

Which Enterprises (Believe They) Have Soft Budgets? Evidence on the Effects of Ownership and Decentralization in Mongolia¹

James H. Anderson, Georges Korsun, and Peter Murrell

University of Maryland, College Park, Maryland 20742

Received April 1, 1999; revised December 9, 1999

Anderson, James H., Korsun, Georges, and Murrell, Peter—Which Enterprises (Believe They) Have Soft Budgets? Evidence on the Effects of Ownership and Decentralization in Mongolia

To ascertain the prevalence of soft budgets and to find causes of softness, we surveyed Mongolian enterprises, asking whether state aid was expected when financial difficulties arose. One-quarter of the enterprises expected soft budgets, a large proportion of which have central government ownership. We examine causes of soft budgets in addition to state ownership, but the central government variable dominates. These results are confirmed using instrumental variables or bivariate probit to unmask unmeasured selection effects. Local government ownership has a much weaker effect than does central ownership, suggesting a crucial role for decentralization. *J. Comp. Econ.*, June 2000, **28**(2), pp. 219–246. University of Maryland, College Park, Maryland 20742. © 2000 Academic Press

Journal of Economic Literature Classification Numbers: P11, P21, O53, H70, H20.

¹ The current affiliation of Anderson is the World Bank and that of Korsun is Deloitte-Touche-Tohmatsu. We thank two anonymous referees and the Editor for helpful comments, William Evans, Young Lee, and Robert Schwab for invaluable discussions and computer programs, Berta Heybey for research assistance, Batbold, Bathoyag, and Bailyhuu for generous help and advice, Gunpilmaa for translation and secretarial work, and the teams of researchers and accountants for collecting information with care and precision: Otgonchimeg and T. Batjargal, the team leaders, and Badarch, Batbold, Erdenesanaa, Gansuh, Ganzorig, Namsrai, Tungalag, Altansuh, D. Batjargal, Bayasgalan, Davaasuren, Hishigsuren, Idshinrinchin, Jigden, Lutdorj, Norjii, Nyamsuren, and Tseesuren. We are indebted to the directors of some 250 Mongolian enterprises for their cooperation. This research was made possible through support provided by the World Bank and the U.S. Agency for International Development under Cooperative Agreement DHR-0015-A-00-0031-00 to the Center for Institutional Reform and the Informal Sector (IRIS). The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the IRIS Center, US AID, the World Bank, its Executive Directors, or the countries they represent.

1. INTRODUCTION

There is universal agreement that the hardening of budget constraints is necessary for spurring enterprise adjustment in transition countries (World Bank, 1996). There is also widespread evidence that budget constraints have hardened considerably in the 1990's (Pinto et al., 1993; Kornai, 1993; Fan and Schaffer, 1994; Schaffer, 1998). However, no consensus exists on which factors have been responsible for reducing the prevalence of soft budgets. This lack of consensus is reflected in the publication in recent years of a number of theoretical articles that identify the circumstances that lead to soft budgets (Maskin, 1996).²

Despite impressive progress since the end of the centrally planned era, soft budgets are still common in transition countries (Belka et al., 1994; Alfandari et al., 1996; Earle et al., 1996; Li and Liang, 1998; Schaffer, 1998; Kornai, 1999). Therefore, analyses of enterprise–state relations in transition countries offer considerable potential for identifying the determinants of soft budgets, much more so than do studies of stable capitalist economies. Thus, for policymakers and for those interested in testing hypotheses generated by theories, it is especially important to use the experience of transition countries to identify those circumstances that in practice lead to soft-budget regimes. Nevertheless, because of the limited duration of the transition process and because of the difficulty of obtaining data, empirical research on this question has been limited to date (Li and Liang, 1998).³

The foremost difficulty in undertaking empirical research on soft budgets is in operationalizing the notion of softness. Kornai's (1980) seminal definition focuses on expectations of the state's response when enterprises suffer financial setbacks: "the *expectation* of the decision-maker as to whether the firm will receive help in time of trouble or not is an essential component" (Kornai, 1998, pp. 14–15). This definition suggests that operationalization must reflect two principal factors. First, soft budgets are an expectational phenomenon; current policy actions, such as subsidies, are highly imperfect proxies. Imprudent behavior based on the expectation of a soft budget can occur in enterprises that are not currently receiving subsidies.⁴ Second, the expectations concern what happens when the enterprise is in trouble. Indeed, it is this second aspect that accounts for the prominent position given to the hardening of budget constraints in policy debates (Schaffer, 1998, p. 84), reflecting the dangers of moral hazard engendered by making state aid conditional on poor performance.

² See, for example, Bai and Wang (1998), Berglof and Roland (1998), Dewatripont and Maskin (1995), Kornai (1980), Li (1998), Qian and Roland (1998), and Shleifer and Vishny (1994).

³ Alfandari et al. (1996) provide a vivid picture of the patterns of financial subsidies in Russia, relating those patterns to enterprise characteristics. Earle et al. (1996) focus on the effects of different types of ownership on government subsidies. Li and Liang (1998) investigate the causes of soft budgets indirectly by examining the effects of soft budgets on different aspects of enterprise behavior.

⁴ Moreover, as Kornai (1992a) argues, subsidies are also given to enterprises for reasons unrelated to soft budgets.

With these concerns in mind, the present paper uses survey data that elicits the expectations of managers. This approach contrasts with that of the existing literature, which measures soft budgets by focusing on current policy actions, particularly on explicit and implicit subsidies. Our expectational approach has the advantage that it focuses on whether enterprises foresee help in times of trouble, rather than focusing on the less direct measure of softness, current aid. It also avoids the inevitably imperfect cataloging of all the sources of state aid, which can be legion and difficult to uncover in the murk of the transition-country policy environment (Schaffer, 1998). Of course, asking enterprise officials directly about soft budgets has its disadvantages. In particular, the validity of survey evidence concerning expectations rather than facts might be in question. Nevertheless, given the paucity of existing empirical evidence on the causes of soft budgets, this survey evidence carries the potential of offering significant new insights.

To collect the evidence used in this study, we surveyed in mid-1996 over half of the enterprises that had passed through Mongolia's mass privatization program for large enterprises.⁵ Although Mongolia does not have the political significance of a Russia or a Poland, it does provide a case study with results of much wider applicability than simply being descriptive of this small central Asian country. Since it is a fairly typical, poorer reforming socialist country, results for this country are indicative of processes in many other transition countries.⁶

One of the survey questions elicited expectations concerning whether the enterprise would receive state aid should it encounter hard times by asking what proportion of lost revenues the state would make up if losses threatened the enterprise's ability to maintain its employment level.⁷ The question is reproduced in its entirety in Table 1, which summarizes the enterprise responses. Two pragmatic concerns influenced the phrasing of the question. First, to remove negative connotations that respondents might have felt from acknowledging the possibility of state handouts, the question focused on employment as the goal of soft budgets. Employment maintenance is a goal that would be seen to be positive by an overwhelming majority of Mongolians. Our many interviews with leading policymakers confirmed that it was indeed a goal of those making policy

⁵ The survey covered all privatized enterprises in the national capital, Ulaanbaatar, plus those in the regional centers of eight of the remaining twenty-one administrative districts of the country. The survey collected both qualitative information from general directors, using a survey containing close-ended questions, and quantitative accounting information. The response rate for the survey was above 99%. The relatively more cumbersome logistical requirements for collecting detailed accounting information led to a research design with a 10% smaller sample of enterprises for the collection of accounting information than for the qualitative information.

⁶ For reasons that we discuss below, our results are less relevant for China. For the case of China, see Lin et al. (1998).

⁷ Respondents would have interpreted directed credits channeled through banks as state aid. The focus in the question on government is natural for a country in such an early phase of transition, since there were no other institutions in society that would have been able to create soft budgets.

TABLE 1
Perceptions of Soft Budget Constraints among Mongolian Enterprises

Set of enterprises	Percentage of enterprises choosing each of the points 0–10 in response to the question given below										Means of the responses, rescaled by a factor of 10 and thus indicating the percentage of softness of the budget constraint	
	0	1	2	3	4	5	6	7	8	9		10
All	73.1	5.2	3.2	2.8	2.0	5.6	1.2	1.6	2.0	0.8	2.4	12.2
No state ownership	80.7	6.4	2.9	2.1	2.1	1.4	0.7	0.0	0.7	0.0	2.9	7.5
Minority state ownership	77.4	3.2	3.2	6.5	0.0	6.5	0.0	3.2	0.0	0.0	0.0	7.8
Majority state ownership	57.7	3.8	3.8	2.6	2.6	12.8	2.6	3.8	5.1	2.6	2.6	24.1
Central government ownership	52.9	2.0	5.9	3.9	3.9	13.7	3.9	2.0	3.9	3.9	3.9	24.4
Local government ownership	72.4	5.2	1.7	3.4	0.0	8.6	0.0	5.2	3.4	0.0	0.0	13.3

Note. Enterprise officials were asked the following question: Suppose that unfortunate market conditions resulted in a sudden drop in your enterprise's revenues, so that you might have to lay off workers. How likely is it that the government (either national or local) would help your enterprise out, so that it would not be forced by its financial situation to lay off workers? Please indicate your expectation of the likely government reaction by choosing a point on a scale from 0 to 10—a "0" means that you think that the government would do absolutely nothing to help out and a "10" means that you think that the government would completely make up for the decline in revenues in some way, and a "5" means the government would make up half the decline in revenues. Choose any number between 0 and 10, indicating your expectation concerning the extent to which government would help out.

decisions. Second, to remove any ethical content from the responses, the question used "unfortunate market conditions" as the cause of the enterprise's problems, rather than any phrase that could have been taken to imply that the enterprise was responsible for its own plight. We assumed that we would not obtain accurate answers if the question suggested implicitly that managers could profit from state handouts when they were themselves to blame for the enterprise's problems.⁸

Table 1 reflects the responses of the 249 surveyed enterprises, 109 of which had partial state ownership. As the table clearly shows, the perceived degree of softness is strongly related to the amount of state ownership and to whether the central or local government owns the state shares. In fact, the pivotal results of the paper are already captured in Table 1; state ownership and centralization are overwhelmingly important in determining expectations of soft budgets.

Of course, the results are no more than suggestive. They tell us nothing about levels of statistical significance or whether the identified relationships hold in a multivariate analysis. Most importantly, the patterns in that table could simply reflect the selection of enterprises into state ownership, where the characteristics of enterprises in which the state maintained partial ownership are exactly those that lead to soft budgets, independently of ownership. However, when we address these issues in the remaining sections of this paper, the straightforward conclusion derived from Table 1 is resoundingly endorsed.

The analysis begins in Section 2, which provides the background on Mongolia necessary both to interpret the results and to suggest variables that should be included in the analysis. Section 3 explores the determinants of soft budgets using single-equation methods, introducing explanatory variables suggested by existing theories as well as by the features of Mongolia. Section 4 examines the vexing issue of selection: are soft budgets caused by unobserved characteristics of state enterprises that are related to state ownership, rather than caused by state ownership *per se*? We find that the effect of central government ownership appears to be stronger once selection effects are taken into account. A concluding section draws together the themes of this paper.

2. BACKGROUND: MONGOLIAN REFORMS AND GOVERNMENT⁹

Mongolia's peaceful revolution of 1990 led to sweeping reforms. The movement to democracy was swift and apparently irreversible. After an election in

⁸ A referee of this paper has suggested that the phrasing of our question is consistent with a different interpretation of the causes of soft budgets. It is possible that the soft budgets represent the rational actions of an owner who is uncertain about the real cause of the decline in an enterprise's fortunes and uses a soft budget to help a viable enterprise weather hard times. While there is nothing in our paper that is inconsistent with this interpretation, the employment-maintenance interpretation is more consistent with our reading of the political and policy environment.

⁹ This section provides only the information necessary for an understanding of the general context in which the paper's results should be placed. For further detail, see Boone (1994) on stabilization, Murrell et al. (1996) on price liberalization, and Korsun and Murrell (1995) on privatization.

mid-1990, a broad coalition government was formed in which the old communist party, the Mongolian People's Revolutionary Party (MPRP), was dominant. However, the economics portfolio was held by one of the new parties, which had been formed by a group of young economists who were convinced that the country needed radical reforms. The first two years of democracy saw very strong economic reform.

An election in 1992 gave the MPRP an overwhelming majority in parliament. The new parties left the coalition and the MPRP governed alone for four years. During this time, economic reforms proceeded less swiftly, although the continuation of the reform process was clear. So, too, was the cementing of democratic reforms, which was underscored by the surprise election victory in 1996 of the Democratic Union, a coalition of new parties.

The data presented in this paper reflect the circumstances immediately before the 1996 election. This was the end of a period (1992–1996) in which the government had been more conservative than its predecessor, which had instituted mass privatization and which had made the decisions that would determine the basic parameters of privatization for a large majority of enterprises. These temporal changes in the reform orientation of government are exactly those most suited to an examination of the effects of privatization. One popular view of privatization is that a reformist government undertakes privatization in order to change the incentives of any subsequent government that might be predisposed to intervention were those incentives not in place. The context of our data set, a conservative government inheriting an economy with a large stock of enterprises that were recently privatized by a predecessor government, affords a prime opportunity to observe whether private ownership indeed provides the hypothesized binding effect.

Our data reflect the circumstances of the enterprises that passed through the large-enterprise privatization program, which was formulated in early 1991 and ended in mid-1995, and resulted in the privatization of 483 enterprises. The enterprises passing through this program were ones that would have always been privately owned had they been in a developed market economy, since they are in manufacturing, distribution, and service sectors in which competition is eminently feasible. Enterprises in activities in which special regulatory regimes often apply, for example, airlines, railroads, telecommunications, and utilities, were not in the large-enterprise privatization program.

Enterprises had little scope for decision making during privatization. All large enterprises went through the same privatization process consisting of the preparation of a plan, including the determination of the residual state ownership share, corporatization, and finally the sale of shares for vouchers that had been issued to every citizen. Two-thirds of the enterprises in our sample had their privatization plans approved before mid-1992, when the first democratic government handed over the reins to its more conservative successor. Thus, for the large majority of enterprises, the basic parameters of privatization were set by a

government that was very different in outlook than the one that determined the presence or absence of soft budgets in 1996.

Markets, in which vouchers were exchanged for shares, determined the allocation of enterprise shares among individuals. In the sample of enterprises studied in this paper, state ownership averages 20.4%, while insiders and their families own 35% and outsiders own 45%. Of the 249 enterprises in our sample, 109 had lingering state ownership. Although the size of state ownership varies from 0 to 80%, the most common values are either 0 or 51%. Two-thirds of the enterprises with partial state ownership, comprising 29% of the whole sample, have a state share of 51%.

In Mongolia, as in many other transition countries, insider owners find it easier to gain representation on corporate bodies than do non-state outsiders. On the one hand, insider shareholding probably resulted from concerted efforts on the part of employees to hold a large share in their own enterprises. On the other, outsiders had few mechanisms to create blocks of shares. Investment funds are not of any significance. Vouchers were non-tradable, so that initial share ownership was diffuse. The secondary trading of shares began officially in August 1995, only 10 months before our data were collected. As a result, by mid-1996, only 13% of enterprises reported any presence on their boards of individuals representing investment funds or large outsider shareholders.

Since a central result of this paper is a comparison between the actions of central and local governments, some brief comments on the structure and functioning of Mongolia's government are appropriate. Mongolia is a unitary state.¹⁰ Twenty-two regional entities lie immediately below the central government (21 aimags, or provinces, and the capital city.) Local representative assemblies are elected. Local executives, or governors, are appointed by the central government for four-year terms on the nomination of the local assemblies.

On the revenue side, the decisions of local governments are highly circumscribed; localities face a hard budget constraint. Borrowing authority is reserved for the central government. The proceeds of several different types of taxes are dedicated for the use of local government, but tax policy is set by the center. As in the large majority of countries, local tax collections are supplemented by funds from the central government. These transfers are determined before the budget year begins, and the central government has been resistant to making changes *ex post*. In contrast to the localities, the central government has more flexibility in obtaining funding, including the ability to borrow from banks, the occasional monetization of deficits, and latitude in the setting of tax policy. In addition, Mongolia has been well treated by international donors, receiving relatively large amounts of aid. Although this aid is mostly subject to IMF and World Bank conditionality, the generosity of aid donors has increased regularly in times of perceived crisis; hence the aid donors might have softened the central govern-

¹⁰ On the subject matter of the ensuing paragraphs, see Enkhbat (1993), Government of Mongolia (1993), Government of Mongolia (1995), and State Statistical Office of Mongolia (1996).

ment's budget constraint. In light of these facts, one can certainly conclude that local governments have much harder budget constraints than the central government.

While the local governments are faced with inflexible constraints on the revenue side, the local governors, who are responsible for allocating local funds to different uses, have some flexibility in spending decisions. The formal authority of local governments is heavily circumscribed by the center, echoing the country's origins in a highly centralized communist state. However, localities have more discretion than suggested by the centralized state structure as a result of the decreased willingness and the declining capacity of the central government to exercise the control that it formally possesses. With the formal rules incompletely specified, sometimes contradictory, and undergoing rapid change, the degree of discretion held and exercised by any particular local government can be quite high. In sum, local governments face hard budget constraints, while having flexibility on spending policy. In particular, if local governors decide that aid to enterprises is advisable, they can provide such aid. An important question addressed by this paper is whether, in aiding enterprises, local governors favor those whose state ownership share is assigned to their locality's stewardship. Such enterprises are designated as "locally owned" in the paper.¹¹

Qian and Roland (1998) use two crucial assumptions when theorizing that local governments will offer softer budgets to enterprises than would central governments. The first is that the local budgets are harder than the central one, which, as discussed above, is the case for Mongolia. The second assumption is that localities must compete for mobile factors of production. Labor mobility expanded markedly with the new freedoms arising from political reforms. Despite the constraints imposed by the lack of a vibrant housing market, official statistics suggest substantial migration between Mongolian regions. This might have been especially important for entrepreneurial talent, which was a concern for all localities. Formal restrictions on the movement of capital probably played an insignificant role compared to the hazards of investing in a chaotic transition environment where financial markets were underdeveloped. Significant, but not large, amounts of investment were taking place; private investment was 6.5% of GDP in 1996, and private foreign direct investment was over 2% of GDP (World Bank, 1997). A significant share of the latter came from private Chinese inves-

¹¹ In the following, we will use the term "centrally owned enterprise" to designate an enterprise that has residual state ownership that is administered by the central government. The designation "locally owned" is analogously defined, as are the terms central and local ownership. Note, however, that the difference between these two types of enterprises does not lie in ownership per se but rather in which level of government administers ownership. The terms are introduced for parsimony only and do not reflect *de jure* ownership rights, which have remained ill-defined throughout the reform era. Retained enterprise shares are simply classified as state-owned without any formal designation of which state agency is the legal owner. The terms centrally owned and locally owned do reflect *de facto* usage rights, which have become cemented through time in informal arrangements.

tors, who exhibited a willingness to invest in even the most isolated regions of the country.

3. SEARCHING FOR OMITTED VARIABLES

In this section, we examine the effect on soft budgets of variables that are suggested by existing theory and by peculiar features of Mongolia. In particular, we focus on whether the relationships evident in Table 1 still hold once such variables are introduced into the analysis.

There is an extensive theoretical literature on why state ownership might lead to soft budgets. Kornai (1980) provides the seminal analysis suggesting that state paternalism provides the causal link. Shleifer and Vishny (1994) and Boycko et al. (1996) show that the political objective of maintaining employment is fostered by state ownership when the political cost of subsidizing employment through direct grants is higher than the cost of forgoing the state's share of enterprise profits. Moreover, theories proposing centralization as a cause of soft budgets (e.g., Dewatripont and Maskin, 1995; Bai and Wang, 1998; Qian and Roland, 1998) indirectly suggest a focus on state ownership, since privatization is one mechanism of decentralizing relationships. These theories, as well as much historical experience, provide compelling reasons to include state ownership as the pivotal variable in our empirical analysis.

Shleifer and Vishny (1994) predict that the degree of soft budgets varies with the amount of state ownership, providing a justification for the use of a continuous state ownership variable. Of course, there could well be some non-linearity in the relationship between ownership and softness, the first percentage owned presumably being less important than the fifty-first. However, in our empirical analyses, we use only the continuous state ownership variable for a variety of reasons. First, the ordered probit technique used in this section implicitly allows non-linearity. Second, there are no parameters in Mongolian corporate law suggesting where non-linearities might occur. Third, robustness checks using a variety of dummy variables for different levels of ownership discerned no variation in the qualitative character of the results. Presumably, one reason for this robustness is that nearly two-thirds of state-owned enterprises have 51% ownership, implying that the continuous variable is highly correlated with a majority-ownership dummy.

3.1. Local and Central Ownership

There are several theoretical contributions that suggest a relationship between soft budgets and the level of government that holds state ownership. Oates and Schwab (1988) show that inter-jurisdictional competition between local governments will weed out inefficient policies. Shleifer and Vishny (1994) argue that the connection between state ownership and soft budgets is weaker when the government's own fiscal constraint is harder, implying that local governments will usually impose harder budget constraints. In China, this has certainly been

the case (Qian and Xu, 1993). Qian and Roland (1998) establish a direct link between governmental decentralization and harder budget constraints by showing that inter-regional competition for capital raises the cost of subsidies and reduces the incentive for bailouts. Indeed, as Maskin (1999) makes clear, a common theme of several recent theoretical contributions is the increase in softness that results from centralization, for example centralization in credit markets (Dewatripont and Maskin, 1995), centralization in capital ownership (Bai and Wang, 1998), and centralization in government (Qian and Roland, 1998). Since we contrast the softness induced by local and national government, which were owners of capital and most of the banking sector, our paper implicitly examines all of these theories, although our tests are not sharp enough to differentiate between particular forms of the centralization hypothesis.

In Mongolia, local governments have hard budget constraints but also the flexibility to aid enterprises within these constraints. In addition, the local governments face inter-jurisdictional competition for mobile resources. In contrast, the central government has the tools of a sovereign state at its disposal. Hence, one would predict that local government ownership would be a less important determinant of soft budgets than would central government ownership, reflecting the higher opportunity cost of inefficient policies at the local than at the national level.

We therefore use two separate state ownership variables in our analysis: $Ceno_i$ is the percentage of central government ownership of enterprise i , and $Loco_i$ is the percentage of local government ownership. Definitions of variables and descriptive statistics appear in Table 2.

Given the nature of the question reported in Table 1, ordered probit is the natural tool to relate soft-budget scores to their determinants. Suppose that Y_i^* is a continuous latent variable reflecting the degree of softness of the budget constraint of enterprise i . Then

$$Y_i^* = X_i\beta + Ceno_i\delta + Loco_i\gamma + \epsilon_i, \quad (1)$$

where X_i is a vector of observations on other pertinent enterprise characteristics, β , γ , and δ are parameters, and ϵ_i is an error term. Then, if $Soft_i$ is the response of enterprise i on the soft-budget survey question ($Soft_i = 0, 1, \dots, 10$), $Soft_i$ is related to Y_i^* in the following manner:

$$\begin{aligned} & \text{if } Y_i^* \leq \alpha_0, \text{ then } Soft_i = 0; \\ & \text{if } \alpha_{j-1} < Y_i^* \leq \alpha_j, \text{ then } Soft_i = j; \quad \text{for } j = 1, \dots, 9; \text{ and} \\ & \text{if } \alpha_9 < Y_i^*, \text{ then } Soft_i = 10, \end{aligned}$$

$$\text{with } \alpha_0 < \dots < \alpha_9 \text{ parameters.} \quad (2)$$

We estimate the parameters $\alpha_0, \dots, \alpha_9$, β , γ , and δ by ordered probit. The working assumption at this stage is that all non-state-ownership determinants of

TABLE 2
The Variables

Name	Definition	Mean	Standard deviation	Observations available
<i>Soft</i>	Defined in Table 1	1.221	2.502	249
<i>Softd</i>	Dummy variable equal to one when the enterprise has a soft budget	0.269	0.444	249
<i>Ceno</i>	Percentage of the ownership share of the enterprise that is administered by the central government	10.217	21.626	249
<i>Cend</i>	Dummy variable indicating non-zero central ownership	0.205	0.404	249
<i>Loco</i>	Percentage of the ownership share of the enterprise that is administered by a local government	10.137	19.621	249
<i>Regd</i>	Percentage of the ownership share of the enterprise that is administered by the Darhan local government	1.390	7.695	249
<i>Inso</i>	Percentage of the ownership share held by insiders	34.778	27.858	249
<i>Outbrd</i>	Dummy variable equal to 1 if the enterprise board includes individuals representing investment funds or large outsider shareholders	0.128	0.335	242
<i>Prof</i>	Enterprise profits, billions of tugriks	0.119	0.973	218
<i>Vapl</i>	Value added per employee, millions of tugriks	0.495	0.665	203
<i>Emp</i>	Number of employees, in hundreds	1.719	2.671	213
<i>Empsh</i>	Enterprise employment as a proportion of the population in the enterprise's locality ($\times 1,000$)	0.876	1.619	213
<i>Mktshp</i>	Estimated enterprise percentage share of the national market	19.708	21.997	244
<i>Trade</i>	Dummy variable for trade and distribution sector	0.120	0.326	249
<i>Socburden</i>	Extent of social welfare activities of the enterprise in 1990 (scale 0 to 4)	2.726	1.381	248
<i>Appdate</i>	The date (Lotus metric) at which the enterprise's privatization plan was approved	33875	369	242
<i>Appdate2</i>	$(Appdate/1000)^2$	1147	25.2	242
<i>Empp</i>	Employment at the time of privatization	303	452	226
<i>Share</i>	The number of shares in the enterprise at the time of privatization	446140	1485139	246

soft budgets are included in the vector X_i so that $Ceno_i$ and $Loco_i$ are both uncorrelated with ϵ_i . In Section 4, we examine this assumption.

The results appear in Table 3, whose first column contains the ordered probit

TABLE 3
Ordered Probit Regressions Using the Soft Budget Score as the Dependent Variable

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Ceno</i>	0.019*** (5.24)	0.018*** (4.72)	0.017*** (4.80)	0.019*** (4.93)	0.021*** (4.99)	0.021*** (5.31)	0.021*** (5.52)	0.021*** (5.39)	0.020*** (5.55)	0.019*** (5.23)	0.019*** (5.33)	0.021*** (4.16)	0.022*** (5.58)	0.021*** (5.41)
<i>Loco</i>	0.008** (1.93)	0.007* (1.69)	0.006 (1.27)	0.009** (2.01)	0.008* (1.81)	0.009** (1.98)	0.009* (1.96)	0.012*** (2.70)	0.010** (2.35)	0.008* (1.86)	0.004 (0.88)	0.005 (0.80)	0.010* (1.90)	0.008* (1.67)
<i>Regd</i>											0.025*** (2.58)	0.021* (1.85)	0.020** (2.10)	0.021*** (2.14)
<i>Inso</i>		-0.003 (0.76)										-0.002 (0.37)		
<i>Outbrd</i>			-0.395 (1.34)									-0.205 (0.65)		
<i>Prof</i>				0.055 (0.71)								1.010 (0.70)		
<i>Vapl</i>					-0.083 (0.56)							-0.256 (0.91)		
<i>Emp</i>						0.031 (1.02)						-0.016 (0.22)		
<i>Empsh</i>							0.052 (1.02)					0.022 (0.31)		
<i>Mktshp</i>								0.012*** (3.01)				0.003 (0.66)	0.010** (2.39)	0.011*** (2.69)
<i>Trade</i>									-0.628** (2.19)			-0.576 (1.62)	-0.469 (1.59)	
<i>Sochburden</i>										-0.025 (0.41)		-0.044 (0.59)		
<i>Cen50</i>	52.261	55.27	55.30	56.88	55.75	58.42	57.05	47.93	49.67	52.45	52.51	54.215	47.09	48.66
<i>Loc50</i>	119.213	133.34	170.24	123.43	136.20	135.37	136.94	81.10	96.70	123.18	245.85	227.213	106.22	121.59
<i>Reg50</i>											40.306	52.479	50.328	48.589
Log likelihood	-275.09	-274.81	-264.75	-252.63	-214.41	-227.62	-227.76	-265.97	-272.49	-274.77	-271.67	-196.84	-262.27	-263.62
Observations	249	249	242	218	203	213	213	244	249	248	249	194	244	244

Note. Absolute values of *t*-statistics in parentheses.

*** Significant at the 1% level.

** Significant at the 5% level.

* Significant at the 10% level.

regression when only state ownership variables are included. In order to gauge the strength of the ownership effect, it is necessary to compare the size of the γ and δ relative to the α_j . To ease the reader's task and to reduce the size of the table, we provide this information in summary form, omitting estimates of the ten α_j .¹² We use the values of δ and the α_j to calculate *Cen50*, which shows the increase in the percentage of central ownership that would change the degree of softness of the budget constraint by 50%, from a value of *Soft* on the borderline between 0 and 1 to a value that is between five and six. *Loc50* is analogously defined for the local ownership variable.

This first regression solidifies the impressions from Table 1. Central ownership is highly significant and local ownership is weakly significant. A change of central ownership of 52% would lead to a "50% softening" of the budget constraint, while even a 100% change in local ownership would not lead to this degree of softness.

In the ensuing sub-sections, we examine the effects of other variables that are suggested by existing theories. Each variable is tested in two versions of the ordered probit. First, we run regressions that contain the state ownership variables and one other variable (columns 2–11 of Table 3). Then, we present a regression containing all variables (column 12). The two versions of the ordered probit regressions are consistent in their qualitative implications.

3.2. *Insiders and Outsiders*

Shleifer and Vishny (1994) and Boycko et al. (1996) argue that soft budgets are more likely to arise when the objectives of owners are similar to those of the government. Thus, insider ownership is more likely to lead to soft budgets than is outsider ownership. Earle and Estrin (1996, pp. 208–209) also emphasize the greater likelihood of soft budgets with insider ownership. To examine these theories, we use the variable *Inso*, the percentage of the firm owned by insiders.¹³

Given the identity relationship between the various forms of ownership ($Ceno + Loco + Inso = 100 - \text{outsider ownership}$) and the fact that outsider ownership is the omitted ownership variable, the coefficient on an included ownership variable measures the effect of increasing the value of the included variable while decreasing outsider ownership. The results in column 3 suggest that an exchange of ownership between insiders and outsiders makes little difference to soft budgets, while an exchange between the private sector and central government has a large effect.

Because it is difficult for outsider owners in Mongolia to effect concerted action, many outsider owners are passive. This suggests focusing on those outsiders who have been able to find a place in governance structures. The survey

¹² These intercept coefficients are always significant at conventional levels of significance.

¹³ Li (1998) also focuses on the role of insiders, theorizing that soft budget constraints arise when insiders have greater control rights than those formally bestowed by ownership. However, our data do not afford us an opportunity to test this theory.

collected data on which enterprise boards included individuals who represented either investment funds or large outsider shareholders. These data are the best available on whether outsiders have been able to obtain a role in corporate decision making. The dummy variable *Outbrd* reflects these data. The inclusion of this variable does not suggest revising any previous observations.¹⁴

3.3. *Soft Budgets as Redistribution*

In Kornai's original formulation, soft budgets are seen primarily as a means of allowing enterprises to escape adjustments that would otherwise result from financial exigencies. This is the view that stimulated the wording in the question used to generate *Soft*. Given this wording, there is no essential reason why *Soft* should reflect the present financial circumstances of the enterprise.

Nevertheless, memories can be short and an enterprise that is currently in difficult circumstances might have a clearer memory of soft budgets. In order to examine whether this is the case, we included current profits (*Prof*) in the regression. However, profits might be an unsatisfactory measure because potential profits might well be paid as excess wages in insider controlled firms. This suggests using a measure of labor productivity rather than financial flows; we use value-added per employee (*Vapl*). The inclusion of these variables (columns 4, 5, and 12) does not add any information. Less profitable or less productive enterprises do not seem to perceive soft budgets any more strongly than do other enterprises.

3.4. *Too Big to Fail*

Kornai (1992b, p. 143) suggests that larger enterprises have softer budgets and Alfandari et al. (1996, p. 192) find that employment size is a determinant of enterprise subsidies in Russia. Given the difficulties of collective action across enterprises and the relative ease of mobilizing a large number of workers in a single enterprise, large enterprises will usually have political power disproportionate to their size. Shleifer and Vishny's (1994) model predicts that enterprises with greater political power obtain more subsidies. These observations suggest using the number of employees as an explanatory variable (*Emp*), where this variable is lagged one year, reflecting the fact that it is mobilization of workers at some time in the past that would account for an enterprise's political power.¹⁵

¹⁴ In concluding that the form of non-state ownership does not seem to affect the presence of soft budgets in Mongolia, our results differ slightly from those of Earle et al. (1996, p. 232), who find that assistance from the state is less in employee-owned firms than in outsider-owned firms.

¹⁵ Of course, higher levels of employment in the future will be an effect of soft budgets, given the moral hazard implications of soft budgets. Thus, it is important to note that the employment variable used here is lagged relative to the soft budget variable (and experiments with further lagging give the same results). Nevertheless, given some degree of autocorrelation in the variables, there will still be problems of endogeneity. It is likely that the coefficient on the employment variables will be biased upward if there is a problem of endogeneity, suggesting that our qualitative conclusion does not suffer from biases due to endogeneity.

Moreover, an enterprise of a given size probably has more power the smaller is the jurisdiction in which it is situated, given the transactions costs of negotiating political deals and the leverage that results from first-past-the-post election rules. Hence, we also examine enterprise employment as a share of the local population (*Empsh*). The inclusion of these variables causes no modification in previous conclusions (columns 6, 7, and 12).

The relative importance of the enterprise in the national market might also be pertinent. In a small country such as Mongolia, which is relatively isolated from world markets by geography and by legacies of the communist era, an enterprise that is dominant in its market might well have the political muscle that comes from the ability to threaten disruptions in supply. Many large enterprises are important users of agricultural materials, the production of which supports a large share of the population. These enterprises have certainly been willing to exploit their links to the countryside for political advantage during the reform process.

Independent data on market concentration are not available and therefore we use survey data. We asked enterprises to estimate their percentage share of the national market. There are obvious problems of endogeneity with this variable; state aid might enable an enterprise to gain a larger market share leading to a positive correlation between market share and soft budgets that has little to do with the causes of soft budgets.

To counter this problem, we used the survey data to construct a measure of market share that is exogenous to the enterprise. We assigned a three-digit classification to each enterprise's major product. Then, for each enterprise in succession, we dropped that enterprise from the data set and ran an ordinary least-squares regression of reported market shares on product and regional dummies. Predicted values from this regression were used as proxies for market share. By construction, this variable, *Mktshp*, contains no direct information from the enterprise's report of its own market share and therefore is necessarily exogenous.

This market share variable is significant (column 8), its presence strengthening the perceived effect of the state ownership variables. This variable measures market power on a national scale, something which is presumably much more important for the central government than for local government. Hence, this variable is likely to reflect central government policy rather than local policies, which is consistent with previous observations on the relative importance of central and local ownership. These results suggest that political power arises more from market muscle than from enterprise size per se.

3.5. Sectoral Effects

Priority sectors had soft budgets during the socialist era (Kornai, 1992b, p. 143). Certainly, in Mongolia the processing of agricultural raw materials has particular cachet. Therefore, we examine sectoral effects, for which we use a

standard Mongolian seven-sector categorization.¹⁶ For brevity, we do not report complete results. Table 3 reports only the results for the one sector dummy that has a significant coefficient. This sector, the distribution or trade sector (*Trade*), has a significantly lower propensity to have soft budgets than other sectors when it is added on its own to the regression (column 9) but not when included with all other variables (column 12). The weakness of sectoral effects is not surprising. All the privatized enterprises engage in activities that take place normally in competitive markets. There are no utilities, national transport companies, or telecommunications companies, or any other firms that are often subject to special regulatory activity in market economies. Price controls are no longer relevant for these enterprises.

3.6. Social Welfare Burdens

Observations from the Chinese experience suggest that soft budgets might be a *quid pro quo* for the social welfare burdens that the state imposes on enterprises and that these burdens are disproportionately borne by state-owned enterprises (Lin et al., 1998). This theory probably explains patterns in Chinese data, where empirical work often centers on understanding the differences between the older state-owned enterprises and the enterprises that came into being after the onset of market reforms (e.g., TVEs and private companies). The state-owned enterprises have accumulated long-standing commitments, both to the state and to the workers, to supply social welfare services. These historical commitments would be difficult to break quickly. For newer enterprises, coming into existence after the onset of reforms, such commitments would be less important.

However, this perspective is not as useful when we are studying a set of privatized or partially privatized enterprises in a country such as Mongolia, where the historical origin of all enterprises in the data set was the same. All the enterprises were created by the state; they were all 100% state-owned and controlled five years before we collected our data. We would not expect the inherited social welfare commitments to vary greatly across the sample of enterprises, except perhaps as a function of enterprise size or locality. Additionally, whereas Chinese state-owned enterprises are responsible for the pensions of their retired workers (Lin et al., 1998, p. 426), meaning that this burden is higher for older enterprises, this is not the case for Mongolia, which had a centralized pension system even under the old system. Thus, to the extent that there is variation in current social welfare burdens across Mongolian enterprises, this would be an outcome of current bargaining between the enterprise, the state, and workers. The current social welfare burdens would be an endogenous result of such bargaining, a product of ownership and other variables, just like soft-budgets. If enterprise social welfare activities and soft budgets are jointly

¹⁶ The seven sectors are heavy industry, light industry, agricultural processing, construction, transportation, distribution, and services.

endogenous outcomes of the bargaining between state and enterprise, then neither of them should be used to explain the other.

Even though the above suggests that the social-welfare-burden explanation for soft budgets is not likely to be pertinent to our Mongolia data set, we can still add some empirical information. If social welfare burdens arising out of historical commitments are helpful in explaining soft budgets, enterprise social welfare activities before privatization should help explain soft budgets. Our survey asked enterprises whether they provided housing, a health clinic, child care, and recreation facilities to workers in 1990, obtaining a yes–no response for each of these four activities separately. We construct the variable *Socburden* by converting these responses to four dummy variables, which are then summed to obtain a measure of social welfare burdens on a scale of 0 to 4. The pertinent regression information appears in columns 10 and 12 of Table 3. There is no evidence that historical social welfare commitments have an effect on the presence of soft budgets in Mongolia, the pertinent coefficients having the wrong signs. We hasten to add, however, that care should be exercised in extrapolating this result to other countries. The historical circumstances of Mongolian enterprises might be very different from enterprises in countries such as China, and therefore, we would not be surprised if the results were different for these countries.

3.7. Variations across Localities

In a country where democracy is so new and many old officials are still in power, it is plausible that there could be great differences between policies in different localities. Therefore, we constructed regional ownership variables analogous to *Loco*, measuring the ownership that is under the control of each of the nine local authorities appearing in our sample. As in the case of sectoral variables, we do not report complete results, since only one regional ownership variable has a significant coefficient. This variable, *Regd*, is included in regressions 11 and 12, where the variable *Loco* becomes insignificant, suggesting that the significance of the local variable in the earlier regressions reflects the policies of just one region.¹⁷ This region, Darhan, an industrial city, overspent its planned budget in 1995 by 54%, much more than did any other locality (State Statistical Office of Mongolia, 1996, pp. 1–3). Evidently, the locality itself had a soft budget, provided by the center. We also calculate the value of *Reg50*, a variable analogous to *Cen50*, which measures the effects of an increase in ownership in Darhan. The values of *Reg50* and *Cen50* are similar in magnitude, indicating that local ownership in this city has an effect that is similar to that of central ownership, in contrast to the smaller effect of ownership in other localities.

¹⁷ Regional dummies were also examined, in addition to the variables mentioned in the text, which are regional dummies interacted with local ownership. None of the regional dummies was significant, suggesting that the ownership component of *Regd* is crucial.

3.8. A Summary

In regression 13, we include all the variables that had significant t -statistics in at least one of regressions 1–12. The sectoral dummy in this regression is no longer significant (as is also the case in regression 12) and is omitted in column 14, which reports the regression that summarizes the results of this search for omitted variables. This summary regression suggests that state ownership, and little else, determines an enterprise's perceptions of whether it has a soft budget. The result for central ownership is robust across all the elements of Table 3. However, the local ownership variable is of marginal significance in the summary regression and is not significant in several other instances. The magnitude of the local ownership effect is half that of central ownership.

4. SEEKING SELECTION EFFECTS

So far, we have treated ϵ_i and the included ownership variables as uncorrelated. This is reasonable under the assumption that we have been able to include all pertinent variables in X_i . However, although the previous section covers the most plausible hypotheses suggesting elements of X_i , one cannot be certain on an *a priori* basis that this assumption is correct. If there is an unmeasured determinant of *Soft* of which we are unaware, then the same variable might also be a determinant of *Ceno*, possibly leading to biases in the estimates presented in Table 3.

More formally, our system of equations now comprises (1), (2), and

$$Ceno_i = F(Z_i, \eta_i), \quad (3)$$

where $F(\cdot)$ is a function that leads to censoring at 0, Z_i is a vector of explanatory variables, and η_i is an error term. (We focus solely on central ownership to simplify the presentation.) If all pertinent variables are included in X_i in Eq. (1) and Z_i in Eq. (3), then ϵ_i is independent of η_i and the estimates in the preceding section are consistent. However, if there is a variable that should belong in both X_i and Z_i but is unmeasured and omitted, then it is a component of both ϵ_i and η_i . Then, $Ceno_i$ and ϵ_i are correlated and our previous estimates are inconsistent. The same logic applies also to *Loco* and *Regd*.

Combining an 11-category ordered probit with tobit formulations for each of the three state ownership variables presents a formidable challenge for estimation, one which has not been taken up in the existing literature and one which we do not pursue. Rather, a pragmatic route is taken, in which we employ two different methods of accounting for selection bias, based on two different sets of simplifying assumptions. In Section 4.1, we ignore the censoring of the ownership variables and the categorical character of *Soft* and use standard linear instrumental variable methods. In Section 4.2, we use transformations of the pertinent variables to construct a bivariate probit model. The focus throughout is

on examining whether the strong effect of central ownership survives when one allows for the possibility of selection effects.¹⁸

4.1. Testing for Selectivity Using Linear Instrumental Variables

If one ignores the categorical and censored nature of *Soft*, then one can estimate the following linear equation using instrumental variables methods:

$$Soft_i = X_i\beta + Ceno_i\delta + Loco_i\gamma + Regd_i\theta + \epsilon_i. \quad (4)$$

Ideally, the pertinent instruments would emerge from an understanding of the process that determined the size of residual state shares during privatization. Unfortunately, this process was not transparent. Decisions on the state share resulted from the interactions of many actors and extensive interviews with the major participants have not served to untangle the objectives and constraints that drove this process.¹⁹ However, these interviews and a previous statistical study (Korsun and Murrell, 2000) have identified some of the variables that are pertinent: *Appdate*, the date at which the enterprise's privatization plan was approved; *Share*, the number of shares in the enterprise at the time of privatization; and *Empp*, employment at the time of privatization.

Each of these variables has a plausible relation to the size of state ownership. *Appdate* captures secular changes in residual state shares. After the first privatizations, the residual state share in successive privatizations tended to decline as the reforming government became emboldened. Then, when a more conservative government later came to power, there was a tendency to retain higher state shares in the last privatizations.²⁰ This suggests that the appropriate instrument is a quadratic in the date of plan approval; thus we use both *Appdate* and its square (*Appdate*²).

Share is equal to the book value of enterprise net worth at the time of privatization, since the number of shares was the same proportion of net worth in each enterprise. Enterprises with larger values of *Share* were more likely to have residual state ownership, perhaps because such enterprises were the largest, most prestigious enterprises that had been built as important state investment projects in the communist era. *Empp* is negatively related to state ownership, suggesting that the privatizers in the first reform government were more willing to remove the state completely where insiders would be strong enough numerically to dominate share ownership.²¹

¹⁸ When examining the determinants of government assistance to enterprises in Russia, Earle et al. (1996, pp. 226–233) show that the effects of ownership weaken considerably when selection effects are taken into account. Their approach to the selection issue uses lagged dependent variables.

¹⁹ Indeed, many important participants were not aware of the overall dimensions of residual state share.

²⁰ For the first 30 privatized enterprises in our sample, the state share averaged 18%, for the 91st to 120th, it averaged 8%, and for the 191st to the 220th, the average was 27%.

²¹ A large majority of the decisions on the state share were made by the first reform government,

TABLE 4

R-Squared between Endogenous Variables and Sets of Instruments

Endogenous variable	Instruments	<i>R</i> -squared
<i>Ceno</i>	<i>Appdate</i> , <i>Appdate2</i> , <i>Empp</i> , and <i>Share</i>	0.24
<i>Loco</i>	<i>Appdate</i> , <i>Appdate2</i> , <i>Empp</i> , and <i>Share</i>	0.02
<i>Regd</i>	<i>Appdate</i> , <i>Appdate2</i> , <i>Empp</i> , and <i>Share</i>	0.04
<i>Ceno</i>	<i>Appdate</i> , <i>Appdate2</i> , <i>Empp</i> , <i>Share</i> , and regional dummies	0.30
<i>Loco</i>	<i>Appdate</i> , <i>Appdate2</i> , <i>Empp</i> , <i>Share</i> , and regional dummies	0.13
<i>Regd</i>	<i>Appdate</i> , <i>Appdate2</i> , <i>Empp</i> , <i>Share</i> , and regional dummies	0.31

These variables are appropriate instruments because they are not determinants of current budgetary softness. *Appdate* was determined by idiosyncratic features of the privatization process, such as the familiarity that specific privatization officials had with particular enterprises. To speed the privatization process initially, officials worked first with enterprises they knew well. *Share* reflects the book values of the planned era, which are very different from the present valuations determined in a completely new economic system, with vastly different relative prices, a new set of trading partners, and new institutions.²² Employment in enterprises has changed dramatically over the reform period, the average enterprise shedding over 40% of its labor force, suggesting that *Empp* is not a proxy for current enterprise size. Moreover, while it is true that the models of Section 3 are mis-specified if there are selection effects, the results of that section suggest that lagged employment does not belong in X_i .

Table 4 shows the strength of the relation between the instruments and the instrumented variables, listing the *R*-squared of regressions of each of the instrumented variables on the set of instruments. Evidently, this small set of instruments is satisfactory for *Ceno*, but not for either local variable, *Loco* or *Regd*. The factors that explain central state ownership do not apply at the local level.²³ Therefore, in some of the regressions that follow, regional dummies are added to the set of instruments. Regional dummies are related to *Loco* and *Regd*

which was much more radical than the second, the one in power when our survey was undertaken. The rhetoric of reform notwithstanding, the radical privatizers were skeptical about the consequences of outsider ownership in an environment in which few entrepreneurs had been tested by the market.

²² Had past book values been equal to present values, each enterprise would have had the same voucher share price during privatization. In fact, the ratio of the highest share price to the lowest was more than 300.

²³ The privatization decisions on locally owned enterprises were usually made by local privatization commissions.

because there are variations in the residual state share across localities. Table 4 again provides the pertinent evidence on the strength of the relationships.

One might doubt the validity of regional dummies as instruments, arguing that the prevalence of soft budgets will vary across regions and, therefore, that regional dummies belong in X_i . This doubt is allayed by a variety of evidence. We have argued that regional variation in soft budgets would arise through the effects of the regional-ownership variables, which are included in the pertinent regressions to the extent suggested by the exercise reported in Table 3. Hence, the regional dummies themselves are not candidates for inclusion in X_i , given the use of the regional-ownership variables. Moreover, the regional dummies are all insignificant when added to the ordered probit regressions appearing in the last column of Table 3, although such evidence must be treated with great caution since those regressions are mis-specified if there are selection effects. Finally, the overidentification tests in Table 5 endorse the decision to use the regional dummies as instruments.

Table 5 presents the instrumental variable results together with comparable ordinary least-squares estimates. Because the case for the use of the regional dummies as instruments is somewhat weaker than that for the other four instruments and because the robustness of the central ownership effect is the primary concern, we vary the set of instruments used and the variables instrumented across the columns of Table 5. Analogously to Table 3, Table 5 reports the strength of each ownership effect. *Cen50*, *Loc50*, and *Reg50* measure the increase in ownership that would be required to change a hard budget constraint into one with a 50% degree of softness. These measures show the change in ownership that would change the predicted score on *Soft* from 0 to 5, a definition analogous to that used in Table 3.²⁴

The results in Table 5 are consistent with those previously presented. Central ownership is always significant, while local ownership is significant in only one case. The magnitude of *Cen50* is comparable with that in Table 3. Interestingly, the introduction of measures to counter selection bias increases the size of the estimated central ownership effect as is evidenced by comparing the magnitude of the coefficient of *Ceno* in column 0 to that in all other columns. We return to this issue in the next sub-section, which presents further evidence of this phenomenon.

When either of the local ownership variables is instrumented without using regional dummies (columns 2, 3, and 4), both are insignificant. When regional dummies are added to the set of instruments (column 5), *Loco* is not significant but *Regd* is, a result that could be due to the differing strength of the instruments for the two variables, but which is also consistent with previous observations that *Loco* is of marginal importance. Certainly, the estimates of *Cen50*, *Loc50*, and

²⁴ The change in the interpretation of *Soft*, from an ordered categorical variable to a continuous one, necessitates the slight change in the method of calculation of *Cen50*, *Loc50*, and *Reg50* from that used for the results presented in Table 3.

TABLE 5

Instrumental Variables Estimates of Regressions Explaining Soft Budget Scores

Instruments used	0	1	2	3	4	5
	OLS	Set A	Set A	Set A	Set A	Set B
	None	<i>Ceno</i>	<i>Ceno</i> <i>Regd</i>	<i>Ceno</i> <i>Loco</i>	<i>Ceno</i> <i>Loco</i> <i>Regd</i>	<i>Ceno</i> <i>Loco</i> <i>Regd</i>
Intercept	0.153 (0.59)	-0.028 (0.08)	0.080 (0.22)	0.766 (0.60)	-1.801 (0.48)	0.459 (0.96)
<i>Ceno</i>	0.056*** (7.02)	0.069*** (3.99)	0.068*** (3.72)	0.060*** (2.59)	0.089** (1.83)	0.061*** (3.80)
<i>Loco</i>	0.017* (1.91)	0.021** (2.07)	0.005 (0.29)	-0.037 (0.41)	0.131 (0.53)	-0.012 (0.45)
<i>Regd</i>	0.056*** (2.78)	0.056*** (2.74)	0.150 (1.67)	0.102 (1.36)	0.166 (1.26)	0.087** (2.33)
<i>Mktshp</i>	0.018*** (2.58)	0.020*** (2.69)	0.015* (1.71)	0.008 (0.43)	0.039 (0.82)	0.013 (1.44)
<i>Cen50</i>	88.666	72.392	73.841	83.110	56.413	82.175
<i>Loc50</i>	287.24	239.49	951.62	-136.23	38.29	-403.32
<i>Reg50</i>	89.10	89.94	33.33	48.91	30.07	57.61
Observations	218	218	218	218	218	218
Test of overidentifying restrictions:	—	2.31	0.94	1.56	0.20	7.85
χ^2 95% critical value	—	7.82	5.99	5.99	3.84	16.92

Note. Set A: *Appdate*, *Appdate2*, *Empp*, and *Share*. Set B: *Appdate*, *Appdate2*, *Empp*, *Share*, and regional dummies. Absolute values of *t*-statistics in parentheses.

*** Significant at the 1% level.

** Significant at the 5% level.

* Significant at the 10% level.

Reg50 in column 5 underscore the fact that local ownership in one region, Darhan, has an effect similar in magnitude to that of central ownership, but the effect of local ownership elsewhere is much weaker than that of central ownership.

Finally, if one accepts the use of linear instrumental variables techniques despite the non-continuous nature of the dependent variable, one can test whether the instruments are appropriately excluded from the soft-budget equation. The test statistic examines the appropriateness of over-identifying restrictions and is calculated from a regression of the estimated residuals of the soft budget equation on all exogenous variables (Newey, 1985, p. 245). Under the null hypothesis of exogeneity of all instruments, the statistic has a chi-squared distribution with degrees of freedom equal to the number of instruments minus the number of variables presumed to be endogenous in the soft budget regression. The last lines of Table 5 contain the results, which give no reason to doubt the choice of instruments.

4.2. Testing for Selectivity Using Bivariate Probit

The results so far indicate that central ownership dominates the determination of soft budgets. In this sub-section, we make one last attempt to examine the robustness of this conclusion. We focus exclusively on central ownership selection effects, estimating a maximum likelihood model under the assumption that there are no such effects on the local ownership variables.²⁵ We follow the methodology of Evans and Schwab (1995).²⁶ To apply this methodology, we convert pertinent variables to binary ones. Thus, $Cend$ equals 1 when $Ceno$ is positive and zero otherwise. This conversion does not entail much loss of information since $Ceno$ has 80% of its observations at zero and a further 12% close to 51. Similarly, $Softd$ equals 1 when $Soft$ is positive and zero otherwise. The loss of information is muted again since 73% of observations on $Soft$ are zero.

To formulate an estimation model, assume that C_i^* is a latent variable measuring the net benefits to politicians of keeping some central ownership in enterprise i . $Cend$ is unity when $C_i^* > 0$ and zero otherwise. Then

$$C_i^* = Z_i\theta + \eta_i,$$

where Z_i and η_i are defined as in the previous section. Similarly, a modified form of Eq. (1) is

$$Y_i^* = X_i\beta + Cend_i\delta + \epsilon_i.$$

(The variables $Loco$ and $Regd$ are included in X_i in this analysis to emphasize that we are not considering their endogeneity.) If $Y_i^* \leq \alpha_0$, then $Softd_i = 0$; otherwise $Softd_i = 1$. The error terms, η_i and ϵ_i , are now assumed to have zero means, unit variances, and a covariance of ρ . A value of ρ significantly different from zero indicates the existence of unmeasured variables that affect central ownership and that are pertinent to the determination of soft budgets.

The results are presented in Table 6. They are completely consistent with those of previous sections. The central ownership variable is highly significant. The regional ownership variable for Darhan is significant, but the local ownership variable is again insignificant. Table 6 adds an important piece of the picture. The error terms in the two equations are significantly negatively correlated, implying that the omitted variables that cause an enterprise to have a positive state share also lead to a smaller probability of a soft budget for that enterprise. Although the magnitudes of the estimates of coefficients in Table 6 are not directly comparable with those in previous tables, there is indirect evidence that the estimated size of the central ownership effect is increased when one allows for the correlation of

²⁵ This assumption allows the use of bivariate probit, avoiding the apparently insurmountable problems of higher-order probits.

²⁶ Thanks to William Evans for the use of software.

TABLE 6

Bivariate Probit Estimate of Regression Explaining Soft Budget Scores

Intercept	-1.113*** (6.86)
<i>Cend</i>	2.165*** (5.13)
<i>Loco</i>	0.005 (0.84)
<i>Regd</i>	0.023** (2.10)
<i>Mktshp</i>	0.004 (1.05)
ρ	-0.826*** (3.31)
Log likelihood	-201.69
Observations	218

Note. Absolute values of *t*-statistics in parentheses.

*** Significant at the 1% level.

** Significant at the 5% level.

* Significant at the 10% level.

the errors in the two equations. The central ownership variable has a higher order of significance than in previous tables, and its coefficient, adjusted for scale, now dwarfs those of the local ownership variables. The presence of central ownership raises the probability of a soft budget by 0.71.²⁷

These results on selection effects probably contradict the priors of most readers. The usual assumption would be that the state will retain ownership in those enterprises that have characteristics that would make state involvement in the future more likely. If that were the case, then countering selection bias would amount to making sure that there are no spurious ownership effects on soft budgets. In Mongolia, the sign of the correlation between the errors suggests that the opposite was the case; controlling for selection seems to increase the estimated size of the ownership effect. If Mongolia is at all representative of other countries, this suggests that examining selection effects is very important in uncovering the effects of ownership.

There remains the question of what the omitted variable could be. This has to be a matter of conjecture. One possibility arises from the fact that most decisions on privatization were made by a different government than were the decisions on soft budgets. The privatizers might have retained partial ownership in enterprises whose management had close links with the privatizing regime. With a change in government, those enterprises would be out of favor and, therefore, less likely to receive soft budgets.

²⁷ Calculated at the sample means of the remaining explanatory variables.

5. CONCLUSIONS

The data examined in this paper present a remarkable picture, both in showing the powerful effects that reforms have had on enterprises and in uncovering clear relationships delineating the determinants of soft budgets. The baseline against which the figures in Table 1 can be compared is late 1990, when most of the surveyed enterprises would have had soft budgets to some degree. Just five and one half years later, fully 73% of enterprise directors do not expect any state aid when their enterprise encounters troubled times. Given that over 70 years of socialism fostered the expectations of soft budgets, this is an extraordinary turn-around in beliefs.

The econometric results demonstrate clearly that privatization and decentralization were crucial factors in promoting the change in expectations. The estimates in Table 6 combined with the information in Table 1 suggest that 78% of enterprises would have had soft budgets had all enterprises remained under central government ownership.²⁸ Moreover, it is clear that if there were complete local ownership, the expectations of soft budgets would be closer to those in a regime of completely private ownership than those in a regime of complete central ownership. Hence, decentralization of ownership produces large effects on the presence of soft budgets, ones that are similar to those of privatization itself. One locality bucks this pattern, but it is the exception that proves the rule, since that locality received a soft budget from the central government in the year preceding the collection of our data.²⁹

The clarity in the depiction of the results of reforms arises partially from the fact that variables other than ownership and decentralization seem unimportant in explaining perceptions of soft budgets. The only alternative hypothesis receiving somewhat consistent support is that of market concentration, suggesting that an enterprise might be too big to fail on the national level. This result echoes the major results of this paper. Central rather than local policy is bound to be much more important to enterprises that are nationally important. Policies promoting decentralization are likely to reduce the number of such enterprises.

To what degree can one be confident in the overall validity of these conclusions? Certainly, there are assumptions that would formally invalidate each set of results. For example, judgment on which variables are non-significant in Table 3 might be erroneous because of the selection effects clearly identified in Table 6. Or, the estimates in Table 5 might be questioned because of the decision to ignore

²⁸ The 78% figure comes from adding the estimate of the central ownership effect derived from Table 6 and the baseline figure of 7% of private enterprises having soft budgets.

²⁹ The difference between the local and central ownership effects is also significant in countering a possible criticism that the answers to the survey question are affected by the embarrassment that private owners would feel at admitting the receipt of state aid, presumably in contrast to the absence of guilt felt by the directors of partially state-owned enterprises. Such emotions are not so prevalent in Mongolia and many other transition countries; the results for the local-ownership effects suggest that they do not produce biases in survey responses.

the censored and categorical nature of the dependent variable. Or, one might doubt the treatment of local ownership in Table 4 because its instruments are weak. These are possibilities that cannot be rejected *a priori*, because the information does not exist to test them.

Therefore, a final appraisal of the validity of the conclusions must rest on the reader's assessment of the plausibility of alternative assumptions that might invalidate our reading of the results. Our judgment is that there is such consistency between the results in the alternative estimations that it is highly unlikely that the qualitative pattern of the results would change if extra data were available to investigate the effects of alternative assumptions. The most plausible reason for such consistency is that each of the estimations is an approximation of the underlying reality.

Two remaining issues are left unaddressed. The first is whether our variable *Soft* really measures soft budgets or whether it simply reflects enterprises' erroneous expectations. In a small country such as Mongolia, where there is easy communication between enterprise and government and where information flows freely, it is unlikely that such expectations are simply flights of fancy. Even if they were, erroneous expectations are important to economic events, since it is expectations of soft budgets that lead to the inefficient enterprise decisions that are the worst consequences of soft budgets. Hence, the dependent variable examined in this paper reflects an important element of reality whichever way one resolves the ambiguity that is embodied in the paper's title.

The second issue is whether the driving force of the soft budget is purely rent-seeking politics, resulting immediately in efficiency losses, or whether the soft budgets reflect the concerns of a far-sighted owner who is uncertain about the real cause of the decline in an enterprise's fortunes and uses soft budgets to help a viable enterprise weather hard times.³⁰ The information presented here is consistent with either interpretation. Our interviews with policymakers in Mongolia suggest that maintenance of short-term employment was their central goal, rather than a far-sighted concern that differentiated between temporary illiquidity and permanent insolvency. Nevertheless, the best test of these two different interpretations is to examine whether the soft budgets led to a depreciation of enterprise performance. This is the subject of ongoing research.

REFERENCES

- Alfandari, Gilles, Fan, Qimiao, and Freinkman, Lev, "Government Financial Transfers to Industrial Enterprises and Restructuring." In Simon Commander, Qimiao Fan, and Mark Schaffer, Eds., *Enterprise Restructuring and Economic Policy in Russia*. Economic Development Institute (EDI) Development Studies, pp. 166–202. Washington, DC: World Bank, 1996.
- Bai, Chong-en, and Wang, Yijiang, "Bureaucratic Control and the Soft Budget Constraint." *J. Comp. Econ.* **26**, 1:41–61, Mar. 1998.

³⁰ We thank an anonymous referee for raising this issue.

- Berglof, Erik and Roland, Gérard, "Soft Budget Constraints and Banking in Transition Economies." *J. Comp. Econ.* **26**, 1:18–40, Mar. 1998.
- Boone, Peter, "Grassroots Macroeconomic Reform in Mongolia." *J. Comp. Econ.* **18**, 3:329–356, June 1994.
- Boycko, Maxim, Shleifer, Andrei, and Vishny, Robert, "A Theory of Privatisation." *Econ. J.* **106**, 435:309–319, Mar. 1996.
- Dewatripont, Mathias, and Maskin, Eric, "Credit and Efficiency in Centralized and Decentralized Economies." *Rev. Econ. Stud.* **62**, 4:541–555, Oct. 1995.
- Earle, John, and Estrin, Saul, "Employee Ownership in Transition." In Roman Frydman, Cheryl Gray, and Andrzej Rapaczynski, Eds., *Corporate Governance in Central Europe and Russia: Volume 2 Insiders and the State*, pp. 1–61. Budapest: Central European University Press, 1996.
- Earle, John, Estrin, Saul, and Leshchenko, Larisa, "Ownership Structures, Patterns of Control, and Enterprise Behavior in Russia." In Simon Commander, Qimiao Fan, and Mark Schaffer, Eds., *Enterprise Restructuring and Economic Policy in Russia*. Economic Development Institute (EDI) Development Studies, pp. 205–252. Washington, DC: World Bank, 1996.
- Enkhbat, B., "Local Government Strengthening in Mongolia: Fact-Finding Study at Bulgan Sum, Dornod Aimag & Alag-Erdene Sum, Hovsgol Aimag." Research and Consultancy Centre, Institute of Administration and Management Development, Ulaanbaatar, Mongolia 1993.
- Evans, William, and Schwab, Robert, "Finishing High School and Starting College: Do Catholic Schools Make a Difference?" *Quart. J. Econ.* **110**, 4:941–974, Nov. 1995.
- Fan, Qimiao, and Schaffer, Mark E., "Government Financial Transfers and Enterprise Adjustments in Russia, with Comparisons to Central and Eastern Europe." *Econ. Transition* **2**:151–87, June 1994.
- Government of Mongolia, "Law on the Government of Mongolia." Ulaanbaatar, May, 1993.
- Government of Mongolia, "Reform of Local Administration and Decentralization." Ulaanbaatar: Management Development Program of the Mongolian Government, April 1995.
- Kornai, János, *Economics of Shortage*. Amsterdam: North Holland, 1980.
- Kornai, János, "The Postsocialist Transition and the State: Reflections in the Light of Hungarian Fiscal Problems." *Amer. Econ. Rev.* **82**, 2:1–21, May 1992a.
- Kornai, János, *The Socialist System: The Political Economy of Communism*. Princeton: Princeton Univ. Press, 1992b.
- Kornai, János, "The Evolution of Financial Discipline under the Postsocialist System." *Kyklos* **46**, 3:315–336, 1993.
- Kornai, János, "The Place of the Soft Budget Constraint Syndrome in Economic Theory." *J. Comp. Econ.* **26**, 1:11–17, Mar. 1998.
- Kornai, János, "Hardening the Budget Constraint: The Experience of Postsocialist Countries." Collegium Budapest, Discussion Paper Series No. 59. Budapest, July 1999.
- Korsun, Georges, and Murrell, Peter, "Politics and Economics of Mongolia's Privatization Program." *Asian Survey* **35**, 5:472–486, May 1995.
- Korsun, Georges, and Murrell, Peter, "How Does the Transitional State Behave? Evidence from Retained State Ownership in Mongolian Privatization." In Eric Maskin and Andras Simonovits, Eds., *Planning, Shortage, and Transformation*. Cambridge, MA: MIT Press, forthcoming, 2000.
- Li, David, "Insider Control and the Soft Budget Constraint: A Simple Theory." *Econ. Lett.* **61**, 3:307–311, Dec. 1998.
- Li, David, and Liang, Minsong, "Causes of the Soft Budget Constraint: Evidence on Three Explanations." *J. Comp. Econ.* **26**, 1:104–116, Mar. 1998.
- Lin, Justin Yifu, Cai, Fang, and Li, Zhou, "Competition, Policy Burdens, and State-Owned Enterprise Reforms." *Amer. Econ. Rev.* **88**, 2:422–427, May 1998.
- Maskin, Eric, "Theories of the Soft Budget-Constraint." *Japan World Econ.* **8**, 2:125–133, June 1996.

- Maskin, Eric, "Recent Theoretical Work on the Soft-Budget Constraint." *Amer. Econ. Rev.* **89**, 2:421–425, May 1999.
- Murrell, Peter, Dunn, Karen, and Korsun, Georges, "The Culture of Policy Making in the Transition from Socialism: Price Policy in Mongolia." *Econ. Devel. Cult. Change* **45**, 1:175–194, Oct. 1996.
- Newey, Whitney K., "Generalized Method of Moments Specification Testing." *J. Econometrics* **29**, 3:229–256, Sept. 1985.
- Oates, Wallace, and Schwab, Robert, "Economic Competition Among Jurisdictions: Efficiency Enhancing or Distortion Inducing?" *J. Public Econ.* **35**, 3:333–354, Apr. 1988.
- Pinto, Brian, Belka, Marek, and Krajewski, Stefan, "Transforming State Enterprises in Poland: Evidence on Adjustment by Manufacturing Firms." *Brookings Papers Econ. Act.* **1993**, 1:213–261, 1993.
- Qian, Yingyi, and Roland, Gérard, "Federalism and the Soft Budget Constraint." *Amer. Econ. Rev.* **88**, 5:1143–1162, Dec. 1998.
- Qian, Yingyi, and Xu, Chenggang, "Why China's Economic Reforms Differ: The M-Form Hierarchy and Entry/Expansion of the Non-state Sector." *Econ. Transition* **1**, 2:135–170, June 1993.
- Schaffer, Mark E., "Do Firms in Transition Economies Have Soft Budget Constraints? A Reconsideration of Concepts and Evidence." *J. Comp. Econ.* **26**, 1:80–103, Mar. 1998.
- Shleifer, Andrei, and Vishny, Robert W., "Politicians and Firms." *Quart. J. Econ.* **109**, 4:995–1025, Nov. 1994.
- State Statistical Office of Mongolia, "Monthly Bulletin of Statistics, January 1996." Ulaanbaatar, 1996.
- World Bank, *Policies for Faster Growth: Mongolia Country Economic Memorandum*. Washington, DC: World Bank, 1997.