OWNERSHIP AND CHIEF EXECUTIVE COMPENSATION:
EVIDENCE FROM ESTONIA

by

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July 12 1999

ABSTRACT

By using new panel survey data for Estonian firms with matching information for chief executives, evidence is presented on the determinants of the level of chief executive compensation during 1993-1997. Findings based on fixed effects models indicate that CEO pay is: (i) positively related to size (whether measured by total assets, employment or sales); (ii) often related to performance when measured by the return on assets or profit margin, but unrelated to productivity; (iii) strongly linked to firm ownership. Size elasticities range from 0.03 to 0.05 and performance elasticities average 0.06 (for return on assets) and thus are much smaller than comparable measures estimated in other studies. The most significant (statistically and economically) determinant of CEO pay is consistently found to be the ownership structure of the firm. CEOs in state-owned firms receive about 10-12% more pay than CEOs in private firms, ceteris paribus, and CEO pay differs by type of private ownership. Compared to state firms, it is statistically significantly lower in firms owned by employees (by about 15%) and higher (by 7-15%) in firms owned by foreigners. These findings are consistent with efficiency wage and monitoring hypotheses. Together with findings that CEO pay is lower in firms owned by domestic outsiders and that ownership by managers has no effect on compensation, these findings provide stronger support for hypotheses that stress the importance of non-pecuniary motivation.

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I. Introduction

Researchers have begun to investigate diverse topics concerning the managerial labor market during transition that potentially have a vital bearing on the success of overall reform (Aghion et al., 1994). Key issues believed to influence enterprise performance include appropriate reward systems for chief executive officers (CEOs) (e.g. Groves et al., 1995; Jones and Kato, 1996) and the roles of new versus incumbent managers (e.g. Boycko et al., 1996; Claessens and Djankov, 1999). Unfortunately, reflecting the limited nature of the available data, our understanding of actual managerial labor markets during early transition and the provision of hard data that will inform such debates is confined to a handful of empirical studies that cover a limited range of countries. [i] In this paper, by drawing on new panel data for Estonian firms, we extend the range of available information on the determinants of the level of CEO compensation in transition countries to a country that is very different than those that have been studied.

The Estonian case is especially interesting since the privatization process has led to the emergence of firms with very different structures of ownership (Jones and Mygind, 1999). Thus, for the first time we are able to examine the impact of the role of very different ownership configurations on executive pay. For example, arguably very different principal-agent relationships exist in firms which are either state or privately-owned and, for private firms, depending on whether owners are insiders or outsiders (Boycko et al., 1996). To provide for optimal monitoring in these differing situations, diverse pay packages for CEOs can be expected to emerge and to have varying effects. The structure of the paper is as follows.

In the next section we continue by first briefly reviewing some of the key issues that have appeared in the theoretical and empirical literature concerning management in economies in transition and then by relating some of these issues to the specific context of transition in Estonia. Next we describe what are most unusual data---for a panel of firms, with corresponding data at the chief executive level. After outlining the empirical strategy we use to test hypotheses on the

determinants of the level of chief executive pay, findings from these fixed effects models are reported.

II. Conceptual Framework and Transition in Estonia

The managerial labor market during early transition is believed to have a number of features. Some of these reflect the legacy of arrangements in Soviet-type economies including managerial reward systems in which pay was mainly a base wage and the pay of top managers was a low multiple of the average wage. Theorists have pointed out how these arrangements would be expected to result in acute incentive and motivational problems for managers (e.g. Bonin, 1976; Weitzman, 1976). A substantial gap would emerge between behavior in a proprietary fashion (as called for under the official ideology) and the reality of risk aversion and the pursuit of a quiet life (Kornai, 1992). Partly because of asymmetries in information between managers and planners, a "ratchet effect" would emerge with extensive managerial slack (e.g. Ickes and Samuelson, 1987; Litwack, 1991). In turn, several systemic inefficiencies were predicted including diverse pathologies of production (e.g. Putterman, 1993).

Hence, in order to facilitate successful overall reform during early transition, many have stressed the crucial importance of reforming incentive systems (e.g. Aghion et al., 1994). For instance, when executive compensation is structured so as to provide pecuniary incentives for managers to pursue profitability, then arguably more market-oriented managerial behavior would be encouraged. In the context of early transition, downsizing of overstaffed state owned firms and productivity increases appear to be key ingredients of successful reform. Arguably such adjustments will be facilitated when executive compensation is structured so as to reward managers for rational downsizing and productivity increases.

In addition, mainstream theorists have noted the existence of several problems in managerial labor markets. When information is asymmetric--for example when one party to the employment relation (usually the principal) has imperfect information about the other party (the

agent) and obtaining reliable information is costly-- problems associated with moral hazard and adverse selection are apt to occur. In particular, compared to state-owned- firms, we hypothesize that potentially there will be acute differences in principal-agent relationships in firms that continue to be state-owned. Rent-seeking by managers in large state-owned firms can be expected to be more important than in privatized firms that will be less politicized and in which market forces will be expected to exert more discipline on CEO compensation.

Furthermore, this principal-agency perspective implies that the form of private ownership can be expected to be important. For example, to provide for improved monitoring of managers, firms owned by outsiders in general (and perhaps foreigners in particular) can be expected to be more likely to pay higher (efficiency) wages and to link pay with firm performance.[ii] This will contrast with firms that are owned by employee-insiders who are able to closely monitor executive performance and who will be expected to be more effective at disciplining managers than in other private firms. Finally, in firms in which managers are the main owners, it is uncertain whether this large measure of managerial control will result in greater current income in the form of pay or in some other form (e.g. profits).

The potential ambiguity of theory concerning the impact of some of the factors typically thought to influence CEO pay is strengthened by taking into account determinants stressed by other theorists as well as by taking note of the Estonian transition context. Thus, some have stressed the potential importance to executive behavior of non-pecuniary motivations (Frey, 1997). These considerations can be expected to be especially important for particular ownership configurations. For example, compared to outsider owned firms, employee owned firms have a greater likelihood of differing value systems and institutional practices such as mechanisms for employee participation in decision making (Hausman, 1996). This tendency can be expected to produce more compressed wage structures than in other firms with other forms of majority ownership (Mygind, 1992). This force is especially likely to be present in transition economies

such as Estonia where egalitarian norms were strong in the past (Mygind, 1996) and which, because of institutional inertia, can be expected to continue to exert an influence on current pay structures.

For a number of reasons the case of Estonia is an interesting one to examine concerning the determinants of executive pay. For one thing, according to many macroeconomic indicators, the performance of this Baltic tiger has been far better than most former communist countries (Fischer et al., 1996). Second, since 1990 the Estonian transition strategy has been quite radical, including rapid price liberalization and a new competition policy, and thus is reminiscent of "big bang" experiences elsewhere. Also, the move to privatization of large state-owned firms was quite rapid and was quite advanced during the period under study in this paper. In these respects the Estonian situation is very different than that examined in other work on executive compensation in transition countries.[iii] Thus in Bulgaria, until recently, a focus of reform efforts was on corporatization rather than wholesale privatization. As such the situation confronting Bulgarian managers was apparently more similar to that confronting Chinese managers compared to managers of privatized firms in transition economies such as Estonia.. Moreover, and apparently unlike the situations in other transition economies for which there is applied work on executive compensation, this has resulted in the introduction of diverse forms of private ownership (see on). In addition, unlike in Estonia, in Bulgaria it appears that managerial positions have become part of the political spoils system and that, to the extent that managers are able to enhance their incomes through "shadow firms," these are indeed plum positions. Perhaps most important, because of the failure to deal with the problem of bad debts, the context within which Estonian managers operated was nearly always characterized by hard budget constraints–a very different situation than that which confronted managers of, for example, corporatized firms in Bulgaria, and more akin to that confronting managers of Czech firms.

III. The Data

With the cooperation of the central statistical authority in Estonia, annual economic and financial data were extracted from company records for a stratified random sample of 666 firms for 1993-1997 to construct a rich panel. These standard economic data, including profits, sales, assets and employment, have been merged with two special surveys. In one survey, detailed data on the distribution of ownership for insiders, available separately for managers and employees, and outsiders, split into foreigners and domestic outsiders, and the state were collected for this large panel. By selecting a large sample, we expect to have representation of all the main forms of ownership, as well as firms which had been privatized at different times and firms from a broad range of industries.[iv] The other survey collected data for a random sub-sample of 220 top executives in these firms, including information on their compensation packages.

These data enable not only estimation of diverse specifications, but also construction of measures of key variables. Concerning ownership, at best most previous studies on executive compensation are able to attempt to classify firms according to whether firms are state or privately owned. Even studies of transition economies which investigate the impact of different forms of privatization upon economic performance usually are able to construct measures of which group is the largest or the dominant shareholder (Frydman *et. al.* ,1997; Jones, 1998; Earle *et. al.*,1996). However, for several reasons, this procedure does not necessarily produce the preferred typology of ownership forms. For example, dispersed shareholdings within a category may lead to limited cohesiveness by the dominant ownership group, which may account for as little as 25% of the total voting stock. Fortunately, in most cases in Estonia, we are able to classify firms based on the analytically preferable method of majority ownership.

In Table 1 we present descriptive statistics for key variables for two selected years during the period under examination, namely the first and last years (1993 and 1997). Firms are classified according to their ownership status in 1997.[v] By examining the entries for the whole sample (column 1) we see that, on average, during 1993-1997, real monthly CEO compensation fell very slightly, while size (employment and assets) fell much more sharply. While some performance

measures such as sales also did not change much others, including labor productivity and profits, deteriorated sharply. [vi]

From Table 1 we also see that there were great differences in key variables when firms are classified according to majority ownership. Examining first the changing fortunes of state owned firms, we see that while they continue to be much larger then other firms, their rate of shrinkage was also noticeably faster than that of other firms.[vii] Unlike other firms, they also experienced rapidly increasing losses during 1993-1997. CEO pay in state firms suffered enormously too while performance indicators displayed an uneven record–for example, compare constant labor productivity and declining margins.

CEO pay was much higher in 1997 in firms owned by foreigners –more than three times as high as in firms in which employees were majority owners. However, unlike firms owned by managers and by domestic outsiders, CEO pay in foreign owned firms fell during 1993-1997. By several indicators foreign owned firms performed very well, recording sharp gains in real sales and in profits, though labor productivity declined considerably too. Performance indicators for other types of firms were often mixed. Thus, productivity and sales grew in employee owned firms though profits fell. In firms owned by managers, profits, margins and the return on assets all improved though sales fell and productivity stagnated. Typically foreign owned firms experienced greater rates of contraction (especially in employment) than did other privately owned firms. Finally, we see that pay differences between managers and the average worker (RATIO) were typically quite modest–about 3:1. Interestingly, during 1993-1997, this ratio fell in foreign owned firms (as well as in employee owned firms), though it widened somewhat in other private firms. [viii]

IV. The Relation between Executive Compensation and Firm Performance in Transition

To study the determinants of the level of CEO pay we begin by augmenting a standard chief executive compensation equation[ix] by a dummy variable indicating whether, during the period 1993-1997, the firm remains state-owned. That is,

$$\ln Pay_{it} = \beta \ln(SIZE_{it}) + \epsilon (PERFORMANCE_{it}) + \gamma(STATE_{it}) + \alpha_i + \tau_i + u_{it} \qquad (1)$$

where Pay_{it} = chief executive pay of firm i in year t; $SIZE_{it}$ = size of firm i in year t; $PERFORMANCE_{it}$ = standard firm performance measures such as various accounting profitability measures of firm i in year t; $STATE_{it} = 1$ if firm i remains state-owned over the 1993-97 period, 0 otherwise; α_i = firm specific fixed effects; and τ_i = year effects. The disturbance term, u_i, we assume u_i - NID$(0, \sigma^2)$.

PERFORMANCE and SIZE are standard variables that have been included in prior empirical studies of executive compensation in the U.S., the U.K. and other advanced market economies and in the limited work on transitional economies. In the western literature, the application of principal agent theory to the design of executive contracts in general predicts a positive correlation between managerial pay and some observable measure of firm performance (which eventually translates into improved well-being for shareholders). To adequately measure PERFORMANCE debate in the western literature has usually centered on the respective merits of measures of stock market returns compared to various accounting measures such as ROA (the return on assets). However, in a context of embryonic capital markets as in Estonia, this debate is moot since stock market measures are highly suspect and only very large enterprises are listed on the stock exchange. Moreover, many have argued (e.g. Pohl et al, 1997; Earle and Estrin, 1998) that the key performance measure may be labor productivity. Thus, in our empirical work, as well as two accounting measures, ROA and MARGIN (gross profit/sales), we also consider labor productivity as an alternative firm performance measure.

The inclusion of a measure of SIZE in empirical work in western literature usually follows from theories which stress the importance of factors such as spans of control in determining CEO pay. For transition economies, another consideration is that under communism being a chief

executive of a larger firm with many employees often translated into more political power and thus an improved ability to obtain higher pay. Our data allow us to use three alternative SIZE measures: (i) EMPLOY(number of workers); (ii)SALES (income from sales in 1993 real kroons); (iii) ASSET (total assets in real kroons).

On all estimates we use a two-way fixed effects model. Year dummy variables ( ) are included to capture technological change and other shocks common to all firms as well as possible measurement errors of inflation. Firm specific effects ( ) are included to capture time invariant firm specific factors that may affect chief executive pay. [x]

We estimated nine specifications of equation (1) depending on the selection of the size and performance measures. Importantly, for all specifications reported in Table 2, F tests refute the joint exclusion of year dummy variables and firm-specific fixed effects at the 1% level. The first three columns of Table 2 show the results when EMPLOY is used as a size measure, whereas columns 4-6 report findings using sales as a measure of size and in the last three columns assets are used to proxy size. For each size measure, results are reported when the three different performance measures are used (for example, ROA in columns 3, 5 and 7). Finally, all models include a dummy variable for whether or not the firm remained state owned throughout the period.

No matter which measure of SIZE is used, evidence is found of a positive and statistically significant relationship between CEO pay and SIZE. The results are not sensitive to the choice of the PERFORMANCE measure. Moreover the estimated pay elasticities of size are quite small and in the range of 0.03-0.05. For example, as sales increase by 10%, CEO pay increases by 0.3 to 0.5%; for assets, the comparable effect is 0.8%. These elasticities are much smaller than those obtained in other studies. For example, Rosen (1990) in reviewing various western studies on the estimated elasticity of pay with respect to scale finds a typical value of 0.25 while Jones and Kato (1997) report elasticities of size of 0.2-0.4 for Bulgaria.

There is mixed support for the existence of a relationship between CEO pay and PERFORMANCE. For productivity (ln PROD), no statistically significant relationship is ever

found. However, when ROA is used to proxy performance, as hypothesized the relationship is always found to be positive and in two cases it is also statistically significant. Also, in two of three cases, evidence is found of a positive and statistically significant relationship between PERFORMANCE (measured by MARGIN) and CEO compensation. Again these elasticities are smaller than those obtained in other studies. Thus, Rosen (1990) finds that the estimated sensitivity of pay to accounting measures are in the 1.0 to 1.2 range, about twice the size of the estimated elasticities for Estonia for ROA. However, the finding of statistically significant relationships between PERFORMANCE (measured by ROA or MARGIN) contrasts with the case of Bulgaria where the only significant link was when productivity was used.

Finally from Table 2 we see that there is strong evidence that ownership matters much in the determination of executive CEO pay. Specifically we see that CEOs in state firms earn higher pay then their counterparts in the private sector, even after controlling for size, performance and other time invariant unobservables. These positive and significant estimates suggest that, after controlling for firm performance, the average CEO working for a state-owned firms receives additional rents of $10-12\%$ as compared to his/her counterpart in privatized firms. Hence, the rent earned by state firm CEOs seems to be significant not only statistically but economically. Put another way, the positive and significant estimates on γ can be interpreted as indicating the presence of financial discipline which privatization has brought to CEO compensation.

In Table 3 we report our estimates of Equation (2) (when we explicitly examine the impact of the particular form of private ownership). Importantly, in all nine estimates, F tests refute the joint exclusion of year dummy variables, the vector of private ownership dummies and the firm-specific fixed effects at the 1% level. As in the previous estimates, again we find that most measures of SIZE have positive and statistically significant effects on the level of CEO pay, other things equal. The sizes of the coefficients on the three proxies for SIZE are essentially unchanged from the previous estimates. However, and unlike findings reported in table2, in these estimates we find that PERFORMANCE is statistically significant in only one case (column III).

Findings for the several forms of individual ownership are very interesting. The most consistent findings are for firms in which employees are the majority owners. As hypothesized, relative to firms in which the state is the majority owner, firms with majority ownership in the hands of employees pay their managers less, other things equal. The size of the ownership effects is remarkably consistent across all specifications and averages about 15%. More surprisingly, we find that managers in which domestic outsiders are the majority also earn a statistically significantly lower amount than do managers of firms that are state owned (ranging from 9-12% depending upon specification). As hypothesized, firms in which ownership lies oversees always pay their managers more, though the effects of majority ownership by foreigners are seldom statistically significantly different than zero. Finally, it appears that once control for size, performance and time invariant firm specific factors have been introduced that CEO pay in firms owned by managers is no different than in firms owned by the state.

V. Summary and Implications

Using a panel survey of firms with matching information for chief executives, we study the determinants of chief executive compensation during an interesting period of transition in the Estonian economy. Findings based on fixed effects models indicate that CEO pay is always positively related to changes in several measures of size (including total assets and employment). The evidence on the link between CEO compensation and performance is more mixed. Using measures such as profit margin and ROA often evidence of a positive and statistically significant relationship is found. However, no link is found between pay and productivity. However, compared to findings from other studies, the size and performance elasticities typically are quite small, averaging about 0.04 and 0.06 respectively. These findings suggest that executive compensation in Estonia is structured so as to provide only weak incentives for managers to increase firm size and to pay limited attention to current business performance.

Our most notable findings concern the effects of ownership on CEO pay. The most significant (statistically and economically) determinant of CEO pay is consistently found to be the ownership structure of the firm. CEO pay is always higher in firms that remained completely state-owned (and are not privatized). This finding is found consistently for all specifications and, averaging 12%, is quite sizeable. Together with the weak pay-performance and compensation-size relationships, this finding suggests that the financial discipline surrounding firms in the state sector was especially weak. In other words, privatization did lead to stronger discipline on CEO compensation thus reducing the rent associated with state-owned firms.

Both principal-agent theory and theory based on the importance of non-pecuniary concerns in influencing CEO pay predict that CEO compensation will differ according to the particular form of private ownership. For all specifications, in firms in which employees are the majority owners, CEOs earn about 15% less than do managers of state firms, other things equal. This disciplining effect on CEO compensation is also often found in private firms in which domestic outsiders are the majority. CEOs in such firms earn about 15% less than do managers of state firms. By contrast, in firms owned by foreigners CEO pay is found to be higher (by 7-15%), while ownership in firms owned by foreigners. These findings are consistent with efficiency wage and monitoring hypotheses. Together with findings that CEO pay is lower in firms owned by domestic outsiders and that ownership by managers is not found to affect compensation. As such these findings provide stronger support for hypotheses that stress the importance of non-pecuniary motivation.

In some respects our findings are similar to those that have emerged in other studies for transition economies and suggest the emergence of two stylized facts. First, there is evidence of a link between size and executive compensation. This is found not only for Estonia but also for China Groves et al. (1995) and Bulgaria (Jones and Kato, 1996, 1999). Second, there is consistent evidence that ownership does matter and that, during early transition, compared to managers of private firms, managers in state firms receive rents. This finding emerges from studies for several

countries, with the findings for Estonia, additionally pointing to the importance of the particular form of private ownership.

At the same time, the magnitude of these effects often differs considerably. For example, the size elasticity effect varies considerably (and is especially small in Estonia). In addition, there is no general finding concerning a link between pay and performance. Thus, whereas in China there is evidence of such a relationship, in Estonia the evidence on this connection is weaker and in Bulgaria even moreso (at least during 1993-1995) no such link is found (Jones and Kato, 1999). In accounting for the differences across countries on these points, clearly the differences in institutional contexts matter. In addition, arguably a key consideration behind the failure to find a link between productivity/profitability and pay in Bulgaria is because, unlike in China, the performance of the economy has been so chaotic. In such circumstances it was (and probably still is) premature to find a pay-performance link. This contrasts with findings for Estonia which are consistent with the view that transition policy is producing incentives for managers to be financially disciplined.

Appendix

Table 1. Descriptive Statistics: Means (standard deviation)

		1			2			3	
	N	Mean	S.D	N	Mean	S.D	N	Mean	S.D
		Total			State Owned			Foreign Owned	
CEOPAY93	199	4244	6344	11	6600	3578	38	7153	12710
CEOPAY97	198	4211	5298	11	4490	1420	38	6408	7444
RATIO93	197	2,6	3,4	11	4490	1420	38	3,5	6,2
RATIO97	195	3,1	3,2	11	3,0	1,03	38	2,9	1,8
ENTLOY93	220	138	243	11	571	681	42	89	156
EWLOY97	216	97	160	11	210	288	42	89	140
ASSET93	182	13235	38147	11	62111	95034	32	26836	68673
ASSF,T97	204	9030	26580	11	26588	37827	38	23902	52418
SALES93	220	13891	36969	11	64637	74369	42	22253	66194
SALES97	203	12425	28811	11	34404	72882	38	29225	50091
PROFIT93	220	136	5349	11	-29:7	2850,7	42	-1234	7798
PROFIT97	207	71	2093	11	-4228	7845	39	663	2497
ROA93	182	0,037	0,399	11	0,0849	0,134	32	-0,083	0,88
ROA97	204	0,028	0,247	11	-0,411	0,386	38	0,07	0,177
MARGIN93	220	-0,042	-0,75	11	0,0425	0,0846	42	-0,296	1,6
MARGIN97	203	-0,041	0,412	11	-0,564	0,635	38	0,004	0,134
PROD93	220	169	561	11	132	104	42	529	1211
PROD97	201	128	198	11	132	188	38	312	355

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	4			5			6	
	N	Mean	S.D	N	Mean	S.D	N	Mean	S.D
	Domestic Owned			Manager Owned			Employee Owned		
CEOPAY93	71	3961	3853	56	3184	2305	18	2379	1827
CEOPAY97	71	4054	3783	56	3754	5920	17	1795	1055
RATIO93	70	2,7	3	56	2	1	17	2	0,75
RATIO97	69	3,5	3,4	56	3	4,3	16	1,8	0,51
ENTLOY93	79	157	200	59	102	251	22	88	89
EWLOY97	76	122	155	59	71	183	22	52	47
ASSET93	70	10543	18385	49	5680	14920	15	2679	3280
ASSETT97	72	7005	14884	58	2780	6374	20	1841	2150
SALES93	79	12893	22755	59	7701	17124	22	3811	6756
SALES97	72	9478	13815	57	5645	12040	20	3946	4834
PROFIT93	79	1064	6217	59	-135	3092	22	214	360
PROFIT97	72	44	1388	58	143	348	22	146	339
ROA93	70	0,067	0,158	49	0,04	0,21	15	0,107	0,14
ROA97	72	-0,013	0,258	58	0,08	0,24	20	0,07	0,092
MARGIN93	79	0,029	0,415	59	-0,005	0,146	22	0,032	0,098
MARGIN97	72	-0,1	0,62	57	0,035	0,122	20	0,036	0,055
PROD93	79	90	131	59	87	83	22	51	68
PROD97	70	87	110	57	87	85	20	67	71

Notes:
1. All figures are in 1993 kroons and for firms classified by ownership in 1997
2. All variables are defined in the appendix
3. The difference between the total number of firms and firms classified by ownership is the number of firms for which there was no majority owner. Typically there were five such firms.

Table 2. The Determinants of the Level of CEO Compensation in State and Private Firms

Independent Variable	Dependent variable: In (CEOPAY) (monthly pay in 1993 Kroons)								
	I	II	III	IV	V	VI	VII	VIII	IX
Intercept	7.5	7.7	7.7	7.60	7.63	7.5	7.27	7.19	7.28
	(49.114)	(82.7)	(81.6)	(50.164)	(51.767)	(49.109)	(37.49)	(34.15)	(37.34)
In	0.056200	0.04419	0.04457						
	(1.53)	(1.888)*	(1.887)*						
In(SALES)				0.03943	0.031170	0.056093			
				(2.136)**	(1.736)*	(2.413)**			
In(ASSET)							0.080888	0.07987	0.08106
							(3.118)**	(2.804)**	(3.111)**
MARGIN		0.03786		-0.0031					0.00786
		(1.688)*		(0.205)**					(0.571)
ROA			0.07646		0.063760		0.07017		
			(1.722)*		(1.449)		(1.638)		
In(PROD)	0.0402					-0.01588		0.022212	
	(1.537)					(0.489)		(0.752)	
STATE	0.1022	0.105	0.1059	0.12559	0.13607	0.10221	0.1186	0.09929	0.11612
	(1.628)	(1.688)*	(1.679)*	(2.2)**	(2.392)**	(1.628)	(2.098)**	(1.575)	(2.043)**
R2	0.23	0.08	0.10	0.23	0.20	0.23	0.30	0.33	0.30
Sample Size	924	922	886	955	915	924	919	884	915

Notes:

1.Absolute values of t statistics are in parentheses.

2. * statistically significant at 10% level; ** statistically significant at 5% leve; *** statistically significnat at the 1% level

Table 3. The Determinants of the Level of CEO Compensation in Firms with Different Forms of Private Ownership

Independent Variable	Dependent variable: ln (CEOPAY) (monthly pay in 1993 Kroons)								
	I	II	III	IV	V	VI	VII	VIII	IX
Intercept	7.56	7.759	7.748	7.65	7.727	7.6	7.32	7.23	7.32
	(47.8)	(75.442)	(74.741)	(49.21)	(51.29)	(47.8)	(36.4)	(33.37)	(36.27)
ln (EMPLOY)	0.05830	0.047599	0.04749						
	(2.5)**	(2.028)**	(2.005)**						
ln(SALES)				0.038311	0.028470	0.05822			
				(2.058)**	(1.575)	(2.495)**			
ln(ASSET)							0.08421	0.08567	0.08430
							(3.213)**	(2.99)**	(3.202)**
MARGIN		0.03329		-0.00602					0.00458
		(1.45)		(0.40)					(0.334)
ROA				0.07027	0.057650		0.062475		
				(1.585)	(1.309)		(1.459)		
ln(PROD)	0.03618					-0.02205		0.01508	
	(1.381)					(0.679)		(0.512)	
FOREIGN	0.1162	0.119554	0.1449769	0.08462	0.102001	0.11625	0.06951	0.12945	0.09619
	(1.274)	(1.312)	(1.57)	(0.974)	(1.161)	(1.275)	(1.092)	(1.403)	(1.1)
DOMESTIC	-0.09789	-0.099858	-0.09802	-0.11731	-0.12096	-0.09789	-0.10661	-0.08755	-0.1042
	(1.559)	(1.588)	(1.554)	(2.018)**	(2.085)**	(1.559)	(1.844)*	(1.392)	(1.799)*
MANAGER	-0.00973	-0.01417	-0.019114	-0.025988	-0.03752	-0.009704	-0.021705	-0.00147	-0.01603
	(0.139)	(0.202)	(0.272)	(0.388)	(0.563)	(0.138)	(0.327)	(0.021)	(0.241)
EMPLOYEE	-0.14826	-0.1491	-0.15328	-0.16008	-0.16809	-0.14822	-0.16749	-0.149807	-0.16369
	(1.879)*	(1.888)*	(1.943)*	(2.109)**	(2.225)**	(1.879)*	(2.234)**	(1.2)	(2.176)**
R2	0.28	0.18	0.2	0.26	0.22	0.28	0.35	0.36	0.35
Sample Size	924	922	886	955	915	924	919	884	915

Notes:
1. Absolute values of t statistics are in parentheses.
2. * statistically significant at 10% level; ** statistically significant at 5% level
3. The inclusion of all ownership dummies in all specifications is significant at the 5% level

Definitions of Variables

CEOPAY = real monthly salary of CEO (1993 kroons)

RATIO= (CEOPAY/ average monthly salary of all employees)

EMPLOY= employment

ASSET= real total assets (thousands1993 kroons)

SALES= real sales (thousands 1993 kroons)

PROFIT= real profits (thousands 1993 kroons)

ROA= rate of return on assets =PROFIT/ASSET

MARGIN = real profit margin (thousands 1993 kroons)

PROD = real sales per worker (thousnads1993 kroons)

STATE = 1 if majority owner is state, 0 otherwise

FOREIGN= 1 if majority owners are foreigners, 0 otherwise

 DOMESTIC= 1 if majority owners are domestic outsiders (e.g. firms registered in Estonia,

        individual Estonians who do not work at the firm), 0 otherwise

EMPLOYEE= 1 if majority owners are non-managerial employees, 0 otherwise

MANAGER= 1 if majority owners are managers, 0 otherwise

Notes:

1.The value of the kroon varied from X-Z kroons   per $ during 1993-1997.

2. Deflators are taken from EBRD (1998).

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Notes

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[i]Concerning the design of CEO pay packages, some of the most influential empirical work is by Groves et al. (1994, 1995) who, in examining the case of China, present evidence to show how contract features such as performance based compensation are associated with gains in firm's total factor productivity. For the former communist countries, Jones and Kato (1996) draw on panel survey data for a large sample of Bulgarian firms and find that the level of CEO pay was positively related to size and productivity (especially when the firm was either corporatized or privatized) but not to profitability. On the effect of new managerial blood see Boycko et al. (199X) and Claessens and Djankov (1999).

[ii]However, if firms are largely owned by outsiders but firms are part of groups, then institutions connected to the group may play a monitoring role. See Kato for a discussion of the Japanese case.

[iii]For China see Groves (19...), for the Czech Republic (Dajnkov and Claessens (1999) and for Bulgaria, Jones and Kato (1997, 1999).

[iv]3. Thus we include some firms that were never privatized and also some privatized firms in which the state remained the majority owner during the period of study.

[v] Considerable chnages in ownership took place in ownership configurations of Estonian firms during this period. See Jones and Mygind (1999).

[vi] The enormous variation in values for most variables (see the standard errors) and reporting means for an balanced panel accounts for the apparent inconsistencies in some of the trends highlighted in Table 1. For example, while productivity falls sharply while sales are essentially flat and employment drops considerably.

[vii]However, in part reflecting the small size of the Estonian economy, Estonian firms have always been much smaller than their counterparts in, for example, the former USSR. In turn, presumably this translated into comparatively less overmanning at the start of transition.

[viii]As such this ratio of CEO/average worker pay is rather lower than what has been reported for western countries though comparable to what has been observed for some transition economies. Thus Kato and Rockel (1992) report comparable ratios for Japan of 13 and for the US of 32 while the comparable ratio in Bulgaria in 1993 was 2.9 (Jones and Kato, 1996).

[ix]See, for instance, Murphy (1998) for a discussion of standard chief executive compensation equations.

[x] Unfortunately we do not have information on individual CEO attributes such as experience and education. Nevertheless we also estimated cross sectional models. But always models with firm specific effects were preferred (see on).)These cross sectional estimates are available from the authors upon request).