date A, as well as at the date B, *TOP4bank* is positive in 3 companies, *TOP4firm* in none, *TOP4ind* in 4 and *TOP4for* in 3 companies. At the date C, the numbers are 5, 15, 8 and 5, respectively.

2) CONC is linearly interpolated in each interval of missing values between two years for which the values are known. This does not concern the cases when the left margin of the interval is zero obtained by the first imputation (see Table 3, 1996-1997).

3) If only one margin of an interval of missing values is known and the other is not, CONC equals the known margin in the whole interval, including the other margin (see Table 3, 1993-1994).

4) If the value is missing for all the four dates, it is taken as missing in all periods for that company, i.e. the first imputation which assigns zero to all dates before date A is not applied. The number of such companies is 6, thus 84 complete time series of CONC are obtained.

- *Table 3: Illustration of the Missing Values' Imputation*

3.1.B. Restructuring

Restructuring is a complex process of transformation of the former state-owned enterprises to 'normally functioning' firms able to compete in the newly emerging market economy. As such it is hard to measure and one has always to be careful when drawing conclusions about restructuring from the results obtained for its proxy, no matter how comprehensive the proxy is. This paper approximates restructuring by the most conventional measure – labor productivity defined as real revenues per employee.[43] Another often used variable, measuring rather firm's value than restructuring, is Tobin's Q (Claessens *et al.* 1997; Makhija and Spiro 2000). The applicability of any 'market price' related measure is, however, questionable in the context of the insufficient transparency and liquidity of the capital market.

[43] The definition of labor productivity in Claessens et al. (1998) is defined as value added per employee.

Problems stemming from the institutional drawbacks accompany also accounting measures such as profits.

Some authors try to develop such measure that would comprise all aspects of restructuring. One of such attempts can be found in Earle and Estrin (1997) who constructed a restructuring index reflecting five dimensions of restructuring – production (described by 4 indicators), employment (4), firm boundaries (3), compensation (4) and investment (2). The drawback of all similar comprehensive indices, however, is that their determination is rather arbitrary. Inspired by the approach of Earle and Estrin to the measurement of employment restructuring, this paper uses also layoff and turnover ratios as dependent variables, in addition to labor productivity.

The layoff ratio, denoted as LAY, is the ratio of the number of employees laid-off in the respective year to the number of all employees in the beginning of that year. The turnover ratio, denoted as TURN, is defined as the ratio of the sum of the number of hired employees and the number of separated employees in the respective year to the number of all employees in the beginning of that year. Earle and Estrin linearly normalized these measures to the interval between zero and one. Their main purpose of this was the compatibility with other indices of restructuring activities for creating the overall restructuring index. For the purposes of this paper, there is no need for normalizing the ratios.

3.2. Empirical Specification

The paper employs panel data techniques for estimating four different specifications. The dependent variables used to measure restructuring are logarithm of labor productivity (LOGLP), layoff ratio (LAY) and turnover ratio (TURN). The simplest specification of the model is that assuming linear dependence of the dependent variable on ownership concentration.

$$LOGLP_{t,i} = \alpha_1 + \theta_1 LOGLP_{t-1,i} + \beta_1 CONC_{t,i} + \gamma_1(\text{control variables}) + \varepsilon_{1i} \quad (1a)$$

$$LAY_{t,i} \text{ (or } TURN_{t,i}) = \alpha_2 + \beta_2 CONC_{t,i} + \gamma_2(\text{control variables}) + \varepsilon_{2i} \quad (1b)$$

where $CONC_{t,i}$ is the share of the i-th firm owned by top two shareholders at the date t and control variables include ownership shares by identity of owners ("SH…"$_{t,i}$), industry dummies (IND_i), region dummies (REG_i) and size measured as the logarithm of employment ($LOGEMP_{t,i}$).

This specification does not take into account possible non-linear, not mentioning non-monotonous, shape of the function. Therefore, it is not sufficient for testing the hypothesis from Section 2.3. There can be found three basic methods in the literature how to verify similar hypothesis. One of them is to describe ownership concentration through dummies referring to respective bands of concentration:

$$LOGLP_{t,i} = \alpha_1 + \theta_1 LOGLP_{t-1,i} + \beta_{11} D1CONC_{t,i} + \ldots + \beta_{1L} DLCONC_{t,i} + \gamma_1(\text{control variables}) + \varepsilon_{1i} \quad (2a)$$

$$LAY_{t,i} \text{ (or } TURN_{t,i}) = \alpha_2 + \beta_{21} D1CONC_{t,i} + \ldots + \beta_{2L} DLCONC_{t,i} + \gamma_2(\text{control variables}) + \varepsilon_{2i} \quad (2b)$$

where $D1CONC_{t,i}$, ..., $DLCONC_{t,i}$ are L dummies created from $CONC_{t,i}$ for different parts of the interval [0; 1] and the residual $(L+1)^{st}$ band is the reference category.

Another way of dealing with the non-linear shape is to modify the simple linear regression through adding square, and possibly also cube, of the variable CONC:

$$LOGLP_{t,i} = \alpha_1 + \theta_1 LOGLP_{t-1,i} + \beta_1 CONC_{t,i} + \beta'_1 (CONC_{t,i})^2 + \beta''_1 (CONC_{t,i})^3 + \gamma_1(\text{control. var.}) + \varepsilon_{1i} \quad (3a)$$

$$LAY_{t,i} \text{ (or } TURN_{t,i}) = \alpha_2 + \beta_2 CONC_{t,i} + \beta'_2 (CONC_{t,i})^2 + \beta''_2 (CONC_{t,i})^3 + \gamma_2(\text{control var.}) + \varepsilon_{2i} \quad (3b)$$

This approach – using only the first and the second power – was used by Claessens *et al.* (1998) in order to show a concave shape of the relationship between performance and ownership concentration measured by the percentage of shares controlled by the top five investors. In this thesis, however, in order to test for possible negative slope of the concentration-performance function, the third power has to be included as well.

The third possibility is a piece-wise linear regression applied e.g. by Morck *et al.* (1988) or Earle and Estrin (1997). Suppose that the function is expected to be increasing from zero concentration to X, decreasing from X to Y, and again increasing after this point. Then the estimated equation is:

$$LOGLP_{t,i} = \alpha_1 + \theta_1 LOGLP_{t-1,i} + \beta_1 CONC.0toX_{t,i} + \beta'_1 CONC.XtoY_{t,i} + \beta''_1 CONC.overY_{t,i} + \\ + \gamma_1(\text{control variables}) + \varepsilon_{1i} \quad (4a)$$

$$LAY_{t,i} \text{ (or } TURN_{t,i}) = \alpha_2 + \beta_2 CONC.0toX_{t,i} + \beta'_2 CONC.XtoY_{t,i} + \beta''_2 CONC.overY_{t,i} + \\ + \gamma_2(\text{control variables}) + \varepsilon_{2i} \quad (4b)$$

where the three new variables are defined as:

CONC.0toX = CONC if CONC $<$ X,
= X if CONC $\geq$ X;

CONC.XtoY = 0 if CONC $<$ X,
= CONC minus X if X $\leq$ CONC $<$ Y,
= Y minus X if CONC $>$ Y;

CONC.overY = 0 if CONC $<$ Y,
= CONC minus Y if CONC $\geq$ Y.

The coefficients β_1, β_1' and β_1'' represent the slopes of the regression line in the respective bands. This is the method how Morck *et al.* reached the conclusions that the relationship between Tobin's Q and insider ownership is positive between 0% and 5%, negative between 5% and 25% and slightly positive after that.

Yet another method which can be used to show the non-linear shape is to divide the sample to (possibly three) sub-samples according to the values of CONC, but this would significantly weaken the results because the sub-samples would be too small. Therefore, this approach is not applied in the following analysis.

3.3. The Data and Descriptive Statistics

This section describes the character and main properties of the data. It is divided to five subsections, whereas the first subsection compares the sample with the population and identifies the aspects in which the sample is under- or over-represented. Subsections B, C and D describe the data on respective variables and the final subsection prepares the field for the following econometric analysis by deriving some statements about the concentration-restructuring relationship, using basic descriptive statistics.

3.3.A. Representativity of the Sample

The comparison of the sample with population might reveal some facts about the sample representativity with respect to industry, region and size. As Table 4 shows, the industry of machines and equipment is over-represented at the expense of light manufacturing and heavy manufacturing which are under-represented in the sample. More than a half of all employees in the sample is employed in production of machines and equipment, while in reality this industry employs only one third of manufacturing sector employees.

- *Table 4: Population/Sample Comparison by Industry*

In addition to the 81 firms in Table 4, the sample includes 9 non-manufacturing companies. These represent 10% of all companies in the sample but only 4.4% when weighted by employment.

Looking at Table 5 one can observe that the sample consists most frequently of companies with between 100 and 300 employees. Also companies between 301 and 500 and between 501 and 1000 create a large portion. Although the frequencies in the population refer to all joint-stock and limited-liability companies, knowing the total number of manufacturing companies we can state with certainty that the three highest groups (301-500, 501-1000 and above 1000 employees) are over-represented. Firms with more than 1000 employees create at

most 8.4% of the manufacturing sector. The respective maximum shares of categories "301-500" and "501-1000" are 12.0% and 15.7%. The sample is very likely under-representative in the companies under 100 employees, however, this cannot be precisely demonstrated on the numbers from Table 5.

- *Table 5: Population/Sample Comparison by Size*

3.3.B. Labor Productivity, Employment, Layoff and Turnover Ratio

As was already mentioned in the section 3.1.B, this paper defines labor productivity as the ratio of real revenues and employment. Table 6 shows descriptive statistics for the levels of employment at the ends of the years, real values of revenues and labor productivity. For illustration, the development of the three variables is depicted in Graph 1.

- *Table 6: Descriptive Statistics for Employment, Real Revenues and Labor Productivity*
- *Graph 1: Employment, Real Revenues and Labor Productivity in the Sample (Mean)*

The average **level of employment** in the examined firms was decreasing for the whole first decade of transition, except for a small increase between 1993 and 1994. The average level of employment in 1989 was almost 1,500. In 1993, it was already halved and by 1998, it had fallen to 503 employees.

The **real value of revenues**[44] also dropped by two thirds during the first ten years of transition but in a different way. After a slight increase in 1990, they contracted by one third each of the two following years. After 1992 the negative trend slowed down and reversed only after the average real revenue reached CZK 400 million in 1996. In 1998, the value was 437 million.

[44] Revenues adjusted by PPI to 1998 prices.

Labor productivity dropped by 42 percent during the first three years of transition. Since the end of 1992, it had been increasing by 1996 on average by 3.5 percent per year. Afterwards, the growth accelerated to 9 percent in 1997 and 38 percent in 1998 when the average labor productivity exceeded the 1989 level.

For comparison with the labor productivity in the population see Graph 2. This graph illustrates that while the overall labor productivity of the manufacturing sector decreased in 1993, the sample mean of this variable rose. After 1993, when the labor productivity of the population started growing, that of the companies in the sample was increasing in lower pace. This is likely the result of the over-representation of larger enterprises, which are in general harder to restructure and their performance is less sensitive to any kind of changes.

- *Graph 2: Labor Productivity in the Czech Manufacturing Sector in 1992-1996*

Table 7 shows the development of the **layoff and turnover ratios**. It can be observed that the average ratio of layoffs per 1,000 employees decreased from 78 in 1991 to 46 in 1994, in the following year it jumped to 80 and afterwards it had been constantly increasing until 1998 when it reached 128. The turnover ratio also decreased between 1991 and 1994, but only slightly – from 0.38 to 0.36. In 1995 it jumped to 0.44 and afterwards slightly fell again to 0.39 in 1998. These numbers suggest significantly higher level of employment restructuring after 1994 when the major part of privatization had been over but they might be biased because there are more observations available for the first four years than for the period after 1994.

- *Table 7: Descriptive Statistics for the Layoff and Turnover Ratios*

3.3.C. Ownership Structure

The ownership structure is described by **ownership concentration** (CONC), which represents the primary concern of this paper, and by the **identity of owners** ("SH…") which enters the vector of control variables. Table 8 presents summary statistics for the imputed values of CONC. Panel A of the table shows that the average private outside ownership concentration was steadily increasing from 1.7% in 1991 to 66% in 1998. But these numbers do not reflect only the process of the concentration of ownership but also the process of privatization as such. The means and standard deviations in Panel B are computed only from those observations where CONC is strictly positive, thus it shows solely the process of the concentration of property rights in the hands of private outsiders. Even these numbers show that the average concentration was steadily rising from 37% in 1993 to 67% in 1998. This reflects the so-called '*third wave of privatization*' which was expected to proceed spontaneously after the initial distribution of the formerly state-owned property.[45]

- *Table 8: Process of Ownership Concentration*

The ownership structure by identity is described in the data source by a set of variables reporting how large share of the company is in the hands of different types of owners. Table 9 shows how the variables are nested. Some of these variables (called so far "SH…") are used in the regressions as controls. These are SHSTATE, SHINS and SHFOR reporting the shares owned by state, insiders and foreigners, respectively. For the dates A, B and C, SHSTATE is defined as the sum of the shares owned by National Property Fund, Restitution Fund,

[45] This expectation of the spontaneous process of ownership concentration was generally shared but the architects of voucher privatization went further and, based on this expectation, they argued that it does not matter who the first private owners would be because the best owners would be then determined by market forces. However, due to the lack of complementary institutional framework, which would fairly define the 'rules of the game', it really mattered who the first owners (or actually agents of owners in the case of IPFs) were. In terms of the Coase Theorem, it can be said that the architects of voucher privatization assumed zero or low transaction costs and did not realize that the a well functioning legal and regulatory framework

ministries, local governments and other state bodies, SHINS as the sum of the shares owned by managers and other employees, and SHFOR as the share owned by foreign investors. At the date D, however, these three variables are directly reported in the data set as *SSH98*, *ISH98* and *FORSH98*.

- *Table 9: Variables Describing Ownership by Identity*

The following Table illustrates the level of the completeness of observations for the three ownership identity variables.

- *Table 10: Observations of SHSTATE, SHINS, SHFOR in the Four Dates*

The number of valid observations ranges from 52 to 67 for SHSTATE, from 53 to 58 in the case of SHINS and from 58 to 69 for SHFOR. The values of SHSTATE are strictly positive in 42 companies at the dates A and B, in 27 companies at the date C and in 15 companies at the date D. As for SHINS, there are 19 strictly positive values for the dates A and B, 15 for the date C and 14 for the date D. The respective numbers for SHFOR are only 5, 8 and 15.

Some features of the development of the ownership structure can be inferred from Table 11. On average, 40% share of each company immediately after privatization was in the hands of IPFs. Individuals had on average 25% share, the state 17% and insiders 9% while the other types of owners were substantially less represented in the immediate post-privatization ownership structure. In 1998, i.e. four or five years after privatization in many cases, IPFs already owned only 0.2% share on average because many of them transformed to other financial institutions, mostly financial holdings (see Section 1.4) and some IPFs sold their shares, usually to domestic non-financial firms which had become the most important owners with 38% share on average. The direct role of the state in the ownership structures had almost

---

constitutes a necessary condition for this assumption to hold. The *ex-post regulation approach* (see Section

disapeared (from 17 to 3% share on average, see also Graph 3). The indirect influence that the state maintained after privatization through IPFs established by state-owned banks had withered away as well, because banks and IPFs altogether owned only 1.1% share on average. The last two points to be mentioned here are that insiders' average share had almost halved to 5% and that of foreign investors had more than tripled to 9%.

- *Table 11: Shares by Identity at the Dates A and D*
- *Graph 3: Histogram of the State's Shares: Date A vs. Date D – Individual Samples*

In order not to lose many observations, four imputations analogous to those used for ownership concentration (see Section 3.1.A) are done for these three variables, with the only exception that in the first imputation for SHSTATE, value 1 (instead of 0) is imputed prior to date A. The number of the companies where the values of SHSTATE are missing for all dates is 21. Thus 69 complete time series of this variable are obtained by the imputation. For SHINS, there are only 13 companies for which the observations are missing at all the dates, which implies 77 complete series of SHINS. Finally, the number of the companies where the values of SHFOR are missing for all dates is 20. Thus 70 complete time series of this variable are obtained by the imputation.

Table 12 presents summary statistics of these three variables after the imputations for each of the eight years under examination. According to this table, SHSTATE declined on average to 12% in 1993, than increased to 20% in 1995 and afterwards fell to 6% in 1998. The average SHINS increased from 1% in 1991 to 7% in 1995 and then slightly declined to 5% in 1998. SHFOR slowly but steadily grew from zero in 1991 to 3% in 1997 and then jumped to 10% in 1998. Though the comparison of these numbers with those reported in the previous table makes it indisputable that the imputations to some extent distort the real picture, the

1.4), thus implied high transaction costs and made the identity of the first private owners matter.

additional information obtained by the inclusion of the imputed observations outweighs this drawback.

- *Table 12: Summary Statistics of SHSTATE, SHINS and SHFOR after Imputations*

3.3.D. Control Variables

As was mentioned in the Section 3.2., the vector of control variables includes (1) ownership shares by identity of owners, (2) size measured as the logarithm of employment, (3) industry dummies and (4) region dummies. The data on ownership and size have been already described in the previous two sections. The last two groups of variables that remain yet to be described are **industry and region dummies**.

The companies are categorized by industry to three groups – food and light industry, used together as the reference base, heavy industry and machinery (IND_HM), and other industries (IND_OTHER). Out of the 90 companies, 29 (32%) are in the food and light industry, 52 (58%) in the heavy industry and machinery, and 9 (10%) in other industries. Regionally, the companies are divided to those in Prague (the base), others in Bohemia (REGBOH), and those in Moravia and Silesia (REGMOR). In the sample, 10 companies (11%) are located in Prague, there are 43 (48%) other Bohemian companies, and 37 (41%) firms are located in Moravia or Silesia. Industry and region dummies are reported in the data set for all observations.

3.3.E. Concentration-Restructuring Relationship

The last step of this section, and necessary step to be made before moving to the regression analysis, is to show what can be inferred about the concentration-restructuring relationship on the basis of descriptive statistics. This consists in dividing the sample to 11 sub-samples according to the level of concentration (CONC=0, $0<CONC\leq0.1$,…,

0.9<CONC<1, CONC=1) and computing summary statistics for the dependent variables in these bands. This is done in Table 13 and Graph 4.

- *Table 13: Summary Statistics of LOGLP, LAY and TURN (Conditional on CONC)*
- *Graph 4: Plot of CONC and the Conditional Mean of LOGLP, LAY and TURN*

The values of LOGLP in the Table 13, as plotted in Graph 4, increase in the interval (0.0; 0.4], decrease in (0.4; 0.6], then increase again in (0.6; 0.9] and fall afterwards. Although the values do not vary much, they are consistent with the hypothesis from the Section 2.3, except for the decrease in the last 10% band. The other two restructuring measures, on the other hand, do not show any remarkable association with ownership concentration.

To sum up, the descriptive statistics presented in Table 13 and illustrated in the Graph 4 partly confirm the hypothesis of this paper and justify the attempt to test the hypothesis econometrically, using labor productivity as the proxy for restructuring. At the same time, however, they suggest that neither the layoff ratio nor the turnover ratio is related to the level of private outside ownership concentration. Therefore, in the following econometric analysis, the main focus is on labor productivity as the dependent variable, while the two ratios are touched only marginally.

3.4. Estimation Results

After the problems of measuring ownership concentration and restructuring have been discussed, the alternative econometric specifications accounting for the possible attenuation or even negativity of the concentration-performance relationship between certain margins have been presented, and the data was carefully described, let the paper report and interpret proper estimates. All the specifications for the unbalanced panel were estimated by all OLS, fixed effects (FE) and random effects (RE) procedures (using *company* as the stratification variable). However, very low LM statistics favor the OLS estimates over the others in a vast

majority of the final specifications. Moreover the FE and RE estimations mostly give insignificant results, which might be attributed to the large loss of the degrees of freedom when 90 company effects are added. Therefore the results of the FE and RE models are often not reported. The estimations for labor productivity as the dependent variable come first (specifications denoted with the index 'a' in the Section 3.2), while the layoff and turnover ratios' regressions ('b'-specifications) are discussed only afterwards and to a lesser extent. The first set of estimations is the one concerning the basic linear specification (1a).

3.4.A. Linear Concentration-Productivity Relationship

Table 14 presents the estimates of three different versions of the specification (1a) which differ in the identity of the owners they take into account as control variables "SH…". **Specification 1a.1** includes the share owned by the state and the share owned by insiders, while **specification 1a.2** considers only the former and **specification 1a.3** only the latter. All the three equations were estimated both with and without the industry and region dummies, whereas the estimations without these covariates were done by OLS, FE and RE. However, only OLS results are presented for the reasons explained above.

- *Table 14: Estimation Results – Specification 1a*

The first thing to be observed from the results is that all estimated slopes for SHSTATE are negative, while all SHINS and CONC coefficients are positive. However, not all the ownership-related estimates are significant. Estimations *1a.1* and *1a.2* give non-significant slopes for all ownership variables except for SHSTATE when estimated without industry and region dummies. The coefficient is negative (as expected) and significant at 10 percent level in both cases, being slightly higher in its magnitude when SHINS is included in the regression. According to these results, one percent increase of the state's share means *ceteris paribus* decrease of LOGLP by approximately 0.0015.

The coefficient for private outside ownership concentration becomes significant at one percent level, having the value of 0.331 and 0.344 for the specifications with and without covariates respectively, when SHSTATE is left out from the equation and only SHINS remains as ownership covariate (specification *1a.3*). The coefficient for SHINS is positive but insignificant when industry and region dummies are included but it is 10% significant and positive when the dummies are left out, suggesting that 1% increase of the insiders' share causes *ceteris paribus* 0.0026 increase in log labor productivity. There were performed also other regressions with SHFOR, besides SHINS and SHSTATE. All these estimations again deliver negative slopes for SHSTATE and positive for SHINS and CONC but they are insignificant. The estimates of SHFOR coefficients are the most insignificant, varying between slightly negative and slightly positive values.

To sum up, there was found an empirical support for a slightly positive relationship between private outside ownership concentration and labor productivity, but this evidence is rather weak as the magnitudes and standard errors of the estimates are sensitive to the changes of the use of industry, region and ownership covariates. This might mean that there exists some kind of positive, though not linear, relationship between concentration and productivity, which opens the space for examining the three alternative specifications.

3.4.B. Nonlinear Concentration-Productivity Relationship

The first of the three alternatives is the specification (2a) which uses **dummies** of ownership concentration. Based on the Table 13 from the Section 3.3.E, the concentration is divided to six bands with borders at 20%, 30%, 40%, 70% and 90% concentration. Thus five dummies are created: CONC_0020, CONC_2030, CONC_3040, CONC_4070 and CONC_7090 with the band between 90% and 100% concentration being the omitted category. Out of the three models – using SHSTATE or SHINS or both ownership identity variables as

controls – the first does not give any significant estimates of the dummies' coefficients. The results of the model using both controls (**specification 2a.1**) and those of the model using only SHINS (**specification 2a.2**) are presented in Table 15. For the former, only OLS estimates are reported because an extremely low LM statistic unambiguously favors OLS over FE and RE. For the latter, this is not the case any more, therefore all the three results are reported.

- *Table 15: Estimation Results – Specification 2a*

In both estimations of the specification *2a.1*, the coefficient of SHSTATE is negative and significant at 5% level, while the SHINS slope is positive but insignificant. The SHINS coefficient is also positive in all the four estimations of the specification *2a.2*, while only the OLS (without covariates) and RE estimates are significant at 10% level. All estimates for the dummies are negative while they are all significant in three out of the six estimations. The most significant results (all dummies significant at most at 5%) and also the highest R-squared adjusted are obtained by FE estimation of *2a.2* which assigns the lowest intercept to companies with concentration between 20 and 30%. However, the Wald test shows that the coefficients for the first three dummies are not significantly different from each other. The mutual comparison of the first four dummies varies throughout the estimations. The only clear thing that the specifications with dummies show is that the firms with ownership concentration above 90% tend to have, other things being the same, the highest labor productivity, followed by companies with 70 to 90% concentration. Thus the concentration-productivity function can be said to be increasing between 70 and 100% concentration. Below the point of 70%, the model does not reveal any systematic relationship between concentration and productivity.

The second way to examine the non-linear relationship is to modify the basic linear specification (1a) by **adding CONC-squared and CONC-cubed** following the approach of

Claessens *et al.* (1998). Thus the **specification 3a** is obtained. The problem of this specification, that can be recognized at the first glance, is that of multicolinearity which can inflate the standard errors. Multicollinearity is indeed very high – 94% correlation between CONC and CONC-sq., 86% between CONC and CONC-cub. and 98% (!) between CONC-sq. and CONC-cub. – and it might make even the statistically significant coefficients seem insignificant. Nevertheless, there can be found one version of this specification which yields 10% significant estimates of β_1, β_1 ' and β_1'' (Table 16). In this specification, the vector of control variables includes two industry dummies ('heavy industry and machinery' and 'other idustries' with the reference group 'light and food industry'), one region dummy ('Moravia and Silesia' with the reference group Bohemia) and two ownership identity variables ('insiders' and 'foreigners' with the omitted category 'state and private domestic outsiders'). The shape of the relationship indicated by the results is exactly the one suggested in the hypothesis in the Section 2.3. It even corresponds with the strong form of the hypothesis as the slope of the concentration-productivity function is negative (though very close to zero) for the levels of ownership concentration between 31.5% and 58.3%, and positive otherwise[46]. In the other versions of the specification *3a*, the estimates are not significant but in most cases they are positive for the first and the third power of CONC and negative for CONC-squared suggesting again the hypothesized shape.

- *Table 16: Estimation Results – Specification 3a*

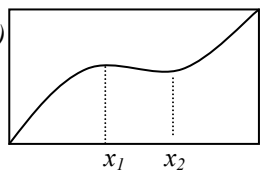
The third alternative is **linear piece-wise regression** described by the specification (4a) in the Section 3.2. The first step to be done within this procedure is to decide how to divide

---

[46] $f(x) = const. + 2.491x^3 - 3.354x^2 + 1.371x$

$f'(x) = 7.473x^2 - 6.708x + 1.371 = 0 \Leftrightarrow x_1 = 0.315, x_2 = 0.583$

As $f''(x) = 14.946x - 6.708$, x_1 is local minimum and x_2 is local maximum.



the unit interval of ownership concentration to bands. A natural way how to determine the dividing points is to depart from the results of the estimation *3a*, according to which the concentration-productivity function is increasing before 30% and after 60%, while it is slightly decreasing between these two margins. Thus ownership concentration can enter the model by three variables: CONC.0to30, CONC.30to60, and CONC.over60. These variables (generally defined at the end of the Section 3.2) were created, and then LOGLP was regressed on them and different sets of control variables. The results are reported in Table 17. Again, only OLS estimates are presented because the LM statistics are almost zero.

- *Table 17: Estimation Results – Specification 4a*

The estimations using SHSTATE together with SHINS (**specification 4a.1**) or solely SHSTATE (**specification 4a.2**) as ownership identity controls show negative (but almost zero) relationship between concentration and productivity in the first band, slightly positive in the middle band and more positive in the third band. But none of the coefficients is significant. The coefficient for CONC.over60 becomes significant when the sole ownership control is SHINS (**specification 4a.3**). In both versions of this specification (with and without covariates), the t-statistics for CONC.0to30 are substantially higher than in the previous two estimations – making the slopes almost significant at 10% level – and the coefficients for this variable are positive. The slope in the middle band is very close to zero and, indeed, less significantly different from zero than in the estimations *4a.1* and *4a.2*. Thus, specification *4a.3* shows the shape suggested in the hypothesis.[47] Similarly to the specification with dummies, the only sound conclusion that can be drawn from all the versions of the linear

[47] Another way how to determine the dividing points is to depart from the summary statistics of LOGLP conditional on concentration presented in the Table 13 and Graph 4 in the Section 3.3.E. This approach suggests that the points are 40%, 60% and 85%. Therefore regressions were run also for variables CONC.0to40, CONC.40to60, CONC.60to85 and CONC.over85. The results of these regressions, however, were of lower information value. Therefore, they are not discussed here.

piece-wise regression is that the function is increasing above 60% concentration. The relationship between ownership concentration and labor productivity in the interval of concentration from zero to sixty percent is again unclear.

The main result of the three alternative estimations reported in this section is that there is a positive relationship between ownership concentration and labor productivity function when the concentration is high, i.e. at over approximately 60%. Under this margin, the sign of the relationship is uncertain. Thus the estimated relationship fits the hypothesis in the high and moderate bands of concentration. However, the expected positive slope of the function for the lowest values of concentration was not confirmed. This might either mean that the level X in the hypothesis is very close to zero or simply that the hypothesis was wrong in predicting the shape of the function for low concentration.

Another view on these results could consider the quality of the proxy used for ownership concentration, which does not take into consideration the distribution of the shares in the group of the largest shareholders. How good the variable CONC is? While high values of CONC can be without much doubt interpreted as representing high concentration, when the value of CONC is moderate or low, the information value of this variable becomes questionable. This might be the reason why the only clear inference about the concentration-restructuring relationship concerns only high values of concentration.

3.4.C. Estimations with Instrumental Variables

The hitherto analysis assumed that ownership concentration is exogenous with respect to other explanatory variables. It is, however, very likely that the process of the concentration of ownership structures after privatization was dependent on several company-related characteristics, such as size, industry or region. To account for the possible selection bias,

ownership concentration should be instrumented and two-step procedure should be used to estimate the concentration-productivity function.

When looking for suitable instruments one might consider three groups of variables that can affect ownership concentration. The first group consists of the company characteristics used in the specifications. These are size, industry dummies and region dummies. Size is measured by the logarithm of employment in the beginning of the respective year and it is expected to have negative effect, as the ownership structures in larger companies are more likely to become less concentrated. Industry is now characterized by five groups – light industry, food industry, heavy industry, machinery, and other industries – where machinery is taken as the omitted category and the others are represented by four dummies. Regionally, the sample is divided to companies in Bohemia (REGMOR=0) and those in Moravia and Silesia (REGMOR=1).

The second group of the suggested determinants of concentration includes lagged variables referring to observable performance or achieved restructuring. These are the return on assets calculated as the ratio of gross profit and production assets (ROA_{t-1}), exports to non-former CMEA countries as a percentage of total revenue (EXP_{t-1}), the layoff ratio (LAY_{t-1}) and the turnover ratio ($TURN_{t-1}$). The values of EXP are reported in the data source only for years 1989, 1994 and 1998. Therefore the values for the other years are imputed by linear interpolation. In this case, as opposed to that of ownership variables (see the Section 3.1.A), the interpolation between two valid observations is the only imputation. This means that when, for instance, the value for 1989 is missing and 1994 and 1998 are not, only the values of 1995, 1996 and 1997 are imputed while those before 1994 remain missing. All the four variables from this group are expected to have positive effect on ownership concentration as their high values signal better perspectives of the firm and thus attract investors.

The third group of the suggested instruments describes cost structure in 1992. The choice of this year is motivated by the character of the data set which provides many observations of variables describing cost structure in 1992 but much lower number of valid observations for other years. These variables are personnel costs (CPER92), material costs (CMAT92) and depreciation (CDEP92), all measured as a percentage of total costs in 1992.

Table 18 presents the results of the OLS regressions of CONC on the variables discussed above. The best specification found (see Estimation C in Table 18) includes size, dummy for Moravia and Silesia, lagged return on assets, lagged export, lagged layoff ratio and the share of personnel costs in 1992. The estimates of the coefficients of all these instruments are significant at most at 5% level and they all have the expected signs. The effect of the other variables on ownership concentration is insignificant. The fitted values obtained by this regression range from 0.13 to 0.95. A large problem of this estimation is that it is based only on 173 observations. This drawback, however, cannot be removed by other imputations because in the vast majority of the cases of missing observations, the observations are not available for any year for the respective company.

- *Table 18: Determinants of Ownership Concentration*

Now, after the identification of the instruments, the two-step regressions can be run for two out of the four specifications examined in the previous chapter, i.e. for those where concentration enters as a continuous variable. These are the basic linear regression and the 'polynomial' regression estimated by OLS procedure as the low levels of LM statistics again favor it over FE and RE. The IV estimation of the specifications *1a.1*, *1a.2* and *1a.3* give slightly negative but insignificant slopes for concentration. The signs of the coefficients for SHSTATE and SHINS are alternating and in all cases insignificant. Thus no linear relationship between instrumented CONC and LOGLP is revealed.

When the fitted value enters the right-hand side in the linear, squared and cubed forms, the obtained results are easy to summarize, though difficult to interpret. Seven versions of this regression were performed (all combinations of SHSTATE, SHINS and SHFOR as ownership controls), all with and without industry and region dummies and none of the estimates of the ownership-describing variables (fitted CONC in the first, second and third powers plus the three controls) are significant. The slopes for state's and foreign shareholding are always negative, while those for insiders' shareholding are always positive. Nor the three concentration-related coefficients change their signs when the set of covariates is altered. The first and the third power are negative, while the second power is positive. These signs, though insignificant, are exactly opposite to the results obtained without instruments. However, as all these estimates are insignificant, it can be concluded that the two-step estimation did not show any systematic relationship between concentration and restructuring. The difference between OLS and IV estimates and the fact that all the ownership variables are estimated to have insignificant effect on labor productivity might be attributed to the different, three times smaller sample in the IV compared to the OLS regressions. As the fitted value for CONC is determined only for 173 observations, the number of observations for the two-step estimations varies from 95 to 134 depending on the inclusion of the ownership identity variables.

To conclude this subsection, there were found significant instruments for ownership concentration but the two-step estimations did not show any systematic relationship between ownership concentration and productivity. The large number of missing observations combined with the impossibility of using reasonable imputations led to three times smaller sample in two-step regressions might be the reason. An alternative explanation could again consist in the considerations about the information value of the variable CONC.

3.4.D. The Effects of Concentration on the Layoff and Turnover Ratios

Alternative proxies for restructuring to labor productivity are the layoff ratio and the turnover ratio. The summary statistics from the Section 3.3.E did not show any effect of ownership concentration on these two measures. Employing the procedures of econometric estimation leads to a similar conclusion. When concentration is assumed to be independent from other explanatory variables, no significant relationship is found. In a majority of these estimations, high values of LM statistics and Hausman tests unambiguously favor FE model. No version of the four specifications (1b, 2b, 3b and 4b) gives significant coefficients for concentration (the slopes oscillate around zero). The only ownership variable that has a statistically significant effect is SHSTATE with always positive and almost always significant effect on LAY and SHINS with always positive and almost always significant effect on TURN.

The same can be said about the estimations using instrumental variables, with the only exception – coefficients for SHSTATE and SHINS are always insignificant. When LAY is regressed, the sign of SHSTATE slope is alternating and that of SHINS is always positive. When the dependent variable is TURN, the signs of both the ownership-identity coefficients are positive in almost all specifications. No such pattern, which is observed for the insignificant coefficients of ownership identity, can be observed for concentration.

To sum up, no systematic association with ownership concentration has been found for any of the two ratios.

CONCLUSION

The purpose of this paper was to examine the dependence of firm restructuring on private outside ownership concentration in the Czech manufacturing sector after privatization. This examination has been done in three steps. The first chapter presented the main features of the post-privatization ownership structures. Departing from the so-called privatization tree constructed from various sources the chapter argued that the main actors in these structures were investment privatization funds and it carefully described the design of these new financial institutions. It also contended that another very important actor was the state, which still retained substantial control through both direct and indirect ownership. The state's *ex-post regulation approach* and the continuous postponement of the reform of the enforcement system enhanced the separation of ownership and control and thus gave large powers to the largest owners or their representatives on the company boards.

In the Chapter 2, the theoretical hypothesis about the examined relationship was derived. Building on the hitherto achievements of the 'general' and 'transition' debates on the ownership-performance relationship, in particular on the contribution of Morck *et al.* (1988), and realizing the above mentioned specialties of the Czech case, the paper assumes that ownership concentration affects restructuring through four different effects – that of *incentive* alignment, that of the *entrenchment of managers*, that of the *entrenchment of the new owners* in control and, finally, that of *tunneling* opportunities for these owners. The hypothesis, constructed from these assumptions, states in its weak form that the concentration-restructuring function in the post-privatization Czech environment is increasing in the whole domain with an attenuated slope in a certain part of it, while the strong form states that the function is increasing before a certain level of concentration, afterwards it is decreasing and, finally, as the concentration gets closer to 100%, the function is increasing again.

The last step was to test this hypothesis on the sample of 90 companies in the period 1991-1998. Restructuring, approximated by labor productivity (in logarithm), was regressed on private outside ownership concentration, measured by the share of the largest N private outside investors where N as well as some other properties of the measure are different for different years. The use of these imprecise proxies, especially that for ownership concentration, represents the first weakness of the empirical analysis. Another limitation of the estimations is caused by the imputations of ownership variables (and exports used as instruments) made in order to, at least partly, eliminate the problem of missing observations. Furthermore, the observations for the dependent variables, size and instrument variables, are incomplete.

Despite the limitations listed above, the OLS, FE and RE regressions partly confirmed the hypothesis, especially the expected shape of the function for high and moderate concentration. However, no significant specification was found when instrumental variables were used to remove possible selection bias. Neither OLS, FE and RE, nor IV estimations showed a significant systematic relationship between private outside ownership concentration and the layoff and turnover ratios. Finally, the results in general report a negative effect of the state's shareholding and a positive effect of insiders' shareholding on restructuring.

The main contribution of this paper consists in the fact that it analyzed the costs as well as the benefits of ownership concentration. Furthermore, it did not attempt to generalize the shape of the concentration-performance function but, on the contrary, it used some specific features of the Czech environment to derive the shape. Although the empirical results are rather weak, they *do* suggest that not only the benefits but also the costs of concentration were present in the Czech Republic of the 1990's. There is still a large space for further empirical research on the importance of the concentration of property rights in the Czech Republic and in transition economies in general. A better understanding of the issue of ownership

concentration would undoubtedly help in designing and fostering the mechanisms of corporate governance. More generally, it might help some to finally realize the crucial importance of legal order and the system of its enforcement.

BIBLIOGRAPHY:

1. Berle, Adolf A. Jr., and Gardiner C. Means (1932), *The Modern Corporation and Private Property*. New York: Macmillan; reprint New Brunscwick, NJ: Transaction Publishers, 1991.
2. Buchtíková, Alena, and Aleš Čapek (1997), *Bad Loans and Financing of Enterprises by Banks in the Czech Republic*, Prague: Czech National Bank, Institute of Economics - mimeo.
3. Carlin, Wendy, John Van Reenen, and Toby Wolfe (1995), Enterprise Restructuring in Early Transition: the Case Study Evidence from Central and Eastern Europe, *Economics of Transition*, Vol. 3, No. 4, pp.427-458.
4. Claessens, Stijn, Simeon Djankov, and Gerhard Pohl (1996), *Ownership and Corporate Governance: Evidence from the Czech Republic*. Washington, DC: World Bank.
5. Claessens, Stijn, Simeon Djankov, Gerhard Pohl, and Robert Anderson (1997), *Privatization and Restructuring in Central and Eastern Europe*. Technical Paper, May 1997 No. 368. Washington, DC: World Bank.
6. Claessens, Stijn, Simeon Djankov, and Gerhard Pohl (1998), *Ownership Structure and Corporate Performance: Evidence from the Czech Republic*. Washington, DC: World Bank.
7. Coffee, John C. (1996), Institutional Investors in Transition Economies – Lessons from the Czech Experience, in: Frydman, R., C. Gray and A. Rapaczynski (editors), *Corporate Governance in Central Europe and Russia, Volume 1: Banks, Funds, and Foreign Investors*. Budaspest: CEU Press.
8. Coase, Ronald H. (1994), *Essays on Economics and Economists*. Chicago and London: The University of Chicago Press.
9. Crichton-Miller, David, and Phillip Worman (1999), *Seekeng a Structured Approach of Assessing Corporate Governance Risk in Emerging Markets*. Winning Essay, Institute of International Finance. Available at http://www.iif.com
10. Cubbin, John, and Denis Leech (1983), The Effect of Shareholding Dispersion on the Degree of Control in British Companies: Theory and Measurement. *Economic Journal*, Vol. 93, June, pp. 351-369.
11. Demsetz, Harold, and Kenneth Lehn (1985), The Structure of Corporate Ownership: Causes and Consequences. *Journal of Political Economy*, Vol. 93, No. 6, pp. 1155-1177.
12. Earle, John S., and Paul Estrin (1997), *After Voucher Privatization: The Structure of Corporate Ownership in Russian Manufacturing Industry*. CEPR Discussion Paper.

13. Earle, John S., Roman Frydman, Andrzej Rapaczynski, Joel Turkewitz (1994), *Small Privatization: The Transformation of Retail Trade and Consumer Services in the Czech Republic, Hungary and Poland*. Budapest: CEU Press.

14. Earle, John S., and Álmos Telegdy (2000), *Productivity and Ownership Structure in Romania*. Budapest: CEU working paper.

15. Ellerman, David P. (1998), *Voucher Privatization with Investment Funds: An Institutional Analysis*. The Davidson Institute Paper Series (167). Ann Arbor: University of Michigan Business School, William Davidson Institute.

16. Goerojo, Martin, and Earle, John S. (1999), *Firms, Workers and Managers in Transition: Czech and Slovak Republics*. Inference from the data collected on Czech an Slovak enterprises. Budapest: Labor Project of CEU, mimeo.

17. Halpern, László, and Gábor Körösi (1998), Corporate Performance in the Transition: Econometric Analysis of Hungarian Exporting Firms, 1985-1994, in: Halpern, L. and C. Wyplosz (editors), *Hungary: Towards a Market Economy*. Cambridge, New York and Melbourne: Cambridge University Press.

18. Hermalin, Benjamin E., and Michael S. Weisbach (1987), *The Effect of Board Composition on Corporate Performance*. Working Paper. Cambridge, MA: Massachusetts Institute of Technology.

19. Ježek, Tomáš (1997), The Czechoslovak experience with privatization. *Journal of International Affairs*, Winter 1997, Vol. 50, Issue 2, pp. 477-488.

20. Kočenda, Evžen (1999), *Residual State Property in the Czech Republic*. Discussion Paper No. 14/99. Prague: CERGE-EI.

21. Kudrna, Zdeněk, Ilona Katzová, Tomáš Sedláček and Ondřej Vychodil (2000), *Corporate Governance Risk in the Czech Republic – Report on Survey by Students of the IES FSV UK*. Prague: Institute of Economic Studies at Charles University and CSOB (Czecho-Slovak Merchant Bank). Available at http://cgr.hyperlink.cz/docs.htm

22. Lieberman, Ira W. (1994), Restructuring of Enterprices in Eastern and Central Europe, in: Bohm, A., and U. Korže (editors), *Privatization through Restructuring*. Ljublana: CEEPN.

23. Makhija, Anil K., and Michael Spiro (2000), Ownership Structure as a Determinant of Firm Value: Evidence from Newly Privatized Czech Firms. *Financial Review*, August 2000, Vol. 35, Issue 3, pp. 1-31.

24. McConnell, John J., and Henri Servaes (1990), Additional evidence on Equity Ownership and Corporate Value. *Journal of Financial Economics*, Vol. 27, pp. 595-612.

25. Mejstřík, Michal (1993), Second Wave of Czech Privatization in Full Speed, in: *Privatization Newsletter of the Czech Republic and Slovakia 2*, No. 18, pp. 1-3.

26. Mejstřík, Michal, Anton Marcinčin, and Radek Laštovička (1997), Voucher Privatization, Ownership Structure, and Emerging Capital Market in the Czech Republic, in: Mejstřík, M., A. Zemplinerová and A. Derviz (editors), *The Privatization Process in East-Central Europe, Evolutionary Process of Czech Privatization*. Dodrecht-Boston-London: Kluwer Academic Publishers.

27. Mládek, Jan (1994), Voucher Privatization in the Czech Republic and Slovakia, in: *Mass Privatization – An Initial Assessment*. OECD Center for Co-operation with the Economies in Transition, pp. 39-47.

28. Morck, Randall, Andrei Shleifer and Robert Vishny (1988), Management Ownership and Market Valuation. *Journal of Financial Economics*, Vol. 20, pp. 293-315.

29. OECD Principles of Corporate Governance (1998). Available at http://www.oecd.org

30. Pistor, Katharina, and Andrew Spicer (1996), *Investment Funds in Mass Privatization and Beyond: Evidence from the Czech Republic and Russia*. Development Discussion Paper No. 565, December 1996. Harvard Institute for International Development, Harvard University.

31. Sedláček, Tomáš, and Ondřej Vychodil (2001), *Case Study of UNIS ČR*. Teaching Case Study. Washington, D.C.: Leadership Forum International and McDonough School of Business, Georgetown University, mimeo.

32. Shleifer, Andrei, and Robert Vishny (1997), A Survey of Corporate Governance. *Journal of Finance*, June 1997, Vol. 52, No. 2, pp. 737-783.

33. Stulz, René (1988), Managerial Control of Voting Rights. *Journal of Financial Economics*, Vol. 20, pp. 25-59.

34. Turnovec, František (1998), *Privatization, Ownership Structure and Transparency: How to Measure a Real Involvement of the State?*. Discussion Paper No. 6/98. Prague: CERGE-EI.

35. Tříska, Dušan (1996), *The Role of Investment Funds in the Czech Republic*. The Davidson Institute Working Paper Series (23). Ann Arbor: University of Michigan Business School, William Davidson Institute.

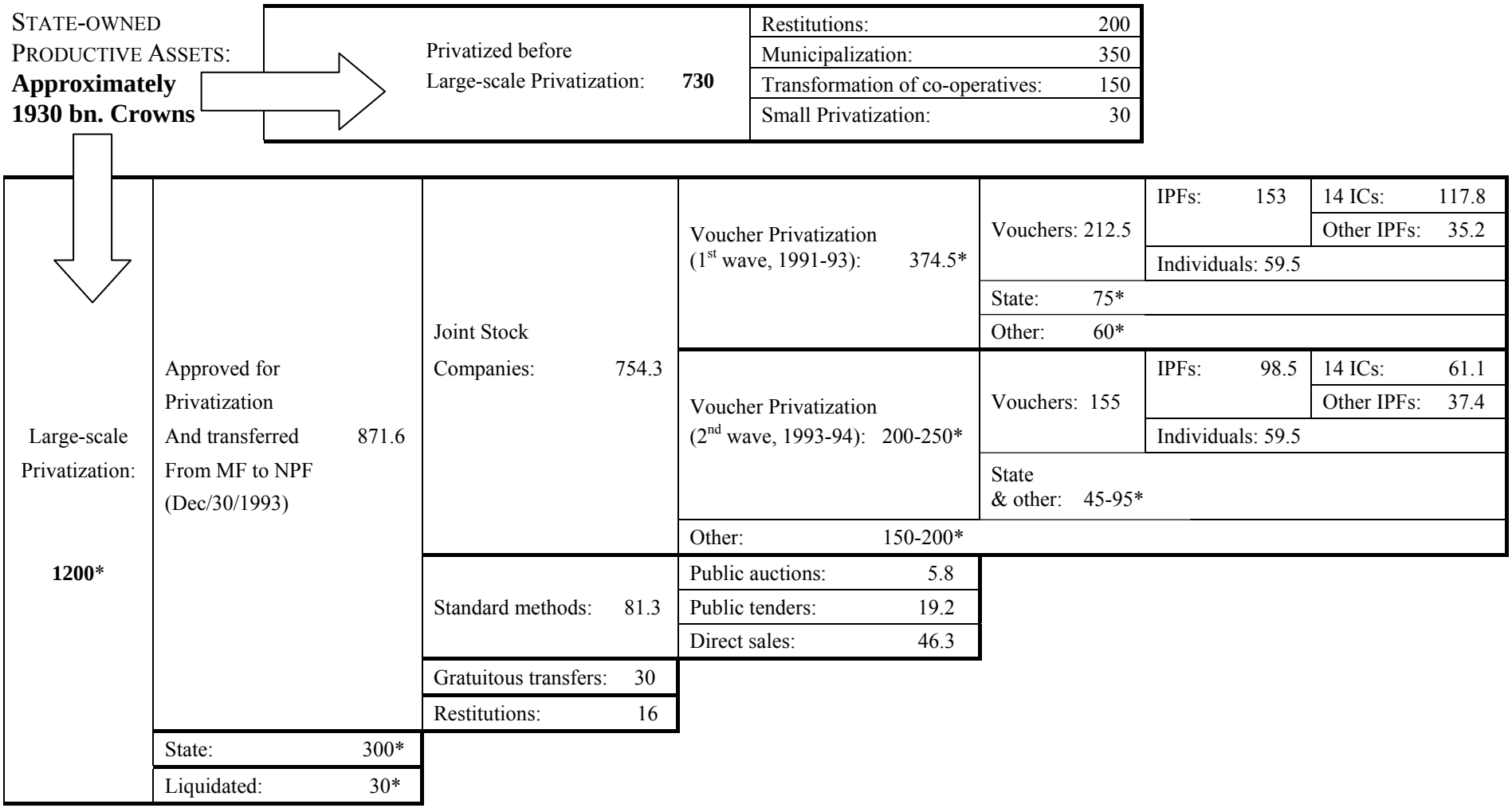
36. WIIW (1998), *Handbook of Statistics: Transition Countries*. Vienna: The Vienna Institute for International Economics.

Data Source:

Czech and Slovak Enterprises Database (1989-1998) collected by the *Labor Project of Central European University*, Budapest.

APPENDIX

Table 1 *Czech Privatization in Numbers – Mass Privatization Tree*



Note: The numbers (billions of crowns) refer to the book value of the assets privatized through the respective methods.
* denotes a roughly approximated number which can differ maximum 10% up or down from its value.
Source: Ministry of Finance, National Property Fund, Mejstřík (1993), Mládek (1994), Kočenda (1999), author's calculations.

Table 2 *The Concentration of Ownership by Funds after Voucher Privatization*

	Relative importance*) over 50%		Relative importance*) over 30%	
	Number of companies	% out of the sample of 949 companies	Number of companies	% out of the sample of 949 companies
1 largest fund	146	15,4	442	46,6
2 largest funds	473	49,8	782	82,4
3 largest funds	669	70,5	847	89,3
4 largest funds	727	76,6	860	90,6
5 largest funds	754	79,5	867	91,4

*) Relative importance $_k$ = share $_k$ / sum of 18 significant stocks of shares, where the 18 stocks represent 8 largest non-voucher investors (foreign and domestic investors, National Property Fund) and 10 largest voucher investors (IPFs).
Source: Mejstřík, Marcinčin, Laštovička (1997).

Table 3 *Illustration of the Missing Values' Imputation*

Date (A,B,C,D)	A=B				C			D
Year	1991	1992	1993	1994	1995	1996	1997	1998
Values before imputation	NA	NA	NA	NA	0.45	NA	NA	0.6
Values after imputation	0	0	0.45	0.45	0.45	0.5	0.55	0.6

Table 4 *Population/Sample Comparison by Industry*

	Population (Czech Republic, 1995)			Sample		
Industry	No. of companies (more than 50 employees)	%	Weighted percentage distribution	No. of companies	%	Weighted percentage distribution
Food, beverages, tobacco	*560*	*15.9*	*10.5*	*15*	*18.5*	*8.2*
Light manufacturing	*1103*	*31.3*	*23.9*	*14*	*17.3*	*14.2*
Heavy manufacturing	*960*	*27.3*	*32.3*	*17*	*21.0*	*22.5*
Machines and equipment	*899*	*25.5*	*33.4*	*35*	*43.2*	*55.2*
Manufacturing total	*3522*	*100.0*	*100.0*	*81*	*100.0*	*100.0*

Source for population data: Goerojo and Earle (1999), Czech Statistical Office (1996). The weight in population statistics was the average number of employees in December 1995. The weight in sample statistics was employment at the end of the year 1995 – in the case of non-availability of this value, the level of employment for the closest available year is used.

Table 5 *Population/Sample Comparison by Size*

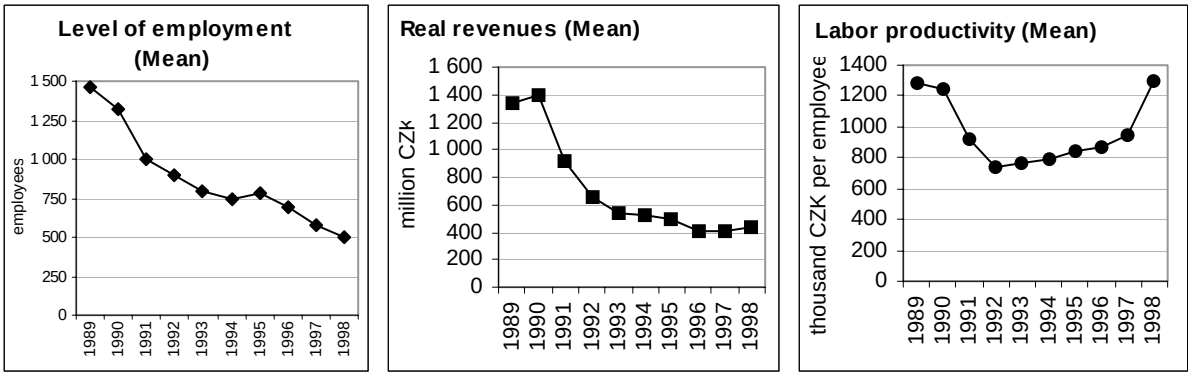
	Population (Czech Republic, 1995) – all sectors		Sample	
Industry	No. of JSCs and LTDs	Percent	No. of JSCs and LTDs	Percent
Less than 100	*101,250*	*96.4*	*2*	*2.2*
100 – 300	*2,462*	*2.3*	*28*	*31.1*
301 – 500	*553*	*0.5*	*25*	*27.8*
501 – 1000	*422*	*0.4*	*20*	*22.2*
More than 1000	*296*	*0.3*	*15*	*16.7*
Total	*104,983*	*100.0*	*90*	*100.0*

Source for population data: Goerojo and Earle (1999), Czech Statistical Office (1996).

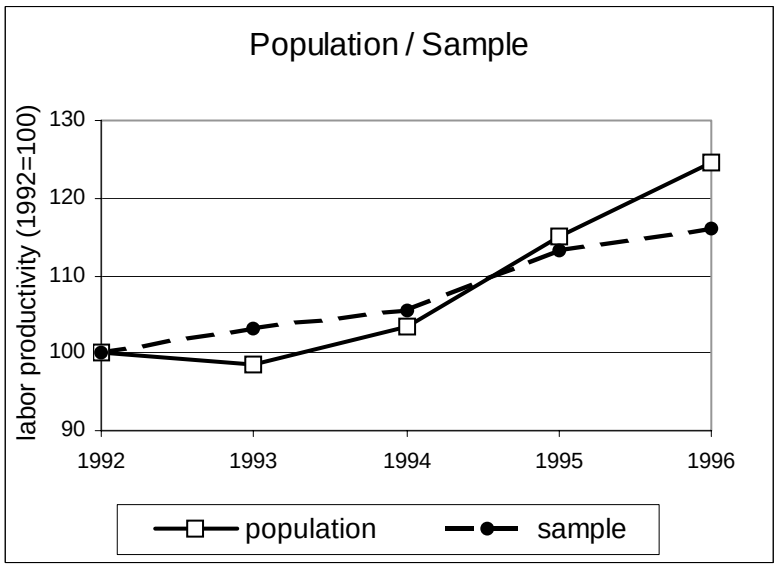
Table 6 *Descriptive Statistics for Employment, Real Revenues and Labor Productivity*
(Mean; *Standard deviation in italics*; number of valid observations)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Employment	1 467.6	1 318.4	1 004.9	891.2	790.8	745.0	787.9	692.2	579.4	503.3
EMP (employees)	*1 554.3*	*1 376.1*	*1 136.0*	*1 080.3*	*990.5*	*1 027.6*	*1 106.4*	*993.0*	*895.8*	*772.5*
	65	70	81	89	89	84	66	66	66	65
Real revenues	1 332 782	1 402 852	913 048	647 569	545 287	518 568	492 379	400 681	407 937	436 634
RREV (thous. CZK)	*1 605 015*	*1 639 338*	*1 150 074*	*1 043 652*	*799 942*	*890 672*	*667 487*	*457 306*	*497 210*	*536 527*
	47	50	57	75	78	75	59	59	59	52
Labor productivity	1 277.1	1 248.6	920.5	742.9	766.1	784.3	842.0	862.6	940.3	1 296.7
LP = RREV / EMP	*1 701.8*	*1 550.1*	*974.9*	*793.0*	*754.5*	*654.4*	*749.4*	*721.9*	*836.6*	*1 368.3*
	41	45	53	74	77	73	54	55	55	50

Graph 1 *Employment, Real Revenues and Labor Productivity in the Sample (Mean)*



Graph 2 *Labor Productivity in the Czech Manufacturing Sector in 1992-1996*



Source: WIIW (1998)

Table 7 *Descriptive Statistics for the Layoff and Turnover Ratios*

	1991	1992	1993	1994	1995	1996	1997	1998	All
LAY - Mean	0.078	0.065	0.061	0.046	0.080	0.106	0.100	0.128	0.791
- Std. Dev.	0.098	0.065	0.075	0.061	0.106	0.171	0.098	0.174	0.109
- Observations	52	66	70	67	48	45	46	45	439
TURN - Mean	0.380	0.381	0.377	0.361	0.440	0.430	0.408	0.391	0.393
- Std. Dev.	0.238	0.232	0.248	0.264	0.290	0.238	0.227	0.222	0.246
- Observations	58	73	79	75	53	51	51	50	490

Table 8 *Process of Ownership Concentration*

A) for all available values of CONC (if CONC ≥ 0)

CONC	All	1991	1992	1993	1994	1995	1996	1997	1998
Mean	0.364	0.018	0.093	0.280	0.327	0.424	0.514	0.592	0.661
Std.Dev.	0.313	0.121	0.228	0.251	0.251	0.249	0.235	0.221	0.249
Obs.	672	84	84	84	84	84	84	84	84

B) for positive values of CONC (if CONC > 0)

CONC	All	1991	1992	1993	1994	1995	1996	1997	1998
Mean	0.510	0.750	0.457	0.368	0.416	0.451	0.514	0.592	0.670
Std.Dev.	0.251	0.354	0.306	0.224	0.207	0.231	0.235	0.221	0.239
Obs.	479	2	17	64	66	79	84	84	83

Table 9 *Variables Describing Ownership by Identity*

1) INSIDERS *... variable SHINS*	2) STATE *... variable SHSTATE*	3) PRIVATE OUTSIDERS
- Managers	- Ministries	**A. Domestic banks**
- Production workers	- National Property Fund	- Largely state-owned banks
- Non-production employees	- Restitution Fund	- Privatized banks
- Former employees	- Local governments	- Newly established private banks
- Work collective ownership	- Other state institutions	**B. Domestic non-financial firms**
		- Largely state-owned firms
		- Cooperatives
		- Privatized firms
		- Newly established private firms
		C. Investment funds
		D. Domestic individuals
		E. Foreigners *... variable SHFOR*

Table 10 *Observations of SHSTATE, SHINS, SHFOR in the Four Dates*

		date A	date B	date C	Date D
SHSTATE	> 0	42	42	27	15
	= 0	17	17	25	52
	missing	31	31	38	23
SHINS	> 0	19	19	15	14
	= 0	39	39	38	45
	missing	32	32	37	31
SHFOR	> 0	5	5	8	14
	= 0	53	53	51	55
	missing	32	32	33	21

Table 11 *Shares by Identity at the Dates A and D*

A) Individual Samples

Date A: 56 obs.	INS	STATE	FIRM	BANK	IF		IND	FOR
Mean	0.089	0.174	0.052	0.006	0.396		0.254	0.027
Std. Dev.	0.248	0.181	0.201	0.040	0.262		0.196	0.131
Maximum	1	0.765	1	0.299	0.920		0.960	0.743
Minimum	0	0	0	0	0		0	0
Date D: 67 obs.	INS	STATE	FIRM	BANK	IF	FIN	IND	FOR
Mean	0.047	0.032	0.377	0.009	0.002	0.220	0.225	0.088
Std. Dev.	0.165	0.114	0.368	0.042	0.008	0.287	0.217	0.243
Maximum	0.820	0.760	1	0.210	0.030	0.900	1	1
Minimum	0	0	0	0	0	0	0	0

B) Common Sample (44 obs.)

Date A	INS	STATE	FIRM	BANK	IF		IND	FOR
Mean	0.022	0.175	0.068	0.008	0.422		0.271	0.035
Std. Dev.	0.087	0.186	0.227	0.046	0.261		0.204	0.149
Maximum	0.57	0.765	1	0.299	0.92		0.96	0.743
Minimum	0	0	0	0	0		0	0
Date D	INS	STATE	FIRM	BANK	IF	FIN	IND	FOR
Mean	0.043	0.040	0.363	0.014	0.003	0.207	0.252	0.080
Std. Dev.	0.161	0.134	0.367	0.051	0.009	0.281	0.241	0.216
Maximum	0.820	0.760	1	0.210	0.030	0.890	1	0.950
Minimum	0	0	0	0	0	0	0	0

Note: Date A denotes the date of the first shareholders' meeting after privatization. Date D denotes 1998. In 1998, many investment funds had been already transformed to other financial institutions and also new financial institutions had emerged. Therefore the category FIN (other financial institutions) appears only at the date D.

Graph 3 *Histogram of the State's Shares: Date A vs. Date D – Individual Samples (SHSTATE on the horizontal axis, frequencies on the vertical axis)*

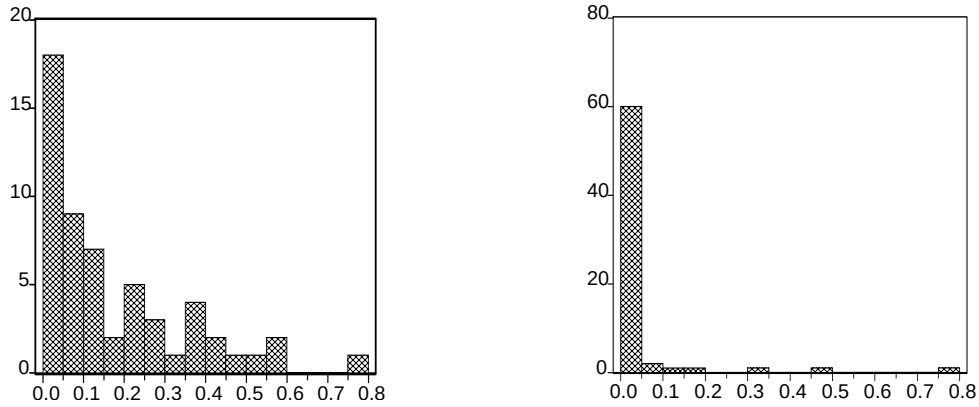


Table 12 *Summary Statistics of SHSTATE, SHINS and SHFOR after Imputations*

		1991	1992	1993	1994	1995	1996	1997	1998
SHSTATE	Mean	0.945	0.769	0.120	0.142	0.198	0.179	0.113	0.057
	Std.Dev.	0.224	0.400	0.181	0.161	0.202	0.225	0.184	0.184
	Min	0	0	0	0	0	0	0	0
	Max	1	1	1	0.6	0.8	1	0.765	0.765
	Obs.	69	69	69	69	69	69	69	69
SHINS	Mean	0.013	0.028	0.067	0.069	0.07	0.061	0.062	0.054
	Std.Dev.	0.114	0.160	0.216	0.218	0.217	0.218	0.221	0.214
	Min	0	0	0	0	0	0	0	0
	Max	1	1	1	1	1	1	1	1
	Obs.	77	77	77	77	77	77	77	77
SHFOR	Mean	0	0	0.002	0.010	0.014	0.017	0.028	0.104
	Std.Dev.	0	0	0.015	0.040	0.065	0.072	0.102	0.260
	Min	0	0	0	0	0	0	0	0
	Max	0	0	0.13	0.249	0.469	0.513	0.651	1
	Obs.	70	70	70	70	70	70	70	70

Table 13 *Summary Statistics of LOGLP, LAY and TURN (Conditional on CONC)*

Band of CONC:	LOGLP				LAY				TURN			
	Mean (Std.D.)	Min	Max	Valid obs.	Mean (Std.D.)	Min	Max	Valid obs.	Mean (Std.D.)	Min	Max	Valid obs.
All	6.47 (0.77)	1.47	8.73	491	0.079 (0.109)	0	0.95	439	0.39 (0.25)	0	1.54	490
If CONC available	6.48 (0.79)	1.47	8.73	463	0.082 (0.111)	0	0.95	421	0.39 (0.25)	0	1.54	472
CONC = 0	6.39 (0.86)	1.47	8.73	141	0.065 (0.082)	0	0.36	141	0.40 (0.27)	0	1.31	154
(0.0; 0.1]	6.21 (0.36)	5.64	6.79	12	0.098 (0.077)	0	0.28	112	0.29 (0.21)	0.10	0.81	14
(0.1; 0.2]	6.34 (0.73)	5.09	8.00	32	0.057 (0.074)	0	0.36	27	0.41 (0.21)	0.14	0.98	31
(0.2; 0.3]	6.45 (0.60)	5.62	8.21	23	0.051 (0.072)	0	0.28	27	0.41 (0.23)	0.01	0.99	31
(0.3; 0.4]	6.62 (0.64)	5.69	8.43	39	0.080 (0.160)	0	0.95	40	0.36 (0.27)	0.01	1.54	42
(0.4; 0.5]	6.56 (0.79)	2.88	8.16	64	0.076 (0.274)	0	0.53	54	0.38 (0.27)	0	1.22	61
(0.5; 0.6]	6.40 (0.80)	4.63	8.24	36	0.115 (0.112)	0	0.42	31	0.36 (0.19)	0.06	0.89	33
(0.6; 0.7]	6.49 (0.92)	4.72	8.70	40	0.068 (0.079)	0	0.34	33	0.38 (0.20)	0.04	1.07	36
(0.7; 0.8]	6.70 (0.84)	4.87	8.26	29	0.100 (0.100)	0	0.39	21	0.43 (0.18)	0.08	0.78	28
(0.8; 0.9]	6.82 (0.78)	4.83	8.66	21	0.156 (0.270)	0	0.93	11	0.43 (0.26)	0.08	1.20	14
(0.9; 1.0]	6.66 (0.59)	5.85	7.67	11	0.111 (0.052)	0.06	0.22	11	0.26 (0.13)	0.13	0.52	12
CONC = 1	6.48 (0.50)	5.54	7.15	15	0.228 (0.158)	0.01	0.56	13	0.43 (0.22)	0.09	0.88	16

Graph 4 *Plot of CONC and the Conditional Mean of LOGLP, LAY and TURN*

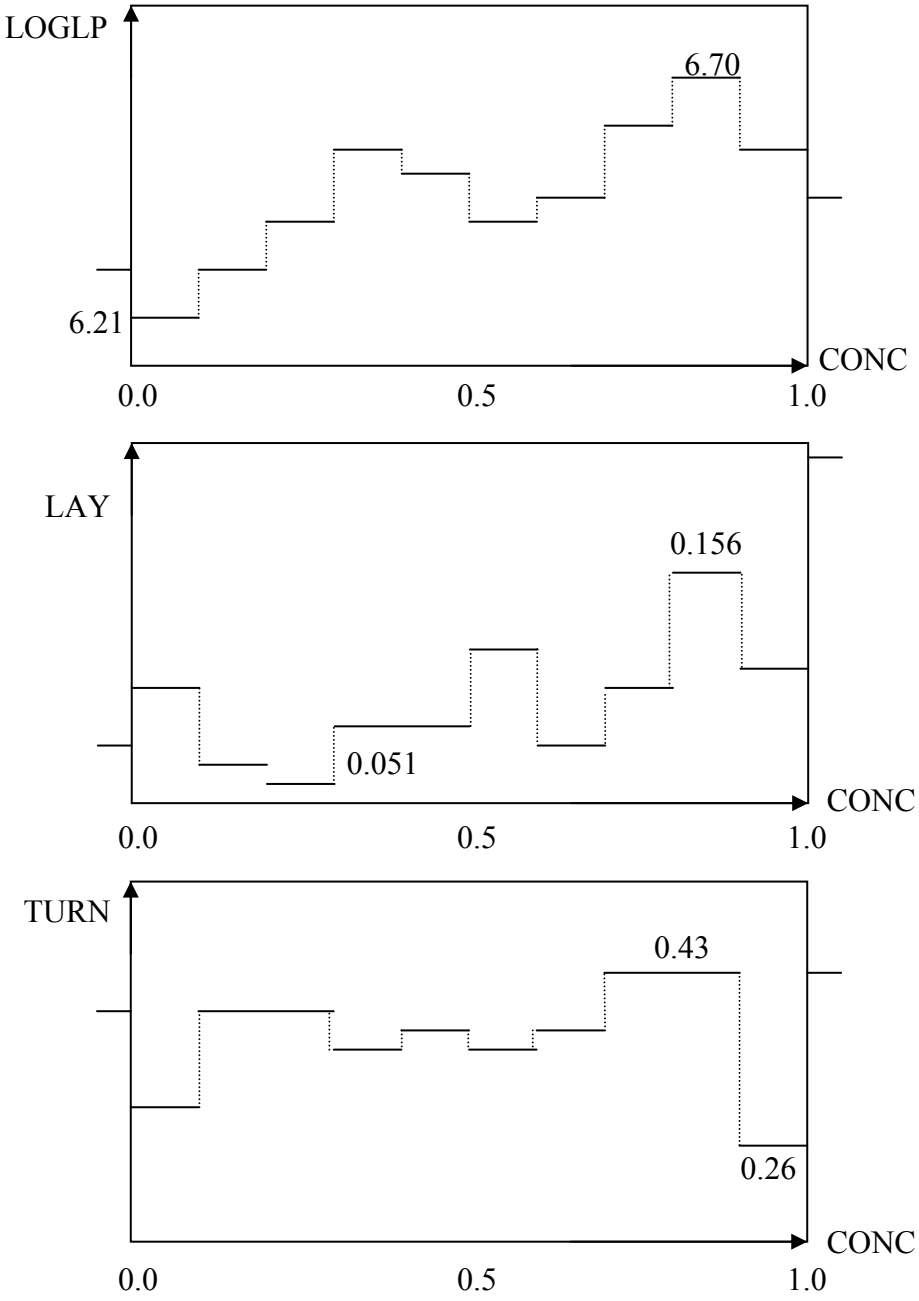


Table 14 *Estimation Results – Specification 1a*

dep. Var. $LOGLP_t$	Estimation 1a.1		Estimation 1a.2		Estimation 1a.3	
	without covariates	with covariates	without covariates	with covariates	without covariates	with covariates
C	1.947***	2.337***	1.954***	2.357***	2.179***	2.544***
$LOGLP_{t-1}$	0.770***	0.724***	0.792***	0.745***	0.724***	0.682***
$LOGEMP_t$	-0.711***	-0.059**	-0.092***	-0.078***	-0.084***	-0.068***
IND_H&M		-0.195***		-0.203***		-0.184***
IND_OTHER		-0.064		-0.086		-0.059
REGBOH		-0.044		-0.060		-0.052
REGMOR		-0.046		-0.055		-0.100
$SHSTATE_t$	-0.155*	-0.144	-0.147*	-0.127		
	(-1.714)	*(-1.605)*	*(-1.737)*	*(-1.503)*		
$SHINS_t$	0.145	0.090			0.263*	0.202
	(1.012)	*(0.606)*			*(1.715)*	*(1.255)*
$CONC_t$	0.144	0.132	0.083	0.078	0.344***	0.331***
	(1.260)	*(1.153)*	*(0.812)*	*(0.765)*	*(3.718)*	*(3.285)*
R-squared adjusted	0.61	0.62	0.64	0.65	0.57	0.58
No. of obs.	313	313	340	340	376	376

Note: t-statistics in parentheses. *** means significance at 1 percent, ** means significance at 5 percent, * means significance at 10 percent.

All the specifications without covariates have been estimated by OLS, FE and RE models, but the results of FE and RE estimates are insignificant and LM-test favors in all cases OLS over FE/RE. Thus only the OLS estimates are reported.

Table 15 *Estimation Results – Specification 2a*

dep. var. $LOGLP_t$	Estimation 2a.1		Estimation 2a.2			
	without covariates	with covariates	OLS without covariates	OLS with covariates	Fixed effects	random effects
C	2.282***	2.812***	2.599***	3.037***		2.999***
$LOGLP_{t-1}$	0.769***	0.718***	0.724***	0.680***	0.192***	0.676***
$LOGEMP_t$	-0.073***	-0.059***	-0.084***	-0.065**	-0.277***	-0.095***
IND_H&M		-0.232***		-0.210***		
IND_OTHER		-0.075		-0.064		
REGBOH		-0.040		-0.039		
REGMOR		-0.031		-0.098		
$SHSTATE_t$	-0.207**	-0.204**				
	(-2.234)	*(-2.208)*				
$SHINS_t$	0.126	0.0.57	0.268*	0.197	0.466	0.292*
	(0.873)	*(0.378)*	*(1.727)*	*(1.207)*	*(0.957)*	*(1.950)*
$CONC\_0020_t$	-0.256	-0.346**	-0.393***	-0.464***	-0.440***	-0.421***
	(-1.589)	*(-2.138)*	*(-2.981)*	*(-3.507)*	*(-2.849)*	*(-3.605)*
$CONC\_2030_t$	-0.284	-0.369*	-0.253	-0.321*	-0.457**	-0.301**
	(-1.474)	*(-1.918)*	*(-1.445)*	*(-1.846)*	*(-2.461)*	*(-1.966)*
$CONC\_3040_t$	-0.289*	-0.371**	-0.306**	-0.363**	-0.423**	-0.337**
	(-1.706)	*(-2.189)*	*(-2.048)*	*(-2.441)*	*(-2.410)*	*(-2.538)*
$CONC\_4070_t$	-0.253*	-0.362**	-0.257*	-0.344***	-0.386**	-0.291**
	(-1.630)	*(-2.305)*	*(-1.961)*	*(-2.602)*	*(-2.528)*	*(-2.484)*
$CONC\_7090_t$	-0.208	-0.355**	-0.154	-0.286*	-0.348**	-0.186
	(-1.218)	*(-2.037)*	*(-1.021)*	*(-1.858)*	*(-2.119)*	*(-1.397)*
R-squared adjusted	0.61	0.62	0.56	0.57	0.68	0.57
No. of obs.	313	313	376	376	376	376

Note: t-statistics in parentheses. *** means significance at 1 percent, ** means significance at 5 percent, * means significance at 10 percent.

Table 16 *Estimation Results – Specification 3a*

dep. var. $LOGLP_t$	Estimation 3a
C	2.529***
$LOGLP_{t-1}$	0.681***
$LOGEMP_t$	-0.070**
IND_H&M	-0.202***
IND_OTHER	-0.051
REGMOR	-0.095
$SHINS_t$	0.243
	(1.259)
$SHFOR_t$	-0.022
	(-0.070)
$CONC_t$	1.371*
	(1.908)
$CONC_t$-squared	-3.354*
	(-1.661)
$CONC_t$-cubed	2.491*
	(1.756)
R-squared adjusted	0.57
No. of obs.	324

Note: t-statistics in parentheses. *** means significance at 1 percent,
** means significance at 5 percent, * means significance at 10 percent.

Table 17 *Estimation Results – Specification 4a*

dep. var. $LOGLP_t$	Estimation 4a.1		Estimation 4a.2		Estimation 4a.3	
	without covariates	with covariates	without covariates	with covariates	without covariates	with covariates
C	(+)***	(+)***	(+)***	(+)***	(+)***	(+)
$LOGLP_{t-1}$	(+)***	(+)***	(+)***	(+)***	(+)***	(+)
$LOGEMP_t$	(–)***	(–)**	(–)***	(–)***	(–)***	(–)
IND_H&M		(–)***		(–)***		(–)***
IND_OTHER		insignif.		insignif.		insignif.
REGBOH		insignif.		insignif.		insignif.
REGMOR		insignif.		insignif.		insignif.
$SHSTATE_t$	-0.19*	-0.18*	-0.18**	-0.16*		
	(-1.925)	*(-1.792)*	*(-1.979)*	*(-1.742)*		
$SHINS_t$	0.14	0.09			0.27*	0.20
	(1.005)	*(0.617)*			*(1.738)*	*(1.255)*
$CONC.0to30_t$	-0.13	-0.08	-0.21	-0.16	0.42	0.46
	(-0.391)	*(-0.228)*	*(-0.639)*	*(-0.453)*	*(1.412)*	*(1.549)*
$CONC.30to60_t$	0.27	0.10	0.20	0.06	0.16	-0.09
	(0.767)	*(0.281)*	*(0.611)*	*(0.183)*	*(0.436)*	*(-0.024)*
$CONC.over60_t$	0.43	0.62	0.31	0.44	0.62*	0.78**
	(1.074)	*(1.549)*	*(0.931)*	*(1.341)*	*(1.735)*	*(2.206)*
R-squared adjusted	0.61	0.62	0.64	0.65	0.58	0.65
Akaike info. crit.	1.340	1.332	1.323	1.313	1.570	1.559
No. of obs.	313	313	340	340	376	376

Note: t-statistics in parentheses. *** means significance at 1 percent, ** means significance at 5 percent, * means significance at 10 percent.

All the specifications without covariates have been estimated by OLS, FE and RE models, but the results of FE and RE estimates are insignificant and LM-test favors in all cases OLS over FE/RE. Thus only the OLS estimates are reported.

Table 18 *Determinants of Ownership Concentration*

Dep. var. $CONC_t$	Estimation A		Estimation B		Estimation C	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
C	0.765***	2.831	0.843***	6.326	0.758***	6.271
$LOGEMP_t$	-0.108***	-4.337	-0.109***	-5.324	-0.104***	-5.189
IND_LIGHT	0.155	0.239				
IND_FOOD	-0.150	-1.123	-0.151	-1.428		
IND_HEAVY	0.005	0.063				
IND_OTHER	0.044	0.638				
REGMOR					0.092**	2.165
ROAt-1	0.00027***	5.045	0.00026***	5.293	0.00025***	5.096
EXPORTt-1	0.352***	2.782	0.324***	3.165	0.337***	3.391
LAYt-1	0.539**	2.596	0.528***	2.645	0.484**	2.426
TURNt-1	-0.025	-0.239				
CPER92	0.730**	2.481	0.676**	2.570	0.611**	2.341
CMAT92	0.099	0.409				
CDEP92	-0.046	-0.080				
R-squared adjusted	0.36		0.38		0.39	
No. of obs.	173		173		173	

Note: *** means significance at 1 percent, ** means significance at 5 percent, * means significance at 10 percent

TABLE OF CONTENTS

INTRODUCTION **1**

1. PRIVATIZATION AND THE CZECH MANUFACTURING SECTOR **5**

1.1. Mass Privatization 6

1.2. Voucher Privatization and Investment Privatization Funds 8

1.3. Residual State Property 13

1.3.A. Direct State Ownership *13*

1.3.B. Cross-ownership in the Banking Sector *15*

1.3.C. Indirect State Ownership *16*

1.4. Institutional Setup and Corporate Governance 17

2. THE EFFECT OF OWNERSHIP CONCENTRATION – HYPOTHESIS **22**

2.1. General Debate 22

2.2. Transition Debate 25

2.3. The Czech Case – Construction of Hypothesis 28

2.3.A. Terms 'Restructuring' and 'Ownership Concentration' *29*

2.3.B. Inspiration and the Constraint of its Application *29*

2.3.C. The Construction of Hypothesis *32*

3. EMPIRICAL VERIFICATION **38**

3.1. Measuring Ownership Concentration and Restructuring 38

3.1.A. Ownership Concentration *39*

3.1.B. Restructuring *41*

3.2. Empirical Specification 42

3.3. The Data and Descriptive Statistics 45

3.3.A. Representativity of the Sample *45*

3.3.B. Labor Productivity, Employment, Layoff and Turnover Ratio *46*

3.3.C. Ownership Structure *48*

3.3.D. Control Variables *51*

3.3.E. Concentration-Restructuring Relationship *51*

3.4. Estimation Results 52

3.4.A. Linear Concentration-Productivity Relationship *53*

3.4.B. Nonlinear Concentration-Productivity Relationship *54*

3.4.C. Estimations with Instrumental Variables *58*

3.4.D. The Effects of Concentration on the Layoff and Turnover Ratios *62*

CONCLUSION **63**

BIBLIOGRAPHY **66**

APPENDIX **69**

LIST OF TABLES AND GRAPHS

Table 1 Czech Privatization in Numbers – Mass Privatization Tree 70
Table 2 The Concentration of Ownership by Funds after Voucher Privatization....71
Table 3 Illustration of the Missing Values' Imputation 71
Table 4 Population/Sample Comparison by Industry 72
Table 5 Population/Sample Comparison by Size 72
Table 6 Descriptive Statistics for Employment, Real Revenues and Labor Productivity....73
Table 7 Descriptive Statistics for the Layoff and Turnover Ratios....74
Table 8 Process of Ownership Concentration 74
Table 9 Variables Describing Ownership by Identity 74
Table 10 Observations of SHSTATE, SHINS, SHFOR in the Four Dates....75
Table 11 Shares by Identity at the Dates A and D 75
Table 12 Summary Statistics of SHSTATE, SHINS and SHFOR after Imputations 76
Table 13 Summary Statistics of LOGLP, LAY and TURN (Conditional on CONC) 77
Table 14 Estimation Results – Specification 1a....79
Table 15 Estimation Results – Specification 2a....80
Table 16 Estimation Results – Specification 3a....81
Table 17 Estimation Results – Specification 4a....82
Table 18 Determinants of Ownership Concentration....83

Graph 1 Employment, Revenues and Labor Productivity in the Sample (Mean)....73
Graph 2 Labor Productivity in the Czech Manufacturing Sector in 1992-1996 73
Graph 3 Histogram of the State's Shares: Date A vs. Date D....76
Graph 4 Plot of CONC and the Conditional Mean of LOGLP, LAY and TURN 78

ACKNOWLEDGEMENTS

I am extremely grateful to *Prof. John S. Earle*, whose inspiring comments and questions raised during the supervision of my work have been part of the reason why I have enjoyed writing this thesis. Furthermore, I would like to thank *Robin Bellers* for his advice on language and stylistic matters, *Álmos Telegdy* for helping me understand some particularities of the data source, and *Mircea Marcu* for fruitful discussions.

ABSTRACT

This thesis examines the dependence of firm restructuring on private outside ownership concentration in Czech manufacturing sector after privatization. It starts with the argumentation that the most important actors in the post-privatization ownership structure in the Czech Republic were investment privatization funds, followed by the state, and that the 'rules of the game' opened a large space for moral hazard. Based on the realization of these Czech specialties and on the logic of the break-through article by Morck, Shleifer and Vishny's from 1988, the paper operationalizes the benefits and the costs of ownership concentration by four effects – incentive, manager-entrenchment, outsider-entrenchment and tunneling effects. This leads to the hypothesis that the concentration-restructuring function in the post-privatization Czech environment is increasing for sufficiently low as well as for sufficiently high values of concentration, while its slope in the inner band of concentration is attenuated or even negative due to the entrenchment and tunneling costs of concentration. This hypothesis is tested on an unbalanced panel data on 90 Czech companies for the years 1991-1998. OLS, FE and RE regressions with labor productivity on the left-hand sides partly confirm the hypothesis, especially the expected shape of the function for high and moderate concentration. However, no significant specification is found when instrumental variables are used to remove possible selection bias. Neither OLS, FE and RE, nor IV estimations showed a significant systematic relationship between private outside ownership concentration and the layoff and turnover ratios. The results in general report a negative effect of the state's shareholding and a positive effect of insiders' shareholding on restructuring.