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Chief Executive Compensation During Early Transition: Further Evidence from Bulgaria

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I. Introduction

Theorists have identified several matters concerning the managerial labor market that potentially have a vital bearing on the success of overall reform during transition (e.g. Aghion et al., 1994). Key issues include the formation of markets for managers and the specific design of management contracts in order to contribute to improved incentives packages for chief executive officers (CEOs) and ultimately to result in improved enterprise productivity. 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. 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 to report some of the first econometric evidence on the determinants of executive compensation for an economy during fading communism and early transition. Using standard specifications, CEO pay was found to be positively related to size but not to profitability. In specifications adapted to transitional economies, CEO compensation was found to be positively related to size and to productivity and to be more strongly tied to productivity when the firm was either corporatized or privatized. In this paper we draw on additional waves of the Bulgarian survey to investigate changes in CEO compensation in subsequent years (1992-1995) in which substantially more Bulgarian managers worked in privatized and corporatized firms.

We continue in the next section by briefly reviewing some of the key issues that have appeared in the theoretical and empirical literature concerning management in economies in transition. Furthermore, this discussion relates some of these issues to the specific context of transition in Bulgaria. Next we describe what are most unusual data---for a panel of firms, with

ABSTRACT

By using new waves of a panel survey of Bulgarian firms with matching information for chief executives, evidence is presented on the determinants of chief executive compensation during 1992-1995. During that period, findings based on first difference models indicate that changes in CEO pay are positively related to changes in total assets whereas they are unrelated to changes in traditional measures of performance (such as profits, ROA, profit margin). More importantly, the most significant (statistically and economically) determinant of changes in CEO pay is consistently found to be the ownership structure of the firm. Specifically, CEOs in state-owned firms receive additional pay worth almost 30,000 Leva (in real terms) more than CEOs in other firms, ceteris paribus. To achieve the equivalent amount of pay raise by increasing total assets would require raising the firm's total asset by more than 700 million Leva (in real terms). We compare our findings with those for other transitional economies (including work based on earlier waves of the Bulgarian panel) and studies of the managerial labor market in China and suggest that a key reason for our findings is the lack of financial discipline in Bulgarian state-owned firms during 1992-1995.

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. Hence, a key hypothesis is that, in the context of transition economies, one will expect to find a link between indicators of firm performance and the level of executive pay, other things equal.

In addition, theorists have noted the existence of several problems in labor markets, especially those of moral hazard and adverse selection. Such problems are especially evident 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. In fast changing environments facing transition economies--though environments often faced by much institutional inertia (North, 1990) these issues are expected to be particularly important and to lead to diverse hypotheses. In particular, we hypothesize that potentially there will be acute differences in principal-agent relationships in private- compared to state-owned firms which will produce variation in the optimal level of executive compensation, as well as differences in the effects of executive compensation on firm performance. Thus some forms of private ownership can be expected to lead to better monitoring of managers and thus lessen the need for payment of efficiency wages to managers.

Turning to empirical work, up to now very little detailed evidence has been furnished on what is actually happening in managerial labor markets during transition. For most countries, the focus has been on aspects of corporate governance. Most studies (e.g., Ash and Hare, 1994 and Blasi, 1995 for Russia) find that even where there has been mass privatization, managers are very powerful and exercise great power than in usually held to be appropriate for the proper functioning of a market economy (Nuti, 1997). There are however some empirical studies which point to the potentially important role of differences in management behavior in accounting for at least some of the differences in firm adjustment during early transition (e.g.

corresponding data at the chief executive level. We use these data to estimate first difference models in order to examine several hypotheses on the determinants of chief executive pay. We find that changes in CEO pay from 1992 to 1995 are positively related to changes in total assets over the same time period whereas they are unrelated to changes in traditional measures of performance (such as profits, ROA, profit margin) over the same time period. More importantly, the most significant (statistically and economically) determinant of CEO pay changes over the 1992-95 period is consistently found to be the ownership structure of the firm. Specifically, the average pay increase for a CEO in a state-owned firm is nearly 30,000 Leva (in real terms) more than for CEOs in other firms, ceteris paribus. According to our first difference model estimates, to achieve the equivalent amount of pay raise by increasing total assets would require raising the firm's total assets by more than 700 million Leva (in real terms).

II. Conceptual Framework and Transition in Bulgaria

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

changes and arguably (Jones and Miller, 1997) the pace of change, in fact, has been far less dramatic than the indicators in studies such as E.B.R.D. (1996) would suggest.

In particular, the fear of accelerating unemployment paralyzed the political process. The move to privatization of large state-owned firms was, quite limited (at least until the beginning of 1997). Hence for the period under study in this paper, a focus of reform efforts was on corporatization rather than wholesale privatization. In this respect the situation confronting Bulgarian managers was apparently more similar to that confronting Chinese managers compared to managers of privatized firms in many transition economies in the former Soviet Union. However, there are important differences. For one thing, evidence from surveys (Jones, 1995) points to Bulgarian managers, absent ownership changes, exercising considerable influence in the typical firm. Furthermore, while privatization is not a requirement for restructuring, various special interest groups have managed to retard attempts to restructure (Pamouktchiev, Parvulov and Petranov,1997) Rather than look for ways to improve state enterprise efficiency by improving governance structures, managerial positions have become part of the political spoils system. 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 Bulgarian managers operated often was characterized by continuing soft budget constraints.

III. The Data

To help to improve our limited knowledge in the general area of executive pay, this study uses data from later waves of the surveys that were analyzed in an earlier paper (Jones and Kato, 1996) namely the Bulgarian Management Survey (BMS), the Bulgarian Economic Survey (BES) and the Bulgarian Labor Flexibility Survey (BLFS). The BLFS was a project sponsored by the ILO to assess microeconomic changes in labor practices in Bulgarian industry. The BLFS involved 490 establishments, selected to ensure a nationally and sectorally representative sample. Specifically, the population was defined as all state-owned (in 1989) Bulgarian manufacturing

Pinto et al. 1993 for Poland.) Arguably such differences at least in part reflect differences in management quality that, in turn, are linked with differences in the structure of executive compensation. Moreover, the work by Groves et al. (e.g. 1995) points to the role that corporatization (rather than privatization) in producing better motivated management (and , in turn, enhanced enterprise performance.)

Turning to the case of Bulgaria, for many that experience in general deserves closer attention because, according to many macroeconomic indicators, the Bulgarian performance lies somewhere in the middle range for transforming economies -- poorer than the Visegrad group and the Baltic Republics but better than many other former communist countries, including Ukraine and Belarus and arguably Russia. Most noticeably, in Bulgaria declines in output and average real income are much greater and unemployment and inflation much higher than in the former group, though often better than in the latter (e.g. Blanchard, 1996; Murrell, 1996). In addition, Bulgaria has been exceptional is its growth pattern. Most transition economies did not begin to grow until inflation was under 50%. Fischer et al. (1996) report that only Bulgaria and Romania began to grow before inflation dropped below 50%. (Of course, some countries in the former Soviet Union have not yet brought inflation down and have not begun to grow again.)

Characterizing the Bulgarian transition strategy since 1990 is not straightforward because, in some ways the Bulgarian approach has been quite radical -- including rapid price liberalization, a new competition policy and extensive and swift small-scale privatization-- and thus is reminiscent of "big bang" experiences elsewhere.[1]

At the same time, the pace of change in other areas has been excruciatingly slow and there were major policy blunders (e.g.Wyzan, 1998.). While formal policy changes have been heterodox, both the implementation of policy measures and the receptiveness of economic agents to changes seem to have been quite uneven. Consequently the de facto pace of institutional change often turns out to be far less than a casual observer might expect based on de jure

[1] For accounts of reform in Bulgaria see Bristow (1996), Dobrinsky (1996), Jones and Miller (eds., 1997) and Wyzan (1998.)

Kato and Rockel (1992) report comparable ratios for Japan of 13 and for the US of 32.3 However, since the comparable ratio in Bulgaria during 1989-1992 was 1.92, and in 1993 was 2.92 it is clear that the ratio has continued to widen during early transition in Bulgaria. Moreover, from Table 1, where we report summary statistics when the sample is divided according to ownership, we see that CEOs in state firms on average earn 60% more than their counterparts in privatized and corporatized firms and that a two-sample test of means indicates that this difference is statistically significant at the 1% level.

From the BES data were obtained on detailed financial balance sheet and income statement data, including measures of size, productivity, and profitability. From Table 1, we see that, for many indicators two-sample tests of means indicate that there are statistically significant differences between the state owned firms compared to privatized and corporatized firms. Thus the average state owned firm is much bigger (for example, a labor force of 538 workers compared to 222), much less profitable (for example, a negative Return On Asset, ROA95, compared to a positive ROA for privatized and corporatized firms) and has higher productivity (PROD95).

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

To study the relation between executive compensation and firm performance in a transitional economy, we augment a standard chief executive compensation equation4 by a dummy variable indicating whether, during the period 1992-1995, the firm remains state-owned. That is,

$$\Delta(CEOPAY)_i = \alpha + \beta\Delta(PERFORMANCE)_i + \gamma(STATE)_i + u_i \qquad (1)$$

[3] However, the ratio is not dramatically different than has been reported for other transition economies. Thus for Russia, Mikhalev and Bjorksten (1995) report that in September 1994 the manager/average pay ratio ranges from 2.8 to 3.7 in Russian state owned enterprises and joint-stock companies.

[4] See, for instance, Murphy (1998) for a standard chief executive compensation equation.

organizations (SOE's) that operated on a for profit basis and had more than 80 employees in 1992, the year of the first wave of data collection. Subsequent waves of data collection took place in 1994 and in 1996.

The sampling design for enterprises operated at two levels. First, five groupings of the 320 municipal districts in Bulgaria were selected on the bases of geographic and urban variability, reproducing aggregate country-wide industry distributions, and minimizing data collection costs (Sofia, Pernik, Pleven, Burgas and Plovdiv). Second, within each of the five regions, population enumeration lists of SOE's were compiled by the Central Statistical Bureau. The number of sampled firms per region was set to reproduce the population proportions of firms per region in 1989 (the first year for which data were gathered). The five regions contained a population of 727 SOE's. Within each region, within major industry categories, firms were ordered by size and the approximate two-thirds largest were selected up to the desired sample size of about 500. Thus the sample contains 69% of the population of firms, but selected to reproduce population distributions by region and industry. In terms of employment, the sample SOE's contain about 95% of all SOE employees in the five regions in 1989.

The BMS collected survey data from the chief executive officers in the same 490 Bulgarian firms. A wide variety of questions were asked including information about chief executives, including pay and the method and terms of appointment. Data were also gathered concerning some firm characteristics, for example the form of enterprise ownership.

During 1995 (the most recent year for which data were collected), as shown in Table 1, the annual chief executive compensation in thousands of 1995 Leva (CEOPAY95) was about 272.5 thousand Leva,[2] about 3.07 times the average worker's wage. As such this ratio of CEO/average worker pay is rather lower than what has been reported for western countries. Thus

[2] Unfortunately we do not have data on all potentially important aspects of executive compensation. Thus we do not have systematic information for all CEO income including information for non-wage income such as subsidized food and transportation. However, the data that are available on such items for firms in our sample suggest that when such forms of income-in-kind were present, they were usually obtained not only by most CEOs but also by most workers. However, we have some information on the incidence of fringes, we have no data on the value of such items of income in kind. See Jones, Kato and Avramov (1995) and Jones and Kato (1996) for more on this.

stock market returns is usually lower than the estimated sensitivity of pay to accounting measures. For example, Rosen (1990) in reviewing various studies finds that the effects on log of pay of the rate of return to shareholders are in the 0.10 - 0.15 range, whereas the estimated sensitivity of pay to accounting measures are in the 1.0 - 1.2 range. For our study, only accounting profitability measures are used since the absence of an active stock market means that stock market measures are irrelevant to STEs in transition like Bulgaria.[7]

To test whether growth may be an important firm objective in Bulgaria, we also consider firm size as an alternative performance measure. In addition, in the face of transition and eventual privatization, increasing labor productivity (via labor shedding and/or increased work intensity) may be a prime goal of the firm and their chief executives. Thus, we also consider labor productivity as an alternative firm performance measure.

We estimate Eq. (1) by merging data from the aforementioned three surveys (the BMS, the BLFS, and the BES). We successfully assembled a panel of 98 firms which provide data necessary for our regression analysis for both 1992 and 1995. Descriptive statistics for key variables are summarized in Table 2, where all value variables are in 1992 Leva.8

Table 2 indicates that CEO pay has increased in real terms only slightly from 1992 to 1995 overall. However, pay for CEOs in state-owned firms has risen substantially in real term from 62 thousands of Leva in 1992 to 73 thousands of Leva in 1995 whereas pay for CEOs in privatized/corporatized firms has fallen substantially in real terms from 54,000 Leva in 1992 to 43,000 Leva in 1995. The observed difference in CEO pay changes over the 1992-95 period tends to point to the presence of rent associated with state-owned firms although the final verdict will need to wait for multiple regression analysis in which firm performance is controlled for.

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[7] Since the accounting practices used in pre-transition Bulgaria differ from conventional approaches used in the west, potentially there are many difficulties in using standard accounting measures of explanatory variables such as profitability and assets. However, in some work, measures of key variables have been adapted to the special circumstances of transition economies. For example Pinto et al, (1993) construct several measures of "profitability". In this paper we follow this literature and construct similar measures.

[8] We use CPI data provided by Jeffrey Miller. We lose additional 20 firms when we use data on total assets.

where $\Delta(CEOPAY)_i$ = changes in chief executive pay of firm i from 1992 to 1995; $\Delta(PERFORMANCE)_i$ = changes in performance measure of firm i from 1992 to 1995; and $(STATE)_i$ = 1 if firm i remains state-owned over the 1992-95 period, 0 otherwise. The disturbance term, u_i, we assume u_i - $NID(0, \sigma^2)$.[5]

The estimated coefficients on $\Delta(PERFORMANCE)_i$, β, indicate pay-performance sensitivities, or the amount of pay raise that a CEO receives when firm performance improves by an additional unit. On the other hand, the estimated coefficients on $(STATE)_i$, γ can be used to test whether CEOs in state-owned firms earn rent. Specifically, positive and significant estimates on γ suggest that, after controlling for firm performance, the average CEO working for a state-owned firms receives an additional pay raise of γ as compared to his/her counterpart in privatized/corporatized firms. In other words, positive and significant estimates on γ can be interpreted as indicating the presence of financial discipline which privatization/corporatization has brought to CEO compensation.

In prior empirical studies of executive compensation in the U.S., the U.K., Japan and other advanced market economies,[6] PERFORMANCE is typically measured either by stock market returns or by various accounting measures. This reflects the fact that the application of the principal-agent theory to the design of executive compensation contracts in general predicts a positive correlation between managerial pay and some observable measures of the well-being of shareholders. However, while most studies do find a significant positive correlation between pay and performance, the correlation is often very small in magnitude and thus difficult to easily reconcile with principal-agent models. Studies also find that the estimated sensitivity of pay to

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[5] In other specifications, we augmented this equation to include interaction terms and estimate the following chief executive compensation equation:
$\Delta(CEO\ PAY)_i = \alpha + \beta\Delta(PERFORMANCE)_i + \gamma(STATE)_i + \delta\ \Delta(PERFORMANCE)_I*(STATE)_i + u_i$

[6] Low degree of freedom and multicollinearity, however, made the estimates rather imprecise.

Ehrenberg and Milkovich (1987) and Rosen (1990) provides a thorough review of the large body of evidence on U.S. executive compensation. Evidence on other countries is relatively scarce. For recent evidence on the U.K., see Main (1991), Gregg, Machin and Szymanski (1993), Conyon (1997). For evidence on Japan, see Kato and Rockel (1992), Kaplan (1994), Ang and Constand (1993), Hebner and Kato (1997), Kato (1997). For evidence on Spain, see Angel and Fumas (1997).

performance, the average CEO receives additional pay worth 21 to 29,000 Leva (in real terms) over the three-year period by working for state-firms rather than for privatized/corporatized firms. Since in 1995, the average CEO earned about 60,000 Leva (Table 2), the additional pay received by state-firm CEOs amounts to almost 50% of the average CEO pay in 1992. Hence, the rent earned by state firm CEOs seems to be significant not only statistically but economically.

The only performance variable which is found to influence changes in CEO pay is total assets. Thus, the estimated coefficient on DASSETS is positive and statistically significant at the 2 percent level. However, this pay-performance sensitivity appears to be rather modest, representing a 40 Leva change in CEO pay for each 1 million Leva change in total assets. For example, according to column (iv) of Table 3, the average pay increase for CEOs in state-owned firms is nearly 30,000 Leva (in real terms) more than in other firms, ceteris paribus. To achieve a comparable increase in pay by increasing total assets would require raising the firm's total assets by more than 700 million Leva (in real terms).

V. Summary and Implications

Using a probabilistic panel survey of firms with matching information for chief executives, we examine the determinants of chief executive compensation during an interesting period of transition in the Bulgarian economy. During that period, findings based on first difference models indicate that changes in CEO pay are positively related to changes in total assets. However, changes in CEO compensation are unrelated to changes in traditional measures of performance (such as profits, ROA, profit margin). The strong pay-size relationships, coupled with the absence of pay-profitability relationships, suggest that executive compensation is still largely structured so as to provide incentives for managers to increase size (or resist downsizing) and pay no attention to profitability.

Perhaps the most notable finding is that CEO pay increases are higher in firms that remained completely state-owned (and are neither privatized nor even corporatized.) This finding

For DPERFORMANCE, we first consider changes in profit from 1992 to 1995. As shown in Table 2, the average firm was making a profit of 7.6 million Leva in 1992. However, by 1995, profit turned negative (a loss of 4 million Leva in real terms). Thus, overall, profit fell by nearly 12 million Leva in real terms over the 1992-95 period. The average state-owned firm was making a profit of 15 million Leva at the beginning of the period yet its performance worsened substantially over the period and it ended up losing 13 million Leva by 1995. On the other hand, privatized/corporatized firms, on average, improved their performance from negative profits of 2 million Leva in 1992 to positive profits of 7 million Leva in 1995.

We then consider three alternative size measures: (i) DASSET (changes in total assets from 1992 to 1995); (ii) DSALES (changes in income from sales from 1992 to 1995); and (iii) DEMPLOY (changes in the number of workers from 1992 to 1995). The table shows a significant downsizing over the period of 1992-95. On average, total assets fell by 141 million Leva in real terms; sales dropped by 60 million Leva; and the level of employment fell by more than 100 employees. Unlike CEO pay and profit, there appears to be no qualitative difference in the extent of downsizing between state-owned firms and other firms.

Finally, we consider three performance indices: (i) DROA (change in Return On Asset, defined as profit/total assets); (ii) DMARGIN (change in profit margin, defined as profit/sales); and (iii) DPROD (change in labor productivity, defined as sales/employment). The table shows an improvement in ROA and profit margin yet a decrease in labor productivity over the period. Somewhat mixed results are obtained from subsetting the sample to those in state-owned firms and those in other firms. ROA improved for both state-owned and other firms, whereas profit margin improved only for other firms. Labor productivity fell for both types of firms.

In Table 3 we report OLS estimates of Eq. (1). Since we consider eight alternative performance measures, there are eight sets of estimates. Perhaps the most consistent and important result is the statistically significant and positive correlation between STATE and DCEOPAY. In all eight specifications, the estimated coefficients on STATE are positive and statistically significant at the 1 percent level. In other words, after controlling for firm

TABLE 1 SUMMARY STATISTICS: 1995

Variable[a]	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
	Total			STATE=0[b]			STATE=1[b]		
CEOPAY95	276	272.49	194.45	128	207.46**	151.68	148	328.74	209.74
RATIO95	279	3.07	1.49	128	2.58**	1.07	151	3.48	1.66
ASSETS95	264	237.91	1111.64	124	98.46*	338.97	140	361.43	1484.51
SALES95	361	383.28	2012.84	174	139.91*	514.46	187	609.73	2736.52
EMPLOY95	361	385.46	902.04	174	221.89**	316.05	187	537.65	1197.34
PROFIT95	329	-18.88	237.88	157	-0.16	167.88	172	-35.97	286.73
ROA95	248	-0.03	1.40	115	0.21**	1.45	133	-0.25	1.33
MARGIN95	329	-0.99	8.81	157	-0.94	6.81	172	-1.04	10.32
PROD95	361	0.57	0.86	174	0.43**	0.58	187	0.70	1.04

Notes:

*statistically significant at the 5% level, using a two-sample test of means; ** statistically significant at the 1% level, using a two-sample test of means.

[a] CEOPAY95=annual chief executive compensation in 1995 (in thousands of 1995 Leva); RATIO95=PAY divided by average worker's pay; EMPLOY95= number of workers in 1995; ASSETS95=total assets in 1995 (in millions of 1995 Leva); SALES95=sales revenue in 1995 (in millions of 1995 Leva); PROFIT95=profit in 1995 (in millions of 1995 Leva); ROA95=return on assets (PROFIT95/ASSETS95); MARGIN95=profit margin (PROFIT95/SALES95); and PROD95=labor productivity (SALES95/EMPLOY95).

[B] STATE=1 if the firm remains state-owned in the 1992-95 period, 0 otherwise.

Sources: Bulgarian Management Survey, Bulgarian Economic Survey and Bulgarian Labor Flexibility Survey.

is found consistently for all specifications. Together with the absence of pay-profitability and compensation-productivity relationships, this finding suggests that the financial discipline surrounding firms in the state sector was especially weak. In other words, corporatization and privatization did lead to stronger discipline on CEO compensation thus reducing the rent associated with state-owned firms.

In respects such as the link between size and pay our findings resemble those in our earlier study and covering the period of fading communism and very early transition, namely 1989-1992. However, there are some important differences in findings between the two studies. Compared to our findings for the earlier period for Bulgaria we find no evidence of a pay-productivity relationship. Thus these latest findings are consistent with the view that serious policy blunders took place during the period, producing weak incentives for managers to be financially disciplined and led to the disappearance of incentives for managers to increase productivity (or slow down the deterioration of productivity).[9]

More broadly, our finding that some change in the determinants of executive compensation is apparent even without widespread privatization is consistent with findings in other areas for Bulgaria including the determinants of productive efficiency (Jones, Klinedinst and Rock, 1998) and wage determination (Jones and Ilayperuma, 1994). However, as with these other studies we also find evidence of substantial inertia in the forces influencing executive compensation.

In some respects our findings are similar to those that have emerged in other studies for transition economies, notably Groves et al. (1995.) Thus for both countries there is evidence of a link between size and executive compensation. In accounting for the differences across countries, 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.

[9] However, one has to interpret these differences with caution since the sample of firms used for this paper is smaller than that used in Jones and Kato (1996)

TABLE 3 CEO COMPENSATION, PERFORMANCE AND OWNERSHIP

Independent Variable	Dependent Variable: Δ(CEOPAY) (in Thousands of 1992 Leva)						
Intercept	-11.06	-12.80	-10.94	-9.70	-9.83	-8.46	-12.19
	(1.87)	(1.91)	(1.84)	(1.47)	(1.64)	(1.35)	(1.89)
ΔPROFIT	0.01						
	(0.49)						
ΔROA		0.53					
		(0.83)					
ΔMARGIN			-0.03				
			(0.02)				
ΔASSETS				0.04			
				(2.45)			
ΔSALES					0.02		
					(0.91)		
ΔEMPLOY						0.03	
						(1.13)	
ΔPROD							-12.24
							(0.48)
STATE	21.88	24.41	21.44	28.93	21.99	22.48	21.73
	(2.79)	(2.68)	(2.71)	(3.24)	(2.82)	(2.88)	(2.78)
R^2	0.08	0.10	0.07	0.16	0.08	0.09	0.08
Sample size	98	77	98	77	98	98	98

Notes:
Absolute values of t statistics are in parentheses. See Notes for Tables 1 and 2 for variable definitions.
Sources: Bulgarian Management Survey, Bulgarian Economic Survey and Bulgarian Labor Flexibility Survey.

TABLE 2 SUMMARY STATISTICS: CHANGES FROM 1992 TO 1995

Variable[a]	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
	Total			STATE=0			STATE=1		
CEOPAY92	98	58.61	36.53	42	53.75	38.32	56	62.25	35.04
RCEOPAY95	98	59.92	40.99	42	42.80**	28.69	56	72.76	44.25
ΔCEOPAY	98	1.31	39.35	42	-10.95**	30.48	56	10.51	42.87
PROFIT92	98	7.58	103.57	42	-2.26	11.98	56	14.96	136.68
RPROFIT95	98	-4.18	65.83	42	6.88	45.94	56	-12.48	76.84
ΔPROFIT	98	-11.76	162.01	42	9.14	49.98	56	-27.44	209.39
ASSETS92	92	171.96	261.13	41	99.58**	166.49	51	230.15	306.89
RASSETS95	81	42.58	151.74	36	13.10	14.26	45	66.16	201.05
ΔASSETS	77	-141.14	300.23	35	-81.02	171.98	42	-191.25	370.00
SALES92	98	145.51	330.68	42	85.39	104.52	56	190.60	424.11
RSALES95	98	86.11	200.87	42	38.85*	57.44	56	121.56	256.35
ΔSALES	98	-59.40	148.07	42	-46.54	68.39	56	-69.04	186.98
EMPLOY92	98	480.73	433.71	42	302.69**	224.11	56	614.27	501.93
EMPLOY95	98	379.37	418.31	42	220.57**	209.49	56	498.46	492.13
ΔEMPLOY	98	-101.37	144.16	42	-82.12	82.10	56	-115.80	176.44
ROA92	92	-0.65	6.79	41	-0.02	2.04	51	-1.16	8.95
ROA95	81	0.00	1.03	36	0.23	1.38	45	-0.19	0.59
ΔROA	77	0.79	7.13	35	0.28	2.60	42	1.22	9.40
MARGIN92	98	-0.33	3.73	42	-0.88	5.49	56	0.09	1.26
MARGIN95	98	-0.31	1.92	42	-0.52	2.91	56	-0.15	0.37
ΔMARGIN	98	0.02	1.98	42	0.37	2.63	56	-0.24	1.25
PROD92	98	0.25	0.24	42	0.24	0.22	56	0.25	0.26
RPROD95	98	0.16	0.16	42	0.14	0.14	56	0.17	0.17
ΔPROD	98	-0.09	0.15	42	-0.10	0.14	56	-0.08	0.16

Notes:

*statistically significant at the 5% level, using a two-sample test of means; ** statistically significant at the 1% level, using a two-sample test of means.

[a] RCEOPAY95=annual chief executive compensation in 1995 (in thousands of 1992 constant Leva); and DCEOPAY=RCEOPAY95-CEOPAY92 (or changes in annual chief executive compensation in thousands of 1992 constant Leva from 1992 to 1995). The rest of the variables are defined analogously.

Sources: Bulgarian Management Survey, Bulgarian Economic Survey and Bulgarian Labor Flexibility Survey.

Gregg, P., Machin, S., and Szymanski, S., "The Disappearing Relationship between Directors Pay and Corporate Performance," British Journal of Industrial Relations, 1993, 31 (1), 1-10.

Groves, Theodore, Yongmiao, Hong, John, McMillan and Naughton, Barry. "Autonomy and Incentives in Chinese State Enterprises," Quarterly Journal of Economics, v109, n1, February 1994, pp. 183-209.

Groves, Theodore, Yongmiao, Hong, John, McMillan and Naughton, Barry. "China's Evolving Managerial Labor Market," Journal of Political Economy, v103, n4, August 1995, pp. 873-92.

Hebner, Kevin J. and Kato, Takao, "Insider Trading and Executive Compensation: Evidence from the U.S. and Japan," International Review of Economics and Finance, v6, n3, 1997, pp. 223-37.

Ickes, Barry and Samuelson, L., "Job Transfers and Incentives in Complex Organizations: Thwarting the Ratchet Effect," Rand Journal of Economics, 1987, 18, 275-286.

Jones, Derek C., "Employee Participation During the Early Stages of Transition: Evidence from Bulgaria," Economic and Industrial Democracy, 16, 1995, 111-135.

Jones, Derek C. and Ilayperuma, Kosali, "Wage Determination under Plan and Early Transition: Evidence from Bulgaria," Hamilton College, Working Paper #94/5, 1994

Jones, Derek C. and Kato, Takao, "The Determinants of Chief Executive Compensation in Transitional Economies: Evidence form Bulgaria," Labour Economics, v3, n3, October 1996, pp. 319-36.

Jones, Derek C., Kato, Takao, and Avramov, Svetlana, "Managerial Labour Markets in Transitional Economies: Evidence from Bulgaria," International Journal of Manpower, v16, n10, 1995, pp. 14-24.

Jones, Derek, C., Mark, Klinedinst and Rock, Charles, "Productive Efficiency During Transition: Evidence from Bulgarian panel Data," forthcoming in 1998, Journal of Comparative Economics.

Jones, Derek C., and Miller, Jeffrey (eds.) 1997 The Bulgarian Economy: Lessons from Reform During Early Transition, Ashgate.

Kaplan, S., "Top executive rewards and firm performance: A comparison of Japan and the U.S.," Journal of Political Economy, 1994, 102, 510-546.

Kato, Takao, "Chief Executive Compensation and Corporate Groups in Japan: New Evidence from Micro Data," International Journal of Industrial Organization, v15, n4, July 1997, pp. 455-67.

REFERENCES

Aghion, P. Blanchard, O. and Burgess, S., "The Behavior of State Firms in Eastern Europe, pre Privatization," European Economic Review, 38, 1994, 1327-1349.

Ang, S. James, and Richard L. Constand, "Compensation and performance: the case of Japanese managers and directors, Paper presented at the Fifth Annual PACAP Finance Conference in Kuala Lumpur, Malaysia, 1993.

Angel, Pedro Ortin and Fumas, Vicente Salas, "The Compensation of Spanish Executives: A Test of a Managerial Talent Allocation Model," International Journal of Industrial Organization, v15, n4, July 1997, pp. 511-31.

Ash, Timothy and Hare, Paul, "Privatization in the Russian Federation: Changing Enterprise Behavior in the Transition Period," Cambridge Journal of Economics, 18, 1994, 619-34.

Blanchard, Olivier, "Theoretical Aspects of Transition," American Economic Review, v86, n2 May 1996, pp. 117-22.

Blasi, Joseph R. "Russian Enterprises after Privatization," mimeo., 1995, Rutgers University.

Bonin, John, "On the Design of Managerial Incentive Systems n a Decentralized planning Environment," American Economic Review, 1976, 66 (4), 682-87

Bristow, John 1996 The Bulgarian Economy in Transition Cheltenham, Elgar

Conyon, Martin J. "Corporate Governance and Executive Compensation," International Journal of Industrial Organization, v15, n4, July 1997, pp. 493-509.

Dobrinsky 1996 • Monetary Policy and Macroeconomic Adjustment• Economics of Transition vol4, #1, May pp, 185-210.

Ehrenberg, Ronald G. and Milkovich G.T., "Compensation and Firm Performance," in Morris Kleiner et al., (eds.), Human Resources and the Performance of the Firm, Madison, Wis.: Industrial Relations Research Association, 1987, 87-122,

Estrin, Saul, Gelb, Alan, and Singh, Inderjit, "Shocks and Adjustment by Firms in Transition: A Comparative Study," Journal of Comparative Economics, v21, n2, October 1995, pp. 131-53.

European Bank for Reconstruction and Development, "Transition Report for 1997," E.B.R.D., 1997, London.

Fischer, Stanley, Sahay, Ratna, and Vegh, Carlos A. "Stabilization and Growth in Transition Economies: The Early Experience," Journal of Economic Perspectives, v10, n2, Spring 1996, pp. 45-66.

Kato, Takao; Rockel, Mark, "Experiences, Credentials, and Compensation in the Japanese and U.S. Managerial Labor Markets: Evidence from New Micro Data," Journal of the Japanese and International Economy, v6, n1, March 1992, pp. 30-51.

Kornai, Janos, The Socialist System, Princeton University Press, 1992.

Mikhalev, Vladimir and Bjorksten, Nils, "Wage Formation During the Period of Economic Restructuring in the Russian Federation," mineo. OECD, 1995, Paris.

Litwack, J., "Discretionary Behavior and Soviet Economic Reform," Soviet Studies, 1991, 43, 255-279.

Linz, Susan, "Russian Labor Market in Transition," Economic Development and Cultural Change, 1995, pp. 693-716.

Main, B., "Top Executive Pay and Performance," Managerial and Decision Economics, 1991, 12, 219-229.

Murphy, Kevin, J. "Executive Compensation," April 1998, forthcoming in Orley Ashenfelter and David Card (eds.), Handbook of Labor Economics, Vol. 3, North Holland.

Murrell, Peter, "How Far Has the Transition Progressed?" Journal of Economic Perspectives, v10, n2, Spring 1996, pp. 25-44.

North, Douglas, Institutions, Institutional Change and Economic Performance, Cambridge: Cambridge University Press, 1990.

Nuti, Mario, "Employeeism: Corporate Governance and Employee Ownership in Transitional Economies," in Mario I. Blejer and Marko Skreb (eds.) Macroeconomic Stabilization in Transition Economies Budapest-London_New York, Central European University Press. 1997, pp.126-154

Pamouktchiev, Hristo, Svilen, Parvulov and Petranov, Stefan, "Process of Privatization in Bulgaria," in Jones and Miller (eds.), 1997, pp. 205-230.

Pinto, Brian, Marek Belka, Krajewski, Stefan, "Transforming State Enterprises in Poland," Brookings Papers on Economic Activity, 1993, 1, 213-270

Putterman, Louis, Division of Labor and Welfare: An Introduction to Economic Systems, New York: Oxford University Press, 1993.

Rosen, Sherwin, "Contracts and the Market For Executives," NBER Working Paper, No. 3542, 1990.

Weitzman, Martin, "The New Soviet Incentive Model," Bell Journal of Economics, 1976, 7, 252-57.

Wyzan, Michael (1998) The Political Economy of Bulgaria's Peculiar post Communist Business Cycle Comparative Economic Studies Spring v.XXXX 5-42.