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Development Issues

*State enterprise reform
and macroeconomic stability in
transition economies*

Frances Perkins and Martin Raiser

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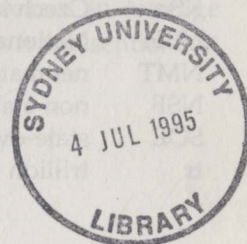
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Research School of Pacific and Asian Studies

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Glossary

bn	billion
CIS	Commonwealth of Independent States
CMEA	Council of Mutual Economic Assistance
CSFR	Czech and Slovak Federal Republic
EBRD	European Bank for Reconstruction and Development
Ft	Hungarian forint (currency)
GDP	gross domestic product
GNP	gross national product
IMF	International Monetary Fund
KSc	Czech crown (currency)
NBH	National Bank of Hungary
NMT	net material product
NSF	non-state firm
SOE	state-owned enterprise
tr	trillion

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*a*bstract

This paper establishes a link between macroeconomic performance indicators and the reform of state-owned enterprises in formerly centrally planned economies.

Budget softness in formerly centrally planned economies in Europe stems from delays in the reform of property rights and accountability, financial legacies in capital markets, the lack of corporate control in decentralised state-owned enterprises, and deficient bankruptcy enforcement. A comparison of reform achievements in these areas suggests that failure to harden budget constraints on state-owned enterprises effectively and early in the transition process carries substantial macroeconomic costs, particularly in terms of persistent inflationary pressures.

A review of a set of indicators for budget softness in China reveals that loss-makers in China still face substantial protection. The financial costs of this protection are estimated to have reached almost 10 per cent of GNP by 1992; the opportunity cost is considerably higher.

Survey data for 300 Chinese enterprises indicate that while many state-owned enterprises have improved their allocative efficiency over the period 1980 to 1992, pressures from workers have tended to result in excessive increases in average remunerations compared to the rate of growth of labour productivity. It is essential that the government allow state-owned enterprises to shed excess labour.

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Abstract

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1 Foster Street, Queensberry, NSW, 2620.

This paper examines the link between macroeconomic performance and the reform of state-owned enterprises in formerly centrally planned economies.

Budget softness in formerly centrally planned economies in Europe stems from delays in the reform of property rights and accountability. Financially lax and markets, the lack of corporate control in decentralised state-owned enterprises and deficient bankruptcy enforcement. A comparison of reform activity points in these areas suggests that failure to harden budget constraints on state-owned enterprises effectively and early in the transition process carries substantial macroeconomic costs, particularly in terms of persistent inflationary pressures.

A review of a set of indicators for budget softness in European and Asian economies in China still face substantial protection. The impact of the government's estimated to have reduced state-owned enterprises by 10 per cent, the opportunity costs of reform are likely to be high.

Survey data for 300 Chinese enterprises indicate that while many state-owned enterprises have improved their allocative efficiency over the period 1988 to 1992, pressures from workers have tended to result in excessive increases in average remuneration compared to the rate of labour productivity. It is essential that the government allow state-owned enterprises to shed excess labour.

Professor Perkins is Director of the East Asia Analytical Unit, Department of Foreign Affairs and Trade. She is a former Research Fellow with the National Centre for Development Studies, The Australian National University.

Martin Raiser is with the Kiel Institute of World Economics at the University of Kiel.

State enterprise reform and macroeconomic stability in transition economies

Comparative studies of transition processes in China and Central and Eastern Europe have focused mainly on the striking differences in macroeconomic performances between the two regions (Table 1). Arguably such a comparison has only limited policy implications, as counterfactual analyses that would prove the overall superiority of one reform strategy over another (for example Naughton 1993; Jefferson and Rawski 1992; 1994) must be conducted in abstraction from diverging initial conditions and exogenous factors (Sachs and Woo 1994; Raiser 1994b). Nevertheless, some areas of policy interest in transition economies lend themselves readily to a comparative analysis that is less subject to the variability of factors outside direct policy control. This paper focuses on one such area, namely the reform of state-owned enterprises in the industrial sector, and attempts to establish a link to macroeconomic performance indicators in formerly centrally planned economies. The strength of this link will crucially depend on the size of the industrial sector in the economy and on the share of industrial output produced by state-owned enterprises. Nonetheless, if the causality can be established, policy conclusions with respect to state-owned enterprise reforms will have macroeconomic repercussions at least in relative terms. The advantage is that the conclusions are specific, in contrast to the generality of arguments in favour of 'gradual or shock therapies'.

Industrial state-owned enterprises arguably were the core of the socialist development strategy pursued in all formerly centrally planned economies. These strategies may have differed in the scale, and the coverage and the duration of the planning mechanism. Nonetheless, the effects of distorted relative prices, the absence of profit incentives and the lack of competitive pressures on state-owned enterprises left all formerly centrally planned economies with the daunting task of reforming the behaviour of the very core of their economies if a sustained improvement in economic performance was to be achieved. The central argument of this paper is that the continuing subsidisation of inefficient and loss-making enterprises has caused, and

Table 1 Selected macroeconomic indicators for economies in transition

	Period	Growth of GDP (per cent per annum average)	Inflation rate CPI (per cent per annum average)	Fiscal balance (average per cent of GDP)	Industrial production (cumulative change)		Industrial employment (cumulative change, per cent)		Growth of value of exports (cumulative change)		Share of investment in GDP (period average, per cent)
					(US\$ million)	(per cent per annum)			US\$ million	(per cent per annum)	
China ^a	(1978-92)	9.2	6.2	-0.5	462	13.3	63.3	709.0	17.7	32.7	
Czech Republic ^b	(1990-93)	-4.8	24.5	-4.0 (CSFR)	-35.3		-30	-9.2		15.7 (CSFR)	
				1990-92							
Hungary ^c	(1970-89)	2.8 (NMP)	8.0	-1.5 1981-89)	100.1	3.7	..	483	8.3	32.0	
	(1990-93)	-4.6	27.1	-5.6	-28.0		-40	20.0		22.7	
Poland ^d	(1982-89)	3.7 (NMP)	46.3	-2.2	29.2	3.7	..	22.5	2.9	29.5	
	(1990-93)	-3.2	182.6	-3.8	-25.5		-31	78.0		20.8	
USSR ^e	(1985-89)	2.5	3.7	..	17.1	3.2	..	16.3	3.0	32.5	
Russia ^f	(1992-93)	-10.5	604.5	..	-37.8		..	-26.6		20	

^a Loans to the Central Government are included under revenues, which biases the fiscal deficit downwards. Investment shares refer to 'Accumulation' in SSB (1992).

^b Exports excluding shipments to Slovakia increased 20 per cent in 1991-93.

^c The first row encompasses the period after the New Economic Mechanism was introduced in 1968. GDP data are net material product.

^d The first row includes the period of partial liberalisation since 1982. Note that 1982 is a trough year which biases performance upwards. Export performance is overstated by the exclusion of CMEA trade.

^e Data for the USSR begin with Gorbachev's ascent to power in 1985. No figures for 1990-91 were available.

^f Employment data are highly unreliable for Russia, official unemployment currently stands at 2 per cent of the labour force. Exports exclude inter-republican trade within the former Soviet Union.

Sources: *China* — State Statistical Bureau, 1992, *China Statistical Yearbook*, Beijing; Harold, P. and Lall, R., 1993, *China: Reform and Development in 1992-93*, Discussion Paper no. 215, East Asia Pacific Region Series, The World Bank, Washington, DC; International Financial Statistics, 1993, *Yearbook*, International Monetary Fund, Washington, DC.

Czech Republic — PlanEcon, 1993, *Review and Outlook. Analysis and Forecasts to 1998 of EC-Developments in Eastern Europe*, Washington, DC, December; International Financial Statistics, 1993, *Yearbook*, International Monetary Fund, Washington, DC.

Hungary — Marer et al. 1992, *Historically Planned Economies. A Guide to the Data*, The World Bank, Washington, DC; PlanEcon, 1993, *Review and Outlook. Analysis and Forecasts to 1998 of EC-Developments in Eastern Europe*, Washington, DC, December.

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Russia — PlanEcon, 1993, *Review and Outlook. Analysis and Forecasts to 1998 of EC-Developments in Eastern Europe*, Washington, DC, December.

continues to cause, macroeconomic imbalances in the course of transition, both in the European formerly centrally planned economies and in China. Because state-owned enterprises are most likely to be subjected to a soft budget constraint, the real challenge in all transition economies lies with industrial reforms and the effect they have on the behaviour of agents in the public sector.

Sources, consequences and measurement of soft budget constraints

Sources of soft budget constraints

The concept of a soft budget constraint was introduced by Kornai (1980; 1986) to explain the behavioural differences between a capitalist firm and a production unit in a centrally planned economy. A capitalist firm that fails to cover its costs out of current revenue (or, in the case of borrowing from outside sources, out of expected future income) ultimately is forced to exit the market. In a centrally planned economy such an exit-threat is nonexistent. As long as a firm has access to implicit or explicit subsidies from the government there are no incentives to cover the costs of production, or behave as a cost minimiser.

The subsidisation of loss-makers in centrally planned economies can take a variety of forms. (Kornai 1986). First, state-owned enterprises subject to mandatory planning can negotiate input and output prices and quotas. In the context of the Chinese economic reforms this aspect may have been (and in a few industries may continue to be) crucial, as the two-tier pricing system offers large profit margins to those state-owned enterprises able to obtain most of their inputs at below market prices and sell part of their output at free market prices (Hussain 1990).

Second, explicit subsidies from governmental budgetary funds may help to finance cost overruns in order to maintain the level of material production. Third, firms may enter into political negotiations about the level of effective taxation, lobbying for tax exemptions and reductions in tax rates. Again in China, the contract responsibility system offers ample opportunities for selective tax waivers and discretionary taxation. Fourth, as the banking system takes on a larger role in the financing of investment, soft loans become a way of keeping loss-making state-owned enterprises afloat.¹ A major aim of economic reforms in all transition economies is to reduce subsidies to state-owned enterprises, but all four aspects of budget softness are still relevant to formerly centrally planned economies to a varying extent.

The causes of soft budget constraints for enterprises in centrally planned economies and formerly centrally planned economies may be analysed at three different levels (Nagaoka and Atiyas 1990). The first level concerns the incentives for the government to keep loss-making enterprises afloat. Some compensation for losses inflicted by price controls and mandatory output requirements may be judged necessary, not merely on the grounds of fairness but also to keep the economy functioning. In the presence of market imperfections or distortions, the social value of an enterprise may be higher than

1 The Yugoslav economic reforms are a case in point, as decentralisation made the banking system pivotal in the allocation of resources. Consequently, bank credit at negative real rates of interest became the largest component of subsidisation of Yugoslav state-owned enterprises (Kraft and Vodopivec 1992).

its market value determined by the price of its output. Moreover, as long as enterprises shoulder most of the social welfare functions and an independent social security system is not in operation, the social costs of regionally concentrated large-scale unemployment may outweigh the net present value of subsidies to the government (Hardy 1992). Finally, competition by bureaucrats in a rent-seeking environment may lead government officials to extend subsidies to their constituency, regardless of the overall negative welfare effects (Aizenmann 1991). The competition between provincial governments in China is a case in point (Herrmann-Pillath 1990).

The second level at which the causes of budget softness may be analysed is the financial system. In most centrally planned economies, state-owned banks became more and more important in the allocation of resources (for China see Bowles and White 1992). Even after the introduction of a two-tier banking system (1984 in China, 1987 in Hungary and 1988 in Poland), these banks often continued to be run as monetary counterparts to the state-owned enterprises in the productive sector. Their objective was not the maximisation of the asset value in their portfolio, as there was no option for take-overs or trading in assets. Indeed, as bankruptcy laws in centrally planned economies were typically nonexistent or remained unenforced, banks merely cared about continuing interest payments by debtors rather than about their underlying performance. Changing the behaviour of state-owned banks in formerly centrally planned economies in turn encounters severe problems that derive from the legacy of underdeveloped financial markets (Estrin, Hare and Suranyi 1992; Buch et al. 1994). Experience and human capital in commercial banking is low, state-owned banks themselves are under little corporate control and the shift of monetary management to indirect control instruments may suffer from credibility defects (Bofinger 1992; Winiacki 1993). As a result, commercial banks in formerly centrally planned economies often resort to distress lending to loss-making customers and hope for a government bail-out (Begg and Portes 1992; Schmieding and Buch 1992).

The third set of causes for soft budget constraints are found at the level of the enterprise itself. The lack of private property rights reduces the incentives for firm managers to invest in the long-run value of the firm. In centrally planned economies the objective of fulfilling the mandatory requirements imposed by the planning authorities mostly supersedes profit considerations by state-owned enterprise managers (Brada 1992). In formerly centrally planned economies the lack of corporate control and the insecurity of property rights combines to encourage collusion by workers and managers, leading to excessive leverage and the gradual decapitalisation of the firm through wage and interest payments (Schmieding 1993).² Linking managerial compensations and worker remuneration to performance can help to mitigate some of

2 See Tybout et al. (in Corbo and de Melo 1985) for an analysis of corporate control and enterprise financial performance in the southern cone of Latin America.

these incentive problems (Groves et al. 1993). However, the question of concern for an effective hardening of budget constraints is what to do with loss-making enterprises. A strict bankruptcy rule for all enterprises in payment arrears may fail to provide incentives for cost-minimisation if the cause of bad financial performance is an inherited stock problem (Brada 1992). Recapitalisation, on the other hand, carries a high risk of moral hazard. Ultimately, the state as owner of the firm and as holder of most of its debt through the public banking system is responsible for enforcing bankruptcy rules. However, the state's role as a creditor typically conflicts with its other social objectives. An interesting manifestation of budget softness at the level of the firm is the dramatic rise in inter-enterprise indebtedness during periods of monetary restraint in formerly centrally planned economies (Kornai 1993).³ In China it is estimated that to clear the so-called 'triangular debts' one yuan of fresh money per three yuan of outstanding debt would be required (pers. comm., Dr Fan Gang, Institute of Economics, Chinese Academy of Social Sciences).

Consequences of soft budget constraints

The problems discussed in the previous section are not restricted to socialist economies in transition. Price distortions, financial market imperfections and the subsidisation of inefficient public sectors have characterised a large number of developing countries (and to a lesser extent industrialised countries), with serious macroeconomic consequences (Raiser 1994a). The macroeconomic spillovers of soft budget constraints for enterprises are twofold (Hofman and Koop 1990). First, while profitable firms may react quickly to incentives for profit maximisation, losses continue to be socialised in economies with soft budget constraints. As a result governments in formerly centrally planned economies, as well as in many developing countries, tend to loose control over resource mobilisation in profitable sectors, while at the same time the lack of an exit-threat leads to an increasing absorption of subsidies by loss-makers. To the extent that this process is accommodated by the monetary authorities, economies that fail to harden budget constraints of domestic producers may encounter increasing inflationary pressures. This hypothesis has found substantial empirical support in the hyperinflationary episodes in Poland, Yugoslavia and more recently Russia.⁴

3 This results partly from the undercapitalisation of state-owned enterprises in formerly centrally planned economies making them particularly vulnerable to a reduction in working capital credits from the banking system (Calvo and Coricelli 1992). However, the cases of Romania and Russia demonstrate that while inter-enterprise credits tend to increase when credit growth is reduced they also stay on that level once monetary policy is relaxed again (Balcerowicz and Gelb 1994).

4 Raiser (1994a) extends this argument by focusing on the behavioural inertia that may result from extended periods of budget softness. Using seven macroeconomic indicators of budget softness in a cross-sectional analysis of 33 developing countries, soft budget constraints are found to have significant inflationary and growth reducing effects. Thereby, budget softness serves as a proxy for inflationary expectations in a standard moderate inflation model.

Second, as resources are bound in unprofitable firms, inputs are drawn away from potentially profitable activities. This problem is the more serious the bigger the weight of the inefficient sector in the economy and the smaller the pool of available savings and natural and labour resources (Sachs and Woo 1994). Soft budget constraints for a large share of the enterprise sector thus tend to put the economy on an extensive growth path that quickly runs into supply bottlenecks. Latent pressures for overheating either provoke recurrent macroeconomic boom-and-bust cycles or, once the extensive growth path is exhausted, lead into endemic shortages and stagnation. It follows that the structural adjustment that should follow liberalisation and increasing market orientation in formerly centrally planned economies and developing countries will be achieved quicker if budget constraints are effectively hardened early in the reform process (Raiser 1994a).

Measuring the soft budget constraint

As pointed out above, there are several sources of implicit and explicit subsidies for state-owned enterprises. This section presents a set of empirical indicators for the phenomenon. These indicators are based on the empirical work in the last section of the paper.

Pricing policy. Particular sectors may benefit from preferential input pricing in formerly centrally planned economies pursuing gradual price reform. For China, a comparison of sectoral material input and output deflators may help to gauge the extent of implicit protection through price controls. This may then be compared with calculations of effective protection rates at a sectoral level, published by the World Bank (1994). In European formerly centrally planned economies the development of energy prices, for instance, is a crucial indicator of remaining input protection to the manufacturing sector (Hare and Hughes 1992).

Trade and competition policy. Unproductive enterprises may be protected from domestic and foreign competition by entry barriers (as in the Chinese case by restrictions on inter-regional factor and goods mobility) and tariff walls or high nontariff barriers. Proposed rough proxies for the overall degree of trade protection are import penetration ratios on a sectoral level (Raiser 1994a).⁵

Tax policy. Direct tax subsidies may be measured as the ratio of government expenditure to GDP. Additionally, data on tax waivers may be collected and the share of revenue lost due to preferential tax policies can be quantified for some countries. At the

5 Of course, since in our analysis a standard of reference is missing, the computation of import penetration ratios merely allows us to gauge whether the overall degree of protection has increased or decreased in a specific sector.

microeconomic level, discretionary taxation may be measured by correlating pre and post-tax profit rates across firms (Kornai and Matits 1987).

Credit policy. The real rate of interest on loans from the banking sector provides a ready indicator of soft lending policies. At rates of interest below the market clearing level, some form of credit rationing becomes necessary. The share of credit going to state-owned enterprises, compared with their contribution to domestic value added may allow one to gauge preferential credit access for public firms. The share of nonperforming loans in the portfolio of state-owned banks indicates whether banks were subject to mandatory policy lending in the past. At the micro-level, a negative cross-section correlation between leverage (credits-to-assets ratio) of enterprises and their profit-to-assets ratio points at distorted credit allocation.⁶

Institutional regulations. The existence and enforcement of a bankruptcy law is an essential prerequisite for an effective hardening of budget constraints. Implementation of such laws may differ, however, as discussed below. The rate of bankruptcy among the enterprise population is thus not necessarily the best indicator. The share of loss-making enterprises in total industry and by ownership groups may provide a first-hand indication of tolerance of loss-makers. For enterprise level data, the share of firms whose net debts exceed the value of their assets also provides a measure of financial difficulties in the industrial sector that await resolution. Finally, as the Hungarian case shows, inter-enterprise credits tend to be drastically reduced with the enforcement of bankruptcy (Kornai 1993). The ratio of inter-enterprise debt to total corporate debts or assets may thus represent the degree of institutional softness due to deficient contract and bankruptcy enforcement.

Wages drift. The discrepancy between productivity growth and wage increases represents an indirect method of measuring budget softness at the level of the firm. Data on this may be obtained from an analysis of worker remuneration and employment levels. In most formerly centrally planned economies the phenomenon of soft budgets was linked to the decentralisation of autonomy for management decisions (Jasinski 1993). This has in many cases enhanced the power of worker councils. If this power is not checked by an efficient system of corporate governance, one would expect workers to claim a larger share of the firm's value added than would be due to them under profit maximisation. Alternatively, the lack of a social security system forces state-owned enterprises to retain workers who are effectively redundant in the production process. The effect of such overemployment is technically the same as that of excessive worker remuneration, although the policy conclusions may differ. Using enterprise-level data for various ownership groups, we propose to measure the divergence of wage shares

6 Within an enterprise and over time, profits and credit flows may be negatively correlated, but at the cross-sectional level, profitability should be an indicator of credit-worthiness (see Pinto et al. 1992 for calculations in the case of Poland).

from output elasticities of labour, obtained from Cobb Douglas production function estimates, as an indicator of allocative inefficiency resulting from wage drift. Moreover, we measure the degree of adjustment inertia in state-owned enterprise employment levels compared to that of non-state firms as one symptom of overemployment.

Hardening budget constraints in Europe's formerly centrally planned economies: the cases of the Czech Republic, Hungary and Poland⁷

Macroeconomic performance in the Czech Republic, Hungary and Poland was strikingly similar in the first two years of transition (Table 1). This suggests that the dramatic decline in output in all three countries was largely the result of previous structural distortions (Gomulka 1991; Siebert 1991) and the sudden dismantling of public institutions causing a jump in transactions costs (Schmieding 1993). However, some differences have emerged in the area of price level stabilisation and factor market adjustment. Extremely low unemployment and relative price level stability in the Czech Republic contrast with 15 per cent unemployment and an annual inflation rate in excess of 30 per cent in Poland (EBRD 1994). Hungary differs from the other two countries with its huge budget deficit and protracted financial crisis. Arguably, these differences may be accounted for to some extent by diverging success in credibly hardening budget constraints for state-owned enterprises early in the transition process (Raiser 1993, 1994c). Let us review the evidence for this contention by turning to the indicators derived above.

No major policy differences are observable concerning the first three indicators of budget softness, namely price controls, trade policy and direct fiscal subsidies. Price controls have ceased to play a role in the subsidisation of state-owned enterprises in all three countries. Over 95 per cent of all goods are now traded at market prices, with only few consumer services remaining subject to price controls. For producers, the major reduction in implicit subsidies has come from the rapid increase in energy prices. Changes in the trade regimes have been just as dramatic as price liberalisation. There has been a rapid reorientation of exports and imports to western trading partners and trade protection is low by international standards (Falk and Funke 1993). Taxation policies in the Czech Republic, Hungary and Poland, since the beginning of reforms, have aimed to reduce direct subsidies to state-owned enterprises. Furthermore, the dependence of central governments on taxes from state-owned enterprises has imposed

⁷ This section draws substantially on previous work. See Raiser (1993; 1994c) and Buch et al. (1994). We should note that policies aimed at hardening budget constraints are not the only factors affecting macroeconomic performance, and their effectiveness itself is the function of exogenous influences, such as the initial credibility of and public support for the government, and the ability of the private sector to exert competitive pressures on state-owned enterprises and absorb redundant resources (Kornai 1993). Our results are thus indicative rather than conclusive.

a relatively high tax burden on most firms in the public sector. In this respect the Czech Government seems to have been toughest, while both in Poland and Hungary tax deferments by state-owned enterprises have at times contributed substantially to budget deficits (Raiser 1993). Generally, however, the impact of subsidisation through the fiscal system is likely to be moderate.⁸

The attempt to harden budget constraints in financial markets found its expression first of all in very tight monetary policies. Here significant policy differences may be detected. While in the Czech Republic the overall monetary restriction was accompanied by a dramatic reallocation of credit away from the public sector (Raiser 1994c), the banking sectors of Poland and Hungary have remained paralysed by the legacies of nonperforming debts (Table 2) and old boys networks, which perpetuated distress lending to state-owned enterprises in the first phase of transition. In consequence, Poland particularly has suffered inflation inertia in its transition so far (Raiser 1993). Moreover, the lack of credibility of monetary policies until the beginning of 1991 opened the room for monopolistic price increases by Poland's industrial conglomerates, which delayed the necessary adjustments and increased the initial price level shock (Kulig and Lipowski 1994). More recently, with the introduction of new banking regulations in all three countries, banks have generally become very cautious lenders and the credibility of monetary policy has improved.⁹

Turning finally to institutional determinants of budget softness, we may note that substantial progress has been achieved in all three countries. Differences relate mainly to the enforcement of bankruptcy laws and to developments in labour markets (Raiser 1994c). The Czech Republic limited the profitability crisis in state-owned enterprises by imposing tight wage controls in the first two years of reform (Raiser and Nunnenkamp 1993). Thus, wage drift was avoided, at least until 1993. The resulting low unit labour costs have contributed to the rapid creation of new jobs, and wage discipline has contained inflation. While the enforcement of bankruptcy has been hesitant, the shift of employment out of the public sector has been significant (Raiser 1994c). By contrast, Hungarian firms have not been able to contain wage increases in the early phase of transition. Consequently, when bankruptcy rules were tightened in 1992, a substantial share of industrial output was affected and unemployment increased to 12 per cent. However, one success of the Hungarian approach was the sudden drop in

8 Fiscal deficits in Hungary are mainly the result of increasing transfer payments to pensioners and the unemployed, in spite of the fact that payroll taxes in 1993 added as much as 52 per cent to the wage bill, corresponding to over 17 per cent of GDP (EBRD 1994:27-31). The dilemma for Hungary's fiscal policy is that its social security arrangements have increased adjustment incentives in state-owned enterprises, but the costs to the budget are passed on to investors in the form of higher taxes and high real interest rates.

9 Due to earlier consolidation efforts, the rise in interest margins typically following in the wake of a financial crisis has been contained in the Czech Republic, and banks have become actively involved in enterprise restructuring and new investment finance. In Hungary and Poland, in spite of recent consolidation attempts, access to credit remains a crucial bottleneck in the recovery process.

Table 2 Bad loans in the Czech Republic, Hungary and Poland

	Amount of bad loans	Bad loans as per cent of total loans
Czech Republic	1993 (December):	
	KSc 110 bn 'risky' credits	1987: 0.3 (CSFR)
	<i>of which</i>	
	KSc 62.5 bn temporarily illiquid	1990: 2.6 (CSFR)
	KSc 47.5 bn substandard and nonperforming	1992: 19.3 (risky credits total)
	1993 (September):	
	KSc 194.4 bn 'risky' credits	1993: 22.8 (risky credits total)
	<i>of which</i>	
Hungary		
	1987: Ft 3 bn	1990: 7
	1990: Ft 43 bn	1992: 23-38
	1992: Ft 265 bn	
	1993: Ft 194.3 bn <i>of which</i>	1993: 11.5 in March
	(March)	13.2 in June
	subaverage	(after credit consolidation)
	doubtful	
	and bad	
Poland	1991: zloty 30.5 tr	All banks:
	1992: zloty 60.8 tr	1991: 16
	1993: zloty 85.1 tr (March)	1992: 26
		1993: 32
		Nine state-owned banks:
		1990: 10
		1991: >20
		1992: 30-60

^a The increase in substandard and nonperforming loans is mainly the result of a change in classification in mid-1993.

Source: Buch et al. 1994. 'Overcoming obstacles to successful reforms in economies in transition', *Kiel Studies* 261, Tübingen; NBH, *Monthly Report*, Budapest, various issues.

Table 3 Inter-enterprise credit in Czechoslovakia, Hungary and Poland, 1990-93

	1990				1991				1992				1993
	1	2	3	4	1	2	3	4	1	2	3	4	4
Czechoslovakia													
KSc bn	..	14.5	..	46.8	88.6	113.0	147.1	174.3	170.2	..	154.4	..	..
Per cent of bank credit	..	10.1	..	8.0	13.4	17.0	21.2	23.0	22.8	..	18.6	..	..
Hungary													
Ft bn	..	90.5 ^a		..	..	159.8 ^a		..	197.0	..	..	104.0	..
Per cent of bank credit	..	14.2 ^a		..	..	20.8 ^a		..	26.5	..	..	13.4	..
Poland ^b													
Zloty tr	75.1	81.5	77.3	103	109.1	126.1	143	153.3	177	190.6	197.5	217.3	279.5
Per cent of bank credit	234	207	167	184	140	138	135	145	130	127	125	117	105
Memo				1992		1993							
Payables to receivables		Enterprise total		98.1		86.3							
Ratio by profitability		Net profit		60.0		63.4							
in Polish industry		Gross loss		161.5		132.0							

^a End-year figures.^b Liabilities resulting from the delivery of goods and services (payables).

Sources: *Czechoslovakia:* 1990: Frydman, A.R. and Earle, J.M., 1993, *Privatization in the Transition to a Market Economy in Studies of Preconditions and Policies in Eastern Europe*, Printer, London; 1991-92: Czech Ministry of Finance, unpublished data.

Hungary: Kornai, J., 1993. The evolution of financial discipline under the postsocialist system, unpublished paper, Collegium, Budapest; National Bank of Hungary (NBH), *Monthly Report*, Budapest, various issues.

Poland: BS (various issues); Glowny Urzad, 1994, *Biuletyn Statystyczny*, Central Statistical Office, Warsaw.

inter-enterprise credits (Table 3). In Poland, the initiative for bankruptcy enforcement remained with the tax authorities until recently. Their leniency towards state-owned enterprises has not only made wage controls ineffective but also allowed the build-up of a financial black-hole in the public sector which causes continuing inflationary pressures (Gomulka 1993). The major institutional achievement in Poland is the rapid growth of the private sector, which is currently leading the economy out of recession.

The foregoing analysis does not aim to provide a comprehensive interpretation of diverging developments in the Czech Republic, Hungary and Poland. It leaves out

many cases of reform failures due to remaining budget softness for state-owned enterprises, such as in many of the CIS republics and also Romania (Rostowski 1994). What we hope to have shown is that the measures of budget softness suggested have some explanatory value in comparing macroeconomic performances in formerly centrally planned economies, particularly in the area of price level stabilisation. Of course, the determinants and consequences of budget softness must ultimately be sought at the level of state-owned enterprise behaviour itself. With the set of indicators for budget softness in hand we now proceed to a more detailed examination of the process of hardening budget constraints and the current degree of budget softness in China. The impact on state-owned enterprise behaviour is subsequently tested.

Soft budget constraints and enterprise reforms in China

Between boom and bust: China's macroeconomic performance

The two outstanding features of China's macroeconomic performance are the remarkable growth rate of GDP and the large and increasing fluctuations in economic activity, accompanied by substantial price instability (Table 4). The first fact distinguishes the Chinese experience from that of all reform attempts in European centrally planned economies and contrasts sharply with the economic contraction characterising the initial transition phase in the European formerly centrally planned economies. The second fact, however, is reminiscent of the overheating tendencies in socialist economies analysed in depth by Kornai (1980). Here we argue that China's high growth rate is at least partly attributable to fortuitous exogenous factors (see also Sachs and Woo 1994; Raiser 1994b), while its tendency to reproduce costly inflationary episodes may be related to remaining budget softness for industrial state-owned enterprises, even after substantial hardening in some areas.

The exogenous factors that have made China's growth success possible are only summarised here. The most important ones include the existence of a large pool of natural resources and surplus labour in agriculture; the absence of a macroeconomic crisis at the start of reforms in 1978; a relatively decentralised structure of industrial production, facilitating the rapid expansion of non-state activities; and the geographical location in the most dynamic economic region in the world. The hallmark of China's reforms thus has been the ability to mobilise enormous additional resources for industrial growth through the early and very successful reforms in agriculture. Both labour and savings from rural farmers have fuelled the dynamic development of township and village enterprises. These have both exerted competitive pressures on state-owned enterprises and provided an investable surplus in the form of their workers' savings that has allowed the state-owned industrial sector to continue its extensive growth path. Macroeconomic and relative socio-political stability and the

Table 4 China's macroeconomic performance, growth of gross national product, industrial output and annual inflation rate, 1978–93 (per cent)

	GNP	Industrial output	Retail prices
1978	11.7	..	..
1979	7.6	..	3.6
1980	7.9	9.3	22.2
1981	4.4	4.3	2.6
1982	8.8	7.8	0.1
1983	10.4	11.2	3.7
1984	14.7	16.3	4.8
1985	12.8	21.4	10.7
1986	8.1	11.7	6.2
1987	10.9	17.7	9.1
1988	11.3	20.8	26.7
1989	4.4	8.5	6.4
1990	4.1	7.8	2.2
1991	7.7	14.5	4.0
1992	13.0	22.0	6.7
1993	13.2	30.0	16.0

Note: All figures are end-year, GNP and industrial output are in current 1980 prices. See IMF (1993) in particular for an in-depth analysis of China's macroeconomic cycles.

Sources: International Monetary Fund (IMF), 1993. *China, on the threshold of a market economy* by M. Bell and K. Kochhar, Occasional Paper no. 107, September; China, State Statistical Bureau, 1993 and 1994. *China Statistical Yearbook*, Beijing.

importance of overseas Chinese trade links provided further stimulus for a high rate of investment and in consequence rapid growth of GDP.

Nonetheless, both in 1988–89 and more recently since mid-1993, the increasing strains of this development strategy became apparent (Table 4). The structural imbalances inherited from the Maoist planning system were not remedied as long as sufficient surplus resources were available. Clearest evidence for this is the constant share of industry in GDP of slightly below 50 per cent, and the continuing deficit in services, characteristic of socialist economies. China's bottlenecks in infrastructure, particularly energy and transport, are causing growing concern to policy makers. The mounting tensions within China's industrial sector are illustrated by the decline in the profitability of state-owned enterprises in the wake of accelerated price liberalisation after 1992 (see later).

Through government intervention, unprofitable state-owned enterprises are enabled to compete with the dynamic non-state firms for increasingly scarce resources. Only the reduction of government support can stop the chronic investment hunger of

state-owned enterprises subject to soft budget constraints (Kornai 1980; Woo et al. 1994). Because it takes time to gather the political strength for such a curtailment of customary support to public enterprises, China's economy has repeatedly gone through an inflationary cycle before a drastic stabilisation attempt and a resulting slump in economic growth set the stage for a new round of economic liberalisation (Naughton 1991; IMF 1993). It is hypothesised that with each new round of reforms the burden of subsidies to unprofitable and unclosable state-owned enterprises shifted to another policy area. The following section reviews the six major areas of budget softness. We expect to find budget hardening in some areas but substantial remaining softness in others, explaining the cyclical pattern of China's macroeconomic development since 1978.

Have budget constraints on China's state-owned enterprises been hardened?

Price controls and domestic competition

One method which was used in the past to protect some Chinese industrial state-owned enterprises (particularly in the consumer goods industries) was to control the price of their inputs at an artificially low level and guarantee deliveries at this price. At the same time, output prices were fixed above international levels and the industries concerned were protected from competition by tariff and nontariff barriers and restrictions on the entry of non-state firms. However, during the reform period, entry of domestic firms into most sectors has been almost completely liberalised and the two-tiered price system of controlled and market-influenced prices was introduced in 1984 to allow enterprises to make a gradual transition from plan to market allocation. The government has increased the pace of liberalisation over the past three years, and by 1993 the great majority of sales were made at market prices (Table 5). It has been announced that virtually total price liberalisation will be achieved by 1995. In 1994, only a small proportion of industrial sector inputs, including raw materials, energy, utilities, capital goods and transport services, were still subject to price controls at levels below market clearing prices.

Consequently, although subsidisation of inputs has continued to be a source of subsidy for individual state-owned enterprises, with the exception of subsidised credit (discussed later) it is not likely to be so for the state-owned enterprise sector overall. Subsidised inputs from non-industrial state-owned enterprises, such as utilities and transport services, are typically available to state-owned enterprises, non-state firms and consumers, but once again these subsidies are paid for by the state-owned enterprise sector. The cost of providing subsidies on input prices will be borne by other state-owned enterprises who are required to provide these plan price inputs. Only state-owned enterprises are required to sell their output at plan prices, so only their outputs can represent subsidised inputs for state-owned enterprises. On the other hand, not only state-owned enterprises but some consumers and non-state firms get access to such subsidised inputs, consumer goods, utilities and infrastructure services, such as

Table 5 Proportion of output and sales at fixed, guided and market prices, China 1978-92

	1978	1987	1990	1991	1992
Agricultural output					
Fixed prices	92.6	29.4	25.0	22.2	17.0
Guided prices	1.8	16.8	23.4	20.0	15.0
Market prices	5.6	53.8	51.6	57.8	68.0
Industrial output					
Fixed prices	97.0	..	44.6	36.0	20.0
Guided prices		..	19.0	18.3	15.0
Market prices	3.0	..	36.4	45.7	65.0
Retail sales					
Fixed prices	97.0	33.7	29.7	20.9	10.0
Guided prices	..	28.0	17.2	10.3	10.0
Market prices	3.0	38.3	53.1	68.8	80.0

Source: International Monetary Fund (IMF), 1993. *China, on the threshold of a market economy* by M. Bell and K. Kochhar, Occasional Paper no. 107:27.

transport and electricity. So, as state-owned enterprises supply all of these subsidised inputs but do not receive all of the subsidised inputs themselves, the net effect on the state-owned enterprise sector profitability is likely to be somewhat negative. This cannot therefore be expected to represent a major source of subsidy, but in fact will be a tax on this sector. This is particularly the case for state-owned enterprises producing outputs which are still largely priced below market levels, such as petroleum producers and providers of utilities and infrastructure services. To the extent that state-owned enterprises are compensated for losses that they make due to their sale of subsidised goods and services, this will be reflected either in fiscal subsidies or soft loans from the banking system. These will be discussed and measured in following sections.

On the other hand, the state-owned enterprise sector overall may derive subsidies from continued control of its output prices above international levels. If this situation is maintained by controls on entry of domestic non-state firms, this subsidy will be provided exclusively to the state-owned enterprise sector. However, if these subsidies are maintained only by import controls, the benefits will also be shared by protected domestic non-state firms. While high levels of protection still exist, as is discussed later, barriers to entry, particularly in the consumer goods sector, where this form of subsidy was most prevalent, have largely disappeared.

One of the probable reasons for the rapid increase in the proportion of state-owned enterprises making losses and the declining profitability of the public sector in the last two years (Table 6), has been the rapid reduction in the level of subsidised inputs,

Table 6 Performance of industrial state-owned enterprises in central budget, China, 1985–1994

	1985	1988	1989	1990	1991	1992	1993	1994
Per cent of loss-making industrial state-owned enterprises*	9.6	10.9	16.0	27.6	25.8	23.4	33.0	50.0
Net pre-tax profit of industrial state-owned enterprises (per cent of capital)*	23.5	20.6	17.2	12.4	11.8	9.7	..	..
Subsidies to loss-making state-owned enterprises (billion yuan, current) ^{a**}		18.0	44.6	59.9	57.9	50.6	84.4	..
Subsidies as per cent of central government deficit**	439	134	158	158	104	..	..	..
Subsidies as per cent of GNP	2.1	3.2	3.8	3.3	2.6	2.1	3.2	..

^a All state-owned enterprises.

Sources:

* China, State Statistical Bureau, 1993. *Yearbook of China's Industrial Statistics*, Beijing.

** World Bank, 1992. *Reform and the Role of the Plan in the 1990s*, World Bank Country Study, Washington, DC:95, 242.

including investment funds, available to state-owned enterprises concurrent with the decontrol of output prices and the drop in many consumer good output prices due to non-state firm entry. Table 7 reports the ratios of input to output price deflators in 1992 for 13 sectors of Chinese industry, calculated with 1980 as the base year. In all sectors, input prices have increased more rapidly than output prices. Generally, manufacturing prices have been liberalised to the benefit of raw material and intermediate goods producers. This reflects the fact that under the planning system, the prices of raw materials were more heavily repressed than consumer goods prices in relation to international prices. As discussed detail earlier, during the reform period, competition from the nonstate firm sector has driven down the prices of consumer goods. The divergence of input and output prices has been highest in the electricity, machinery, chemicals, petroleum, food products and garments sectors. The first four are capital intensive producer goods and energy sectors whose output is still subject to considerable price controls.¹⁰ The food industry has evidently suffered from agricultural price liberalisation, and the food and garments sector have both experienced considerable competition from the non-state firm sector which has driven down prices. The relative movement of input and output prices is roughly compatible with the World Bank's (1994) conclusion about effective protection rates in Chinese industrial sectors in 1992.

10 The IMF (1993:29) estimates that 70 per cent of losses in industrial state-owned enterprises are policy induced and due to price controls in the area of energy, public transport and other public utilities.

Protection was found to be highest in downstream consumer goods, many of which produce negative value added at world prices.

With respect to domestic competition policy there is considerable anecdotal evidence that provinces and smaller localities protect their less efficient enterprises by restricting the entry of products from other provinces and countries into local markets. This either is done physically, with *de facto* customs barriers, or by controlling the purchasing policies of local government-owned distribution networks (IMF 1993:19). Evidence was sought on this issue in the survey of 300 state and non-state enterprises analysed

more fully later in the paper. Table 8 reports the results of the survey on this and related issues. It found that in the four cities surveyed, between 30 per cent of state-owned enterprises and 20 per cent of all enterprises reported restraints on their freedom to sell their output in other regions. These restraints were highest in Shanghai and serious in Guangzhou. Interestingly, firms in the special economic zones of Xiamen and Shenzhen reported that they were less inhibited by such restrictions. This would imply that these two special economic zones are increasingly losing their distinct policy characteristics.

The most important impact on the degree of domestic competition, however, has come from the growth of the non-state firms (Jefferson and Rawski 1994). The high rate of productivity growth in non-state firms and their resulting high profitability has led to some competition in factor markets but more importantly has restrained state-owned enterprises in their pricing policies (McKinnon 1991). Overall, price liberalisation and the entry of non-state firms have exposed inefficient state-owned enterprises to market pressures. The higher the pace of price liberalisation, the higher the resulting losses of state-owned enterprises. The question is whether subsidies were available from other sources.

Table 7 Input and output price deflators and effective rates of protection, selected industrial sectors, China, 1992

	Ratio of input to output price deflator	(Value added world prices)/(value/added domestic prices)
Metallurgy	121	1.62
Electricity	195	-6.10
Coal	133	8.82
Petrol	146	-16.10
Chemical	167	0.47
Machinery	185	-0.35
Construction	124	-0.33
Forestry	126	-0.04
Food products	175	-4.29
Textiles	135	-0.63
Garments	183	-0.65
Paper	137	-1.50
Other	138	-0.94

Sources: First column, data supplied by Professor Zheng Yuxin, Chinese Academy of Social Sciences, Institute of Quantitative Economies; second column, own calculations based on World Bank, 1994. *China: Foreign Trade Reform*, World Bank Country Study, Washington, DC:74.

Table 8 Freedom of enterprises to sell output, buy inputs, 300 enterprise survey (per cent)

	Sell output in other regions	Choice of input supplier	Choice trading firms	Chose quantity of inputs
Guangzhou				
State	58.1	95.5	95	77.5
Collective	54.5	100	100	90.1
Town and village	100	100	100	0
Joint venture	80	100	100	100
Total	61.7	96.8	96.5	80.7
Shenzhen				
State	73.9	100	95	90.5
Collective	75	100	100	100
Joint venture	78.9	94.7	94.3	85.3
Wholly foreign-owned	100	100	100	100
Total	77.1	97.1	95.3	89.1
Xiamen				
State	70	100	100	100
Collective	87.5	94.1	94.1	93.8
Town and village	100	100	100	100
Joint venture	66.7	100	100	100
Wholly foreign-owned	84.6	100	100	91.7
Total	79.6	98	97.8	95.8
Shanghai				
State	60.9	93.8	95.3	90.6
Collective	100	100	100	50
Town and village	26.3	73.7	78.9	73.7
Joint venture	71.4	92.9	92.9	78.6
Total	56.6	89.9	91.9	84.8

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

Trade policy. Starting from a position of virtual autarky in the 1960s, China has rapidly increased its integration into the world economy since its reforms commenced in 1978. The ratio of exports plus imports to GNP increased from 12.8 per cent in 1980 to 38.6 per cent in 1992, corresponding to an import penetration of 24 per cent (IMF 1993:62).¹¹ At a sectoral level, data are only available for very broad industrial aggregations. In chemicals and allied products, import penetration rates increased from

15.55 per cent in 1985 to 20.55 per cent in 1992. In machinery and transport equipment, the increase was from 20.31 per cent to 23.97 per cent. However, no improvement occurred in light, textiles, rubber, minerals and iron industries, whose composite import penetration has remained at 10 per cent since 1985 (China, State Statistical Bureau 1993). Indeed, the Hirschman commodity concentration indices for imports has remained quite high throughout the 1980s at approximately 43, indicating that import penetration has only occurred in limited categories of commodities. Moreover, accounting for pure processing trade, import volumes would have to be adjusted downward by up to 40 per cent (von Kirchbach and Aguado 1994).

Despite a broad range of trade policy reforms aimed at lowering the protection of Chinese producers (see World Bank 1994 for details), China's average tariff rate has consistently increased since 1987. China's unweighted and trade-weighted mean tariff rates and the standard deviation of its tariffs in fact exceed those of seven of the nine highest protection, large developing countries (World Bank 1994:56-7).¹² Duty drawbacks on imported intermediate goods have further increased effective rates of protection and effectively sheltered local producers of final goods.

There are also significant nontariff barriers associated with the mandatory import plan and the system of giving national foreign trade companies exclusive rights to import particular commodities, as well as with separate systems of import licensing and controls. It has been estimated that non-overlapping nontariff barriers in all these categories apply to 51 per cent of imports (World Bank 1994:63). Although the increasing openness has exposed Chinese producers to some external competition, tariffs and nontariff barriers therefore remain high and provide a significant level of protection for Chinese industry. The recent re-emphasis on trade reforms, particularly after exchange rate unification in January 1994, is likely to lead to increasing pressures for subsidies from state-owned enterprises so far sheltered from international competition.

Direct and indirect subsidies. Because price deregulation and the entry of non-state-owned competitors has exposed the inefficiency of many state-owned enterprises, massive direct and indirect government subsidies are being made to this sector to keep loss-makers afloat. Approximately 50 per cent of state-owned enterprises were reported to be making operating losses in early 1994 (Table 6). In 1985 only 10 per cent of industrial state-owned enterprises were making losses, but this had increased to 23 per cent by 1992 and 33 per cent by 1993. State-owned enterprise losses were expected to total 84.4 billion yuan (just under US\$10 billion) in 1993, which represents 3.2 per cent of

11 However, these ratios are somewhat exaggerated by the fact that the official exchange rate used to convert traded goods into domestic currency has been significantly over-valued (by perhaps 30-40 per cent) for most of this period.

12 These countries were India, Pakistan, Brazil, Argentina, Colombia, Egypt, Hungary, Kenya and the Philippines. Only India and Pakistan had higher protection rates than China.

GNP and exceeds the central government's budget deficit, which was only 2.5 per cent of GDP in 1992 (World Bank 1993:7).

In addition to direct subsidies through the budget, loss-making state-owned enterprises receive several forms of indirect assistance. These include relief from paying capital charges for the use of government-owned assets; postponement or waiver of taxation; preferred access to subsidised credit through the state-owned banking system; and tolerance of non-repayment of bad debts by the banking system. Table 9 contains estimates of the approximate total level of fiscal and banking system subsidies to state-owned enterprises. The first part of Table 9 contains estimates of the level of fiscal subsidies to state-owned enterprises due to their failure to pay required taxation and an adequate return on capital employed. Two alternative target rates of return on the government's equity in the assets of industrial state-owned enterprises¹³ are considered: the average government bond rate and China's cost of international borrowing.¹³ The government bond rate could be seen as the financial cost of capital for the Chinese government (or the financial discount rate), as the great bulk of its borrowing is from domestic sources. The international cost of capital for China on the other hand represents the economic opportunity cost of capital for China (or the social discount rate) since China is now borrowing freely abroad for its marginal capital requirements (for a discussion of the method of determining the financial and social discount rates in open economies, see Perkins 1994c). The implicit financial and economic cost of fiscal subsidies to industrial state-owned enterprises has been rising rapidly during the 1980s. By 1992, the financial cost of these subsidies could have been as high as 167 billion yuan (US\$30 billion) having risen from only 5.4 billion yuan in 1980. By 1992, the economic cost of these subsidies, using the international cost of borrowing as the opportunity cost of capital, could have been as high as 605 billion yuan (US\$110 billion), up from 103 billion yuan in 1980.

Substantial indirect subsidies are also received by the state-owned enterprises via the banking system. In 1984 the government split the functions of the People's Bank of China making it into a form of central bank, and establishing several separate banks with responsibility for different sectors of the economy. However, these banks were still required to advance policy loans to loss-making state enterprises to prevent them from failing, and to the preferred projects of local authorities, regardless of their financial viability (IMF 1993:31). In 1988, the banking system was recentralised in response to the blow-out in bank lending in the decentralised system. Interest competition between the different banks was discouraged and the demarcation of lending on sectoral grounds was strengthened (IMF 1993:21).

13 Data on international interest rates and the cost of China's foreign borrowing are drawn from International Financial Statistics, *Yearbook*, no 46, 1993. Data on China's domestic interest rates and bond rates are from the Association of Finance and Banking, 1993, *Almanac of China's Finance and Banking*, People's China Publishing House, Beijing.

Thus the banks have continued to ration credit by government directive, rather than via higher real interest rates and on the basis of customers commercial viability. In 1993, 80 per cent of bank credit was advanced to the state-owned enterprises, although it produced only 48 per cent of output in 1992. The collective sector received only 8 per cent of credit allocated, though they produced 38 per cent of industrial output, and others (foreign and individual-owned firms) received 12 per cent of credit and produced 13.3 per cent of output (Singh and Jefferson 1993; SSB 1993:10).

In most years since the reforms commenced, real bank lending rates have been negative (World Bank 1992:236–37). In 1989 the People's Bank of China raised nominal borrowing rates for state-owned enterprises to 11.3 per cent and they have remained at this level since then, but this was still less than half the inflation rate in urban areas in 1993. On the other hand, nominal borrowing rates for non-state-owned enterprises have been over 20 per cent in 1993–94 (Lin et al. 1994; Zhang Zhouyuan 1994). It appears that the government is unwilling to charge positive real interest rates to state-owned enterprises because of the negative impact it would have on their profitability.¹⁴ Furthermore, because of the weak implementation of bankruptcy laws, approximately 20 per cent of bank loans to state-owned enterprises are estimated to be nonperforming (*China Daily*, discussions with IMF representative, Beijing, October 1994). This represents a further implicit subsidy to industrial state-owned enterprises, as presumably no interest was paid on this proportion of outstanding loans.

The second part of Table 9 includes approximate estimates of the total indirect subsidies paid to state-owned enterprises via the banking system over the 1986–92 period, measured in financial and economic terms. Again the government bond rate and the international interest rate applying to Chinese borrowings were used as a measure of the financial cost of capital to the Chinese Government and the economic cost of capital to China, respectively. The subsidy implied by the gap between these rates and the average interest rates charged on loans to industrial state-owned enterprises was calculated. In addition, an approximate estimate of the subsidy to state-owned enterprises from defaults on loan interest payments was included. These calculations indicate that the financial cost of the interest rate subsidies to industrial state-owned enterprises could have been as high as 100 billion yuan (US\$18 billion) in 1992, having risen sharply from 0.9 billion yuan (US\$6 billion) in 1980. The economic cost of these subsidies, excluding any negative externalities due to the politically induced segmentation of capital markets, was estimated to be 208 billion yuan (US\$38 billion) by 1992, up sharply from 12.1 billion yuan (US\$8 billion) in 1980. Adding these banking system subsidies to the fiscal subsidies calculated above, the total financial value of

14 Recent reforms, announced in November 1993, would provide for a decentralised commercial banking system, fully accountable for its lending operations. Policy lending would be diversified to development banks. The legal steps towards such a system have been taken. However, in the recent inflationary episode of 1993–94, the government still relied mainly on direct credit controls (Raiser 1994b).

Table 9 Net fiscal and banking system subsidies to industrial state-owned enterprises, 1980-92 (yuan billion)

	1980	1986	1988	1990	1991	1992
Capital employed by state-owned enterprises (SOEs)						
1 Fixed assets (gross value) of industrial SOEs	373.0	674.5	879.5	1161	1355.6	1566.9
2 Working capital, cf industrial SOEs	118.3	170.5	238.4	373.0	425.2	939.4
3 Total capital assets employed	491.3	845.0	1117.9	1534.0	1780.8	2506.3
4 Outstanding working and fixed capital loans	42.8	141.7	208.5	255.6	423.6	495.6
5 Estimated government equity (3-4)	448.5	703.3	909.4	1278.4	1357.2	2010.7
Cost of capital (per cent)						
6 Average nominal international interest rates	8.00	7.90	8.20	11.33	..	10.37
7 Plus devaluation of Chinese RMB (av. annual rate 1980-92)	23.71	23.71	23.71	23.71	23.71	23.71
8 Total nominal cost of foreign borrowing	31.71	31.61	31.91	35.05	23.71	34.08
9 Average nominal cost of foreign borrowing, 1980-92	31.3	31.3	31.3	31.3	31.3	31.3
10 Nominal government bond rate	4.00	10.00	10.00	14.00	10.00	9.50
11 Average nominal government bond rate, 1980-92	9.6	9.6	9.6	9.6	9.6	9.6
12 CPI increase	6.00	6.00	18.50	2.10	2.90	5.40
13 Inflation in industrial goods prices	-0.98	13.70	9.60	10.80	10.97	15.60
Fiscal subsidies						
14 Pre-tax profit industrial SOEs	90.7	134.1	177.5	150.3	166.1	194.4
15 Profit retained by enterprise (per cent)	0	17	19	16	15	14
16 Estimated profits and taxes remitted	90.7	111.7	144.7	127.0	141.8	167.8
17 - Nominal rate of return on fixed assets (per cent)	24.3	19.9	20.2	12.9	12.3	12.4
18 Subsidies to loss making industrial SOEs	3.2	5.1	8.1	33.6	35.1	35.4
19 Net remittances (16-18)	87.5	106.6	136.6	93.4	106.7	132.4
20 Estimated taxation due (55 per cent of 14)	49.9	73.8	97.6	82.7	91.4	106.9
21 Estimated equity payments (19-20)	37.6	32.9	38.9	10.7	15.4	25.4
22 Est. capital charge due to govt.(@ int. interest rate)(9x5)	140.6	220.5	285.1	400.7	425.4	630.3
23 Est. capital charge due to govt.(@ bond rate)(11x5)	43.0	67.4	87.2	122.5	130.1	192.7
24 Total fiscal subsidy to SOEs (@ int. interest rate)(20+22-19)	103.0	187.6	246.1	390.0	410.0	604.8
25 Total fiscal subsidy to SOEs (@ bond rate)(20+23-19)	5.4	34.5	48.2	111.8	114.7	167.2
Interest rate subsidies						
26 Nominal interest rates, working capital (per cent)	7.90	7.90	9.00	11.30	11.30	11.30
27 Nominal interest rate, fixed assets (per cent)	10.80	10.80	13.30	11.88	11.16	9.72
28 Weighted nominal domestic interest rates (per cent)	10.10	10.21	12.38	11.74	11.19	10.31
29 Average nominal domestic interest rates, 1986-93 (per cent)	9.31	9.31	9.31	9.31	9.31	9.31
30 Implicit subsidy of SOEs borrowing (c/f int. rate) (29-9) (per cent)	22.0	22.0	22.0	22.0	22.0	22.0
31 Implicit subsidy of SOEs borrowing (c/f bond rate) (29-11) (per cent)	0.3	0.3	0.3	0.3	0.3	0.3
32 Approximate loan default rate of SOEs (per cent)	20.0	20.0	20.0	20.0	20.0	20.0
33 Estimated interest rate subsidy (@ int. rate)(30x4+9x32x4)	12.1	59.6	87.7	107.5	178.1	208.3
34 Estimated interest rate subsidy (@ bond rate)(31x4+11x32x4)	0.9	28.7	42.3	51.8	85.9	100.5
Total subsidies						
35 Total subsidy (@ international interest rate) (24+33)	115.1	247.2	333.8	497.5	588.1	813.2
36 Total subsidy (@ govt bond rate) (25+34)	6.3	63.3	90.5	163.6	200.6	267.7

Note on calculation of net subsidies to state-owned enterprise sector:

1. Subsidies will be approximately equal to expected return on the government's equity holdings in the state-owned enterprise sector (rate of return equal to either the government bond rate or China's international borrowing rate);
2. Plus tax which should be paid on profits earned by state-owned enterprise sector, at the rate of 55 per cent (for period 1980–92);
3. Plus the opportunity cost of outstanding loan funds provided by the Chinese state-owned banking system to the industrial state-owned enterprise sector (the opportunity cost of these funds again equal to either the government bond rate or to China's international borrowing rate);
4. Minus net transfers to the government budget from the industrial state-owned enterprise sector, including company income taxes, profit remittances including capital charges for equity capital used, and adjustment taxes minus any subsidies paid to loss making enterprises;
5. Minus interest payments to banks from the industrial state-owned enterprise sector.

A more accurate estimate of the level of subsidies to industrial state-owned enterprises would also, from the total in Table 9:

1. Subtract credits for the cost borne by the state-owned enterprise sector for the provision of any community service obligations. These would include, *inter alia*, sales of industrial goods for consumers at plan prices which were below international prices, and the provision of housing, health and education services to workers in excess of requirements placed on other types of employers;
2. Add subsidies to state-owned enterprises from the sale of plan priced industrial outputs (mainly consumer goods) which were above international prices;
3. Subtract the net earnings (or add the net use) of foreign exchange by state-owned enterprises sector, multiplied by the difference between the opportunity cost of foreign exchange, the shadow exchange rate, and the official exchange rate;
4. Subtract credits for the industrial state-owned enterprises for repressed interest rates paid on deposits they held with the state banking system. A lack of available data on these items makes it impossible to calculate their value, but as both positive and negative subsidies are included in the list, some could be expected to balance out others, and the inclusion of these items may not make a significant difference to the total subsidy figure.

Sources: China, State Statistical Bureau, *Statistical Yearbook 1993*, *Yearbook of China's Industrial Statistics*, 1993, and *China Statistics Abstract*, 1993; World Bank, 1992, *Reform and the Role of the Plan in the 1990s*, World Bank Country Study, Washington, DC: Tables 6.10–6.12:236–8; Zhao Shiji, 1994, The subsidisation of Chinese state-owned enterprises, paper presented to a conference on China and East Asian trade policy, The Australian National University, Canberra; N. Lardy, 1992, *Foreign Trade and Economic Reform in China, 1978–1990*, Cambridge University Press, Cambridge: 148; World Bank, 1994, *China: Foreign Trade Reform*, World Bank Country Study, Washington, DC, February: Table A2.8:299.

subsidies to industrial state-owned enterprises could have been as high as 268 billion yuan (US\$49 billion) in 1992, having risen from 6 billion yuan (US\$ 4 billion) in 1980. This represents approximately 10 per cent of GDP in 1992. If the cost of international borrowing is used as the opportunity cost of capital employed in the industrial state-owned enterprises, the economic cost of these subsidies could have been as high as 813 billion yuan (US\$ 148 billion) in 1992, or a staggering 30 per cent of GDP. Clearly the banking system and tax authorities have come to shoulder the major burden of keeping afloat those state-owned enterprises which are not fit to face hardened budget constraints in other areas.

Loose financial discipline. Prior to 1983, state-owned enterprises were not charged company income tax. All surplus income after the payment of production costs was transferred to the government. In 1983 the government tried to provide state-owned enterprise workers and managers incentives by allowing them to retain some of their

profits. At this stage a company income tax rate of 55 per cent was levied on the profits of all large and medium sized state-owned enterprises. In addition, a variable adjustment tax was imposed to maintain remittances to the government from individual enterprises at approximately the 1982 level (Takahara 1992:50). Joint ventures were charged a tax rate of only 33 per cent. As no distinction was made between taxes and capital charges levied on state-owned enterprises, the higher enterprise tax level and adjustment taxes for state-owned enterprises was supposed to include some form of capital charge. However, the 55 per cent tax rate was rarely applied. Instead, enterprise by enterprise deals were struck on the level of taxes and profits which would be remitted to the government. As part of the November 1993 reforms, a uniform tax rate of 33 per cent was introduced for all enterprises. However, it is not yet evident if this will be applied uniformly.

In July 1994, the State Taxation Administration Vice Minister, Xiang Huaicheng indicated that taxation arrears by the state-owned enterprise sector reached 16.3 billion yuan in June and that the sector would no longer be given tax breaks (*China News Digest*, 9 August 1994). However, the analysis in Table 9 indicates that implicit fiscal subsidies due to loose tax and capital charge enforcement were indeed much higher even in 1992. In this respect the 1993 tax reforms may face their biggest test as yet.

Involuntary inter-enterprise credits, mainly between state-owned enterprises, termed debt chains or triangular debt, are again becoming a major problem in China. In 1991 they were estimated at 300 billion yuan, corresponding to one-sixth of total bank credit. In 1991-92, a government campaign headed by Zhu Rongji, now the head of the People's Bank of China, sought to eradicate the problem of chain debts by injecting 55.5 billion yuan into the system. Loans were provided to indebted state-owned enterprises, who were required to pay off their most pressing debts. This process eventually cleared debts of 183.8 billion yuan. However, as Zhu Rongji pointed out in December 1992, this was only a temporary measure and the basic causes of triangular debt remained. By 1994, triangular debt in the north-eastern province of Liaoning had increased from 32 billion yuan (US\$4.6 billion) to 47 billion yuan. In Inner Mongolia, debt chains total 10 billion yuan, and violent incidents have been reported in the coal and iron and steel industries as workers who are not being paid have demanded that enterprises owing their firms cash pay up (*South China Morning Post*, 21 March 1994).¹⁵ Both provinces are particularly heavily industrialised and face a pressing need for structural adjustment. Inter-enterprise credits have been used as a cushion against resource reallocation due to relative prices changes.

15 Rostowski (1994) argues with reference to Russia and Romania that any government financed bail-outs carry substantial moral hazard risks, and he proposes a scheme for issuing securities against inter-enterprise debts as part of a market-based solution to the problem.

Institutional reforms: bankruptcy, corporate governance and privatisation. While a bankruptcy law was introduced in 1986 and became effective in 1988, it has rarely been enforced in the state-owned enterprise sector, despite the chronic losses which many are making. In 1988, a law was enacted making firms into independent legal entities that were responsible for their own profits and losses, and that expected to restructure or accept bankruptcy if making losses. However, up until 1992 there were practically no bankruptcies reported in the state-owned enterprise sector, though it is now common in the non-state sector. Since 1992, there has been an increased resolve by the government to force unviable state-owned enterprises into bankruptcy. Regional case reports indicate that the process of restructuring is starting to accelerate (IMF 1993:24–8). Nonetheless, the total number of bankrupted state-owned enterprises since 1988 may not exceed a few thousand out of over 100 thousand large and medium scale state-owned enterprises (Singh and Gelb 1994:14).

After so many years of providing subsidies and protection to the state-owned enterprises, the government is likely to face a credibility problem in attempting to implement its bankruptcy policy. Experience from Eastern Europe indicates that state-owned enterprises are unlikely to accept that the government will really enforce a hard budget constraint, and tend to act on the assumption that it will continue to bail them out. Conservative economic forces within the government and vested interests in the state-owned enterprises recognise that in the absence of a universal social security system the government will be unwilling to risk the social unrest which could result from the widespread bankruptcies of loss-making state enterprises (see also Hardy 1992). The November 1993 Central Committee announcement that China will move towards implementing such a social security system, funded out of taxes, may give the government more scope to allow state-owned enterprises to go bankrupt and for individual enterprises to dismiss workers.¹⁶

To date, one of the most popular ways of dealing with chronic loss-making enterprises, particularly in the service sector, has been to merge them with profitable state-owned enterprises. This policy is likely to continue, in line with the November 1993 reform package (World Bank 1993:7). However, most mergers have been initiated by the enterprises' line departments to overcome the problem of having to declare losses, rather than by the more successful state-owned enterprises themselves, acting on market signals (interview with Cai Xing Huo, Deputy Director, Economic System Reform Committee, Shanghai, 20 April 1994). Consequently, unless managements of the newly merged enterprises are permitted to sack redundant workers, reorganise work

16 The Eastern European examples caution against generous social safety nets with universal coverage. On account of China's continuing fiscal problems a large increase in revenue would be required to finance such a scheme without risking acceleration of inflation. An employment restructuring fund, along the lines of the National Renewal Fund recently introduced in India, that is available only to workers from bankrupted state-owned enterprises may be a more affordable option for China, given its fiscal constraints.

practices and improve product quality and marketing, this process may result in little rationalisation of inefficient enterprises. Instead it will merely enable the losses of inefficient plants to be offset against the profits of the more efficient state-owned enterprises with which they merge.

In the area of corporate governance, the Chinese Government has opted against the privatisation of state-owned enterprises. The 1993 reform package announced that all large-scale state-owned enterprises will eventually be transformed into joint-stock companies, whose shares would be held by workers, management and other state-owned enterprises, presumably including institutional investors. However, even in Eastern Europe, privatisation has proved to be the most time consuming reform step, often encountering the biggest resistance from state-owned enterprise insiders. This is likely to repeat itself in China, if a serious attempt at changing corporate governance structures is made.

In sum, budget constraints are still soft for Chinese state-owned enterprises, particularly due to cheap credit and a deficient tax system, but also due to the lack of far-reaching reforms in the area of contract and bankruptcy enforcement.

Budget softness and enterprise behaviour: microeconomic evidence

Before the start of the empirical analysis of the effects of budget softness it should be noted that industrial reforms in China have also provided positive incentives for behavioural changes in state-owned enterprises, particularly in the area of productivity-linked worker remunerations and state-owned enterprise manager autonomy (Groves et al. 1993). It has been shown that those measures were quite successful in raising individual state-owned enterprise productivity. However, profit incentives only work in firms that are potentially profitable. Loss-makers may still exhibit adjustment inertia, partly because administrative and legal constraints impede a reallocation of resources at the firm level, partly because it is cheaper to lobby for subsidies (see also Hay et al. 1994).

The nature of the interaction between positive profit incentives and deficient sanctions in shaping state-owned enterprise behaviour is particularly debated in the labour market. While supporters of China's gradual industrial reforms argue that rising worker incomes have led to a dramatic increase in worker effort and hence productivity (Jefferson and Rawski 1994), others argue that excessive wage payments in state-owned enterprises are the chief reason for their declining profitability (Woo et al. 1994). The latter position might also point at the factual inexistence of an unemployment threat in most state-owned enterprises, setting incentives for workers' councils, with some influence over the enterprise management, to maximise worker income in each period. As Hardy (1992) has pointed out, the absence of unemployment insurance causes

state-owned enterprises to overemploy or overpay, thus increasing the likelihood of future losses.¹⁷

The microeconomic data set analysed in this section may be used to determine whether state-owned enterprises have tended to experience wage drift (overpayment of workers) or overemployment. First, we make use of the available data to quantify three aspects of budget softness that we have identified as important in the Chinese context: autonomy in decision-making; availability of subsidised bank loans; and discretionary taxation. Only if the microeconomic evidence confirms that state-owned enterprises are subject to softer budget constraints than non-state firms, would a comparison of enterprise behaviour make sense.

Soft budget constraints: microeconomic indicators

The data in the remainder of this section come from a survey of 300 state-owned, collective, and foreign-funded enterprises, surveyed 1993 in four coastal cities in China, namely Guangzhou, Shenzhen, Xiamen and Shanghai (Perkins 1994a). The ownership, industrial and provincial distribution of the surveyed enterprises are given in Table 10.

Autonomy. As part of the survey, managers were asked to indicate who had primary responsibility for decision-making over a range of issues related to production and distribution: the firm's director, management or board of directors; the enterprise's supervisory authority; or jointly between the enterprise management and supervisory authority. Note that lack of managerial autonomy is the counterpart to budget softness, as a firm that has no freedom to pursue its own goals can hardly be made responsible for the losses resulting from its actions (Nagaoka and Atiyas 1990).

In all four cities surveyed, the state-owned enterprises had less autonomy in decision-making than joint ventures, wholly foreign owned enterprises and township and village enterprises, but in Shanghai and Shenzhen, collective enterprises had even less autonomy than state-owned enterprises (Table 11). Among the state-owned enterprises surveyed, those in Shenzhen and Shanghai appeared to have the greatest autonomy in decision-making. Correspondingly, a higher percentage of state-owned enterprises in Xiamen reported supervisory authorities had total or partial decision-making responsibility. Guangzhou's surveyed state-owned enterprises had somewhat less autonomy than those in Shenzhen and Shanghai but more than those in Xiamen. This is counter intuitive as Perkins (1994a) found that total factor productivity growth over 1980-92 in Xiamen was highest among the four cities. However, non-state

¹⁷ Unemployment insurance was introduced in 1986 in China and nominally covers around 70 million employees (IMF 1993). However, dismissals have been rare as the insurance is typically paid out of the state-owned enterprises' welfare fund, which also covers pensions and other transfers to existing workers and their families. The insurance element for the firm rather than the worker is thus nonexistent.

Table 10 Industrial sector, location and ownership of enterprises surveyed (number of firms)

	Textiles	Garments	Household appliances	Machine tools	Iron and steel	Metal products	Total ^a
Guangzhou							
State	11	3	6	2	8	-	30
Collective	-	11	1	1	-	1	14
Joint venture and foreign	-	-	2	-	2	-	4
Total	11	14	9	3	10	1	48
Shenzhen							
State	1	4	9	-	-	-	14
Collective	-	5	4	-	-	-	9
Joint venture and foreign	7	15	12	-	1	1	36
Total	8	24	25	-	1	1	59
Xiamen							
State	7	-	1	1	-	-	9
Collective	-	10	-	1	1	2	14
Joint venture and foreign	4	11	3	-	1	1	20
Total	11	21	4	2	2	3	43
Shanghai							
State	4	10	5	2	2	2	25
Collective	1	9	-	-	-	-	10
Joint venture and foreign	1	2	-	-	-	-	3
Total	6	21	5	2	2	2	38
Grand total	36	80	43	7	15	7	188

^a Data were collected on 300 firms, but these firms included high-tech firms and firms in a variety of other industries. In addition, the data set was incomplete for a number of firms, so they were dropped from the estimating sample.

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

firms in Xiamen accounted for 80 per cent of all surveyed firms, while the proportion in Shanghai (with lowest total factor productivity growth) was only 34 per cent. Since non-state firms have higher autonomy in all locations, Xiamen benefited from the more liberal regime accorded to the majority of its firms.

Sources of finance. Although only a small proportion of state-owned enterprises reported that they had access to Plan allocations of investment finance, no other

Table 11 Locus of decision-making in surveyed firms (per cent)

	Director, board of directors, firm management	Supervisory authority	Joint with supervisor	Workers committee
Guangzhou				
State	50.1	15.2	34.8	-
Collective	60.0	-	40.0	-
Town and village	-	-	100	-
Joint venture	75.0	25.0	-	-
Wholly foreign-owned	-	-	-	-
Total	52.4	13.1	34.4	-
Shenzhen				
State	72.3	5.6	22.2	-
Collective	55.5	-	33.3	11.1
Town and village	-	-	-	-
Joint venture	92.9	4.8	2.4	-
Wholly foreign-owned	100.0	-	-	-
Total	83.1	4.2	11.3	1.4
Xiamen				
State	10.0	30.0	60.0	-
Collective	43.8	18.8	37.5	-
Town and village	100.0	-	-	-
Joint venture	77.7	11.1	11.1	-
Wholly foreign-owned	100.0	-	-	-
Total	59.1	14.3	26.5	-
Shanghai				
State	69.9	8.1	22.1	-
Collective	50.0	-	50.0	-
Town and village	80.6	3.9	10.7	4.9
Joint venture	91.4	4.9	3.7	-
Total	74.1	6.8	17.3	1.9

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

ownership type received any such allocations (Table 12). However, in recent years the state-owned enterprises and collective enterprises appear to have had better access to bank finance than the town and village enterprise and foreign-funded enterprise sectors. Self-financing is a much more significant source of funds for town and village enterprise, joint venture, wholly foreign-owned and even collective enterprises than for

Table 12 Sources of investment finance of surveyed enterprises, by ownership, 1980-92 (per cent)

	State	Collective	Town and village	Joint venture	Wholly foreign owned
From plan allocation					
1980-84	12	-	..	-	..
1985-89	9	-	-	-	-
1990-93	12	-	-	-	—
From bank loans					
1980-84	82	80	..	25	..
1985-89	72	67	81	24	37
1990-93	76	78	53	47	27
From share/bonds					
1980-84	-	-	..	-	..
1985-89	1	-	-	-	-
1990-93	3	-	-	6	-
From self financing					
1980-84	6	20	..	75	..
1985-89	18	33	19	76	63
1990-93	9	22	47	47	73

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

Table 13 Evidence of adverse selection in the financial system, relationship of bank lending to profitability

	Total firms		State firms		Non-state firms	
	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
Profitability	-0.066	-1.359	-0.236	-2.440	-0.042	-0.501
Constant	0.337	22.907	0.790	28.124	0.810	33.844

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

state-owned enterprises. Finally, shares and bonds still formed an insignificant source of investment funds in all the surveyed enterprises in 1990-92.

In order to determine whether the higher reliance of state-owned enterprises on bank financing was due to soft loans provided by state-owned banks to ailing state-owned enterprises, a simple regression was run to establish the relationship between access to

bank finance and enterprise profitability. The proportion of total investment provided by bank loans (LFI) was regressed on profits as a ratio to capital (profitability). The results for all firms surveyed and for state-owned enterprises and non-state firms separately are given in Table 13. For state-owned enterprises there was a significant and negative relationship between access to bank loans for investment and profitability. When the regression was run for non-state firms, the relationship between profitability and reliance on bank funds was not significant. In the light of the massive share of bank funds going to the public sector it may be concluded that, among the surveyed state-owned enterprises, distress lending by state-owned banks does appear to be a phenomenon.¹⁸

Profitability and government interventions. The relationship between post and pre-tax profitability for state-owned enterprises and non-state firms was examined to determine if this is another area where soft budget constraints are evident. An insignificant relationship between post and pre-tax profitability in the state-owned enterprise sector would imply a high level of intervention from state-owned enterprises' line authorities, related to adjusting the tax and capital charge payment liabilities of state-owned enterprises to protect them from low profitability or losses. The results of a simple regression of the log of pre-tax on the log of post-tax profits are given in Table 14. A significant and positive relationship was found between the two variables for both state-owned enterprises and non-state firms. However, the coefficient on the log of pre-tax profitability was lower for state-owned enterprises, 0.76, than for non-state firms, 0.85. This indicates there was a closer relationship between post and pre-tax profitability for non-state than for state-owned enterprises, possibly because there is a greater degree of intervention by line departments in state-owned enterprises, driving a bigger wedge between post and pre-tax profitability. To some extent this would have reduced the incentives for profit maximisation in state-owned enterprises. However, since the coefficient on state-owned enterprises is both positive and significant, these results indicate that there does not appear to be a very serious level of distortion introduced by authorities tailoring tax and capital charge payment liabilities of state-owned enterprises to their profitability.

Overall, budget constraints for the state-owned enterprises in our sample are softer than for non-state firms. However, the differences seem to be smaller than suggested by the macroeconomic evidence, possibly due to the special policy conditions in China's coastal provinces.

18 Of course, it may also indicate that profitable SOEs simply did not need bank loans. As long as real interest rates remained negative, however, and the credit plan was prominent in the allocation of bank funds, this interpretation is less plausible. Clearly, SOEs with soft budgets should demand as much credit as they can get. Government fiat largely determined how much that was.

Table 14 Relationship between post and pre-tax profitability, state and non-state firms

	Total firms		State-owned firms		Non-state firms	
	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
Log pre-tax profit	0.82	36.40	0.76	22.50	0.85	31.80
Constant	-0.43	-3.51	-0.24	-1.26	-0.60	14.11
Adj. R ²	0.615		0.49		0.66	
No. of observations	941		597		344	

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

Consequences for enterprise behaviour

The starting point for our analysis in this subsector is the neo-classical theory of the firm. This arguably is not a very appropriate framework for the study of enterprise behaviour in transition economies as it is not clear what marginal conditions and profit maximisation should imply in a regime of distorted prices and limited managerial responsibility. However, non-state firms have been subjected to market prices much earlier than state-owned enterprises and their budget constraints may generally be considered to be substantially harder (Byrd and Lin 1990).¹⁹ If non-state firms behave in a manner consistent with the neo-classical theory of the firm, a comparison with the behaviour of state-owned enterprises may allow one to identify deviations from profit maximisation in the latter.

Allocative efficiency in Chinese industry. To begin with we assume Cobb Douglas technology in each sector of Chinese industry. Under the additional assumption of constant returns to scale, profit maximisation at the level of the firm implies, by Euler's theorem, that the output elasticities of factor inputs are equal to the factor shares in total output. If technological change is neutral, output elasticities will be constant over time and factor shares should also be constant. Allocative inefficiency may then be measured as the deviation of factor shares from estimated output elasticities. More specifically, the hypothesis of wage drift in state-owned enterprises implies that labour share should be higher than the output elasticity of labour in the state sector.

In an economy where factor mobility is ensured and factor prices are set exogenously in the market, profit maximisation would also imply that factor returns should be equalised across firms. Thus Jefferson and Xu (1991) calculate the coefficient of variation

19 The non-state firms in our sample include collective enterprises, township and village enterprises, joint ventures, wholly foreign-owned firms and private enterprises. In our analysis all were lumped together in order to have a statistically meaningful sample.

of marginal returns to labour in a cross-section of firms in 1980 and 1987 to test whether some convergence of factor returns has taken place.²⁰ Jefferson, Rawski and Zheng (1992) test for the convergence of factor returns between state-owned enterprises and collective enterprises using aggregate data. In our sample, we can compute both measures to see whether some kind of inter-ownership labour market has developed and the extent to which state-owned enterprises are subject to soft budget constraints.

We start by summarising the data on labour shares in our sample. Table 15 gives the ratio of total worker compensation in the value of net and gross output of the firms in our sample subdivided both by industrial subsector and ownership.²¹ Total worker compensation was measured as the sum of wages plus bonuses plus total welfare payments. The latter item was available only in some cases and did not include in-kind benefits, most importantly worker housing. Particularly for state-owned enterprises, in which these elements of worker income are very important, Table 15 gives a lower bound estimate of labour shares. Additionally, the number of observations is very unequal for each year. In order to ensure a meaningful sectoral and ownership disaggregation, only the years 1980, 1985, and 1990–92 are presented. Bearing the shortcomings of the data in mind, we can identify the following trends.

First, labour shares have increased in state-owned enterprises during the 1980s and have remained roughly constant since the early 1990s. The increase in labour shares is much more accentuated in textiles, garments and machine tools. In the (respectively) more capital intensive and competitive iron and steel, heavy metal products and electrical appliances sectors, labour shares have either declined or are still at a very low level. Second, labour shares in non-state firms have remained more or less stagnant during the entire reform period. This would suggest that our initial assumption of Cobb Douglas technology with neutral technical change was appropriate. Again, at a sectoral level, non-state firms display an increase in labour shares in garments, textiles and also heavy metal products. Third, labour shares in non-state firms overall have exceeded those in state-owned enterprises for most of the reform period. Only in 1991 did the share of labour in the net value of output in state-owned enterprises exceed that in non-state firms. On a sectoral level, state-owned enterprises in textiles garments and machine tools have higher labour shares in state-owned enterprises than non-state firms. The converse is true for electrical appliances and heavy metal products, while iron and steel displays no clear pattern.

Overall, Table 15 yields a contradictory picture of wage and employment developments in state-owned enterprises. The increase in labour shares mirrors the

20 Full convergence will never be fully measurable because of heterogeneity of inputs. A sufficiently exact measure of the quality and quantity of labour inputs is typically unavailable.

21 Net value of output is a Chinese statistical category corresponding to value added in the state national accounts methodology. It is gross output net of material inputs and depreciation.

Table 15 Labour shares (broad measure) in gross and net value of output by ownership and industry^a

	Gross value of output					Net value of output				
	1980	1985	1990	1991	1992	1980	1985	1990	1991	1992
State-owned enterprises	0.097	0.099	0.134	0.129	0.138	0.329	0.388	0.523	0.577	0.548
Textiles	0.069	0.089	0.125	0.127	0.182	0.298	0.355	0.615	0.682	0.811
Garments	0.141	0.140	0.208	0.217	0.226	0.284	0.349	0.622	0.909	0.753
Electrical appliances	0.124	0.068	0.101	0.073	0.065	0.418	0.316	0.427	0.293	0.254
Machine tools	0.132	0.179	0.224	0.238	0.221	0.341	0.478	0.690	0.746	0.638
Iron and steel	0.078	0.074	0.064	0.062	0.061	0.379	0.528	0.409	0.422	0.400
Heavy metal	0.018	0.022	0.044	0.043	0.049	0.066	0.076	0.380	0.256	0.325
Non-state firms	0.203	0.188	0.186	0.166	0.162	0.520	0.540	0.600	0.527	0.615
Textiles	–	0.018	0.036	0.050	0.065	–	–	0.190	0.624	0.379
Garments	0.179	0.207	0.224	0.221	0.196	0.491	0.546	0.689	0.564	0.747
Electrical appliances	0.180	0.103	0.122	0.092	0.108	0.303	0.513	0.357	0.329	0.356
Machine tools	0.352	0.443	0.152	0.152	0.177	0.864	0.598	0.585	0.490	0.590
Iron and steel	0.127	0.099	0.094	0.099	0.090	0.497	0.384	0.536	0.4663	0.292
Heavy metal	0.239	0.253	0.294	0.261	0.239	0.478	0.642	0.968	0.730	0.837

^a Labour shares are calculated as $(W+W^s) \times L/Q$, where W is average wage + bonuses, W^s is average welfare payments per worker and Q is gross or net value of output.

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

results of Woo et al. (1994), and could indicate wage drift. However, the diminishing gap between labour shares in state-owned enterprises and non-state firms could also indicate convergence of factor returns. Clear conclusions concerning allocative inefficiency require the comparison of labour shares with estimated output elasticities.

The estimated constrained Cobb Douglas production functions, allowing for neutral technological change were specified as follows:

$$\ln VA_{it} = \ln A + \alpha_1 \ln L_{it} + \beta_1 \ln K_{it} + \lambda_t + e_{it} \quad (1)$$

where :VA=net value of output, deflated with sectoral producer price deflators

α_1 = output elasticity of labour

β_1 = output elasticity of capital

λ = rate of technical progress

L = end-year total workforce

K = end-year total capital stock ²²

e_{it} = random error term

and the i and t denote individual and time subscripts respectively.

$$\ln Q_{it} = \ln A + \alpha_2 \ln L_{it} + \beta_2 \ln K_{it} + \gamma_2 \ln M_{it} + \lambda_t + e_{it} \quad (2)$$

where: Q = gross value of output, deflated with sectoral producer price deflators

$\alpha_2, \beta_2, L, K, \lambda$ as before

γ = output elasticity of material inputs

M = materials used, deflated by sectoral material price deflator, from Zheng Yuxin, CASS

e_{it} = random error term

and the i and t are individual and time subscripts as before.

Models (1) and (2) were estimated for six industrial subsectors, using pooled cross-sectional data from 1980 to 1992. For the textiles, garments, electrical appliances and iron and steel industries, pooling over time allowed separate estimation by ownership also. Table 16 gives the results of the ordinary least squares estimates of the output elasticity of labour (α). We can see that in the two factor case (α_1), the output elasticity of labour is around 0.60 across all industries. This implies a profit share of 40 per cent, not inconsistent with data from other developing countries. Significant differences may be observed in the heavy metal products sector which has a lower α_1 of only 0.43. In all sectors except the garments sector, the output elasticity of labour is higher in state-owned enterprises than in non-state firms. Chow tests for parameter constancy, also displayed in Table 16, show that this difference is statistically significant at the 5 per cent level. This confirms the importance of computing output elasticities from enterprise level data if data on labour shares are to be properly interpreted.

For the three factor case, there is considerably more cross-sectoral variation in the output elasticities of labour. The standard errors are higher (indicated by lower t-values) which suggests a problem of multicollinearity of the regressors. Significant differences between state and non-state firms are also evident except for the electrical appliances sector. The values for α_2 are significantly higher for state-owned enterprises in the iron and steel subsector, while they are lower in garments and textiles.

Before we proceed to comparing these results with those on labour shares in Table 15, one further complication should be noted. The ordinary least squares regressions were run assuming constant and similar technologies in all firms in a given subsector. However, F-tests and a Chi-square test for equal variance, both reported in Table 16,

²² The capital stock was computed from accumulated real investment data as outlined in Jefferson, Rawski and Zheng (1992). The deflator used was computed by Zheng Yuxin and taken from Perkins et al. (1993).

Table 16 Output elasticities of labour, constrained Cobb Douglas production function, two and three factor inputs, by ownership and industrial subsectors^a

	Two factors				Three factors			
	All α_1	SOEs α_1	NSFs α_1	F-test for constant parameters across ownership	All α_2	SOEs α_2	NSFs α_2	F-test for constant parameters across ownership
Textiles	0.60 (12.7)	0.83 (13.8)	0.41* (1.80)	8.65	0.11 (4.7)	0.16 (6.32)	0.29 (2.1)	3.82
Tests for equal variance								
Time	5.4	2.7*	1.6*		2.99	3.97	0.19*	
Individual	9.1	6.1	13.4		28.6	20.1	16.4	
X ² -test	303.4	218.6	56.9		361	204.1	94.1	
Garments	0.66 (15.4)	0.62 (8.9)	0.72 (13.3)	3.89	0.28 (8.52)	0.06 (1.30)	0.32 (7.6)	5.23
Tests for equal variance								
Time	0.28*	1.4*	1.2*		0.22*	0.33*	0.30*	
Individual	10.3	8.5	11.6		11.5	10.6	10.6	
X ² -test	818	125	649		941	148	705	
Electrical appliances	0.58 (10.3)	0.83 (8.6)	0.45 (6.00)	3.54	0.13 (4.5)	0.14 (2.61)	0.12 (3.17)	1.95*
Tests for equal variance								
Time	2.6*	0.31*	2.6*		4.29	3.8	1.5*	
Individual	7.8	2.07*	10.7		5.9	7.7	6.5	
X ² -test	329	133	210		316	123	190	
Machine tools	0.65 (13.6)			—	0.35 (7.2)			—
Tests for equal variance								
Time	0.62*				3.4			
Individual	8.03				5.1			
X ² -test	110.2				105.2			
Iron and steel	0.67 (8.5)	0.69 (4.6)	0.61 (7.71)	3.17	0.46 (6.9)	0.55 (4.61)	0.33 (5.1)	9.79
Tests for equal variance								
Time	0.7*	0.7*	0.27*		1.0*	0.3*	0.22*	
Individual	12.6	15.2	1.13*		21.0	16.0	0.15*	
X ² -test	177	118.4	9.54*		229.8	164.6	5.11*	
Heavy metal products	0.43 (3.40)			—	0.14 (2.9)			—
Tests for equal variance								
Time	0.9*				0.6*			
Individual	13.9				3.34			
X ² -test	78.9				50.9			

^a t-statistics in brackets. * Not significant at 5 per cent level.

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

Table 17 Output elasticities of labour, constrained Cobb Douglas production function, two and three factor inputs, fixed and random effects estimation, by ownership and industrial subsectors^a

	Two factors			Three factors		
	All α_3	SOEs α_3	NSFs α_3	All α_4	SOEs α_4	NSFs α_4
Textiles	0.71 (9.63)	0.94 (10.6)	0.79 (2.5)	0.15 (2.44)	0.12 (2.9)	0.31* (1.69)
P-stat ^b	0.008**	0.05**	0.40	0.14	0.03*	0.89
Garments	0.77 (13.6)	0.28* (1.51)	0.89 (14.4)	0.22 (5.5)	0.08* (1.42)	0.24 (3.8)
P-stat	0.018**	0.29	0.018**	0.037**	0.39	0.0
Electrical appliances	0.64 (7.5)	0.62 (5.4)	0.59 (4.7)	0.22 (6.2)	0.11 (1.59)	0.27 (5.6)
P-stat	0.37	0.15	0.32	0.006**	0.51	0.0018**
Machine tools	0.87 (11.8)			0.51 (8.75)		
P-stat	0.18			0.03**		
Iron and steel	0.78 (7.3)	0.67 (6.2)	0.71 (6.16)	0.50 (6.0)	0.45 (4.88)	0.64 (3.41)
P-stat	0.87	0.91	0.05	0.50	0.77	0.27
Heavy metal products	1.08 (6.7)			0.32 (3.28)		
P-stat	0.01**			0.14		

^a t-statistics in brackets.

^b P-stat is computed for the null hypothesis that fixed effects are dominant over random effects. A star indicates rejection of the null hypothesis at the 5 per cent level.

* Not significant at 5 per cent level.

** Reject null hypothesis at 5 per cent level.

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

reject the null hypothesis of equal variance across individuals for most sectors. It appears that the error term is picking up the effect of sample heterogeneity, due to incorrect measurement of heterogenous labour or different levels of technology for each firm. Note that the F-tests for equal variance over time cannot reject the null hypothesis that technology is time invariant in most subsamples. Thus labour shares can be compared to output elasticities gained from cross-sectional data pooled over time. Taking account of sample heterogeneity, we re-estimated models (1) and (2), allowing for fixed or random individual effects.²³ Whether fixed or random effects are present can

23 Technically, this implies letting the constant $\ln A$ in (1) and (2) vary across individuals or across individuals and time, i.e. $\ln A_{it}$ for fixed and $\ln A_{it}$ for random effects.

be tested using a Hausman specification test. The results of this test and revised estimates of the output elasticities of labour (α_3 and α_4) in models (1) and (2) are given in Table 17. Rejection of the Hausman test is indicated by an insignificant P-statistic. In this case random effects estimates are given. The results are not strongly affected by this alteration, except for the heavy metal producing sector, although some estimated coefficients are no longer significant.

What do these calculations imply for the behaviour of state-owned enterprises in comparison to non-state firms? The strongest result emerging from Tables 15 through 17 is that state-owned enterprises by the early 1980s were paying workers only a fraction of their marginal revenue product. Much of the wage increase during the 1980s was in this sense an improvement in allocative efficiency. However, by the early 1990s labour shares in the net value of output in state-owned enterprises exceeded the output elasticity of labour (α_1 or α_3) in some sectors. This is most evident for the garments sector, but also for machine tools using the pooled output elasticity (All) in the latter case. Moreover, had worker housing and in-kind payments to employees, which are much more prevalent in state-owned enterprises, been included, labour shares by the 1990s may well have exceeded the output elasticity of labour in state-owned enterprises in the textiles industry, too. In the three factor case, state-owned enterprises in garments and textiles have broad labour shares exceeding the output elasticities of labour. For non-state firms, the output elasticities of labour are more or less equal to the labour shares except for heavy metal products, where they are much lower.²⁴ Hence we cannot reject the hypothesis that non-state firms in all sectors except for the latter are allocatively efficient. In conclusion, it seems that wages drift may have become a problem in some state-owned enterprises since the late 1980s but the phenomenon is not accentuated enough to draw firm conclusions about the macroeconomic consequences of inefficient behaviour. While falling profitability in state-owned enterprises is certainly related to rising labour shares in the gross and net value of output, this development has to some extent remedied dramatic allocative inefficiencies prevailing at the beginning of the reform period.

Table 18 summarises the above results in a form that allows direct inferences to be drawn about the degree of convergence of factor returns in Chinese industry. It gives the average marginal revenue product of labour, calculated as $\alpha_1 \times$ net value of output/workforce for each industry. Table 18 additionally presents the average nominal wage in each sector. We first note that there has been little variation in nominal wages across sectors over the whole reform period. The standard deviation of average worker compensation across the whole sample is much lower than for any other variable. In the light of continuing government intervention in relation to average wage guidelines, we

24 Using the fixed effects estimate of Table 18, labour shares in this sector are also lower than the output elasticities, which in this case exceed unity.

Table 18 Marginal revenue product and average wage by ownership and industry, 1980–92 (10,000 yuan)

	MRPL = $\alpha_1 \times \left(\frac{\text{NVO}}{\text{workforce}} \right)$					Average = nominal wage				
	1980	1985	1990	1991	1992	1980	1985	1990	1991	1992
State-owned enterprises										
Textiles	0.280	0.370	0.458	0.433	0.316	0.088	0.145	0.335	0.364	0.436
Garments	0.223	0.289	0.376	0.268	0.444	0.092	0.138	0.332	0.370	0.491
Electrical appliances	0.201	0.774	0.822	1.371	1.820	0.087	0.171	0.378	0.461	0.525
Machine tools	0.195	0.262	0.424	0.432	0.661	0.088	0.155	0.345	0.376	0.495
Iron and steel	0.242	0.539	0.770	0.888	1.182	0.091	0.168	0.387	0.425	0.572
Heavy metal	0.640	0.820	0.380	0.709	0.874	0.098	0.145	0.290	0.348	0.554
Non-state firms										
Textiles	–	–	1.101	0.437	1.342	–	0.397	0.551	0.548	0.895
Garments	0.137	0.176	0.346	0.481	0.342	0.100	0.153	0.363	0.407	0.467
Electrical appliances	0.177	0.338	0.423	0.668	0.897	0.079	0.268	0.391	0.450	0.566
Machine tools	0.093	0.178	0.372	0.511	0.594	0.116	0.132	0.269	0.325	0.397
Iron and steel	0.150	0.259	0.376	0.499	1.009	0.109	0.159	0.469	0.6243	0.708
Heavy metal	0.069	0.094	0.167	0.232	0.197	0.068	0.143	0.446	0.549	0.553

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

may interpret the increase in labour shares reported above as part of a conscious government strategy (Hay et al. 1994). Table 18 also implies that wages may in fact be the exogenous variable in the determination of factor intensities at the level of the firm. Thus the positive difference between labour shares and output elasticities in state-owned enterprises in some subsectors may be due more to overemployment than wages drift.

With respect to the convergence hypothesis the results in Table 18 are ambiguous. Within industrial subsectors, non-state firms seem to close the gap in labour productivity from below except for the heavy metal producing sector, but the latter result may be due to the lack of a separate output elasticity of labour for both ownership categories in this subsample. Still, both in textiles and electrical appliances the remaining gaps are substantial. Moreover, the standard deviation of marginal revenue products (not shown in Table 18) in both ownership categories is around twice the value of the mean, implying a rejection of convergence at the level of inter-firm comparisons. Clearly, the non-homogeneity of measured factor inputs and the remaining imperfections in Chinese factor markets interact to produce this failure of convergence at the firm level. In the case of state-owned enterprises, average wages exceed the

marginal revenue product of labour in the textiles and garments subsectors, confirming the above indication of allocative inefficiency in these two sectors. Overall, allocative inefficiencies in state-owned enterprises are apparent but not dramatic. This suggests that behavioural differences over the whole reform period might be better detected by looking at the dynamics of employment adjustment.

Soft budget constraints and adjustment inertia in the labour market. No enterprise will consistently deviate from profit maximisation all the time, if at least some incentives in that direction are present. However, with soft budget constraints, an adjustment to an exogenous shock, such as an increase in factor prices or a fall in demand, may take much longer. Factor market imperfections affecting all firms may further increase adjustment inertia. This final subsection thus attempts to measure the speed of adaptation of state-owned enterprises to a change in factor prices and output. Similar studies have been provided for the case of state-owned enterprises in formerly centrally planned economies by Estrin, Schaffer and Singh (1992) and are suggested by Earle (1993).

Starting from the assumption of Cobb Douglas technology with constant returns to scale, the profit maximising condition that the marginal revenue product of labour should equal the average wage may be written as follows:

$$\alpha \cdot \frac{VA \cdot p}{L} = w$$

$$\ln L_{it} = \ln \alpha - \sigma_0 \ln \left(\frac{w}{p_{it}} \right) + \sigma_1 \ln VA_{it} + e_{it} \quad (3)$$

where σ_0 and σ_1 are elasticities of factor demand with respect to the factor price $\left(\frac{w}{p} \right)$ and real output (VA). For Cobb Douglas technology σ_0 and $\sigma_1 = 1$.

Assuming a partial adjustment process of L in (3), the model can be written as:

$$\ln L_{it} = \varepsilon \left(\ln \alpha - \sigma_0 \ln \left(\frac{w}{p_{it}} \right) + \sigma_1 \ln VA_{it} \right) + (1 - \varepsilon) \ln L_{i(t-1)} + e_{it} \quad (4)$$

where ε is the adjustment coefficient to the long-run equilibrium in (3).

Estimation of (4) using time pooled cross-sectional data for the years 1980–92 suffers from the complication that the lagged endogenous variable is likely to take over any existing autocorrelation in the error terms. Hence, dynamic models in the recent literature have been specified as error correction models, yielding consistent estimates of both the long-term parameter coefficients and a short-term adjustment coefficient.²⁵ The Cobb Douglas technology assumed here requires that the long-run elasticity of

²⁵ Running an error correction model in principle requires testing for the co-integration of the endogenous variable and the regressors. Our time period was too short to provide a robust test for co-integration. We report the error correction model results and leave it to the reader to judge its quality by the plausibility of the long-term coefficients.

labour demand with respect to the real wage and to the value of output be unity. The error correction model specification of (4) can be written as:

$$\Delta \ln L = C - d \left[\ln L(i_{t-1}) - \sigma_L \ln \left(\frac{w}{p} \right)_{i(t-1)} + \sigma_q \ln VA_{i(t-1)} \right] - S_L \Delta \ln \left(\frac{w}{p} \right)_i + S_q \Delta \ln VA_i + e_{it} \quad (5)$$

where: d = adjustment coefficient

σ_L = long-run real wage elasticity of labour demand

σ_q = long-run output elasticity of labour demand

S_L, S_q = short-run elasticities

The term in brackets is the long-run equilibrium relationship. Thus σ_L and σ_q are obtained by dividing the estimated coefficients through d .

Table 19 reports the results of estimating model (5) for four of the six industrial subsectors, where a subdivision by ownership was feasible. Standard errors of the long-run coefficients were obtained using the Bewley transformation. Table 19 clearly reveals a substantial degree of adjustment inertia in Chinese labour markets. An adjustment coefficient of 0.1 implies that equilibrium is only reached after 10 years. Moreover, this extremely long adjustment period is even longer for state-owned enterprises, and the difference from non-state firms is statistically significant at the 1 per cent level except for the electrical appliances sector.

Table 19 Results of error correction model of labour demand, by ownership and four industrial subsectors, 1980-92^a

	Textiles		Garments		Electrical appliances		Iron and steel	
	SOE	NSF	SOE	NSF	SOE	NSF	SOE	NSF
Variable adjustment coefficient d	0.044 (4.79)	0.152 (2.10)	0.051 (2.97)	0.137 (5.46)	0.075 (2.26)	0.117 (2.43)	0.038 (2.74)	0.097 (1.89)
Long-term coefficient σ_L	0.540 (1.89)	3.303 (2.25)	0.496 (1.25)	0.460 (2.77)	0.915 (1.62)	0.614 (0.87)	2.709 (2.58)	0.910 (2.41)
σ_q	0.857 (9.32)	0.637 (3.98)	0.298 (1.77)	0.758 (14.58)	0.584 (3.32)	0.762 (3.95)	0.678 (5.67)	0.948 (12.90)
R_2	0.18	0.76	0.23	0.37	0.30	0.33	0.25	0.25
F-test for d SOE = NSF	134.7 (0.00)		26.69 (0.00)		1.79 (0.18)		20.20 (0.00)	

^a t-statistics in brackets.

Source: Survey of 300 enterprises conducted by Frances Perkins in conjunction with Professor Zheng Yuxin, Institute of Quantitative Economics, Chinese Academy of Social Sciences, Beijing, May to September 1993.

Unfortunately, the implied long-run elasticities reported in Table 19 deviate quite substantially from unity and some coefficients are not statistically significant. The results of our dynamic model should thus be interpreted cautiously. As a final test for the robustness of our conclusion concerning a higher degree of adjustment inertia in state-owned enterprises, we estimated the relationship in (3) using first differences. The results, not presented here for reasons of space, confirm the hypothesis of adjustment inertia in state-owned enterprises, as reflected in a lower correlation of the difference in employment levels with changes in real wages and the value of output.

Conclusions

This paper has drawn a link between the reform of state-owned enterprises in economies in transition and their macroeconomic performance. The theoretical basis for this link is Janos Kornai's analysis of soft budget constraints in centrally planned economies. In formerly centrally planned economies soft budget constraints may persist for some time, if the reform of property rights and accountability in state-owned enterprises is delayed. An analysis of transition processes in Central and Eastern Europe reveals that financial legacies in capital markets, the lack of corporate control in decentralised state-owned enterprises, and deficient bankruptcy enforcement are the primary causes of remaining budget softness. A comparison of reform achievements in these areas in the Czech Republic, Hungary and Poland suggests that the failure to harden budget constraints on state-owned enterprises effectively and early in the transition process carries substantial macroeconomic costs, particularly in terms of persistent inflationary pressures.

Macroeconomic performance in China has been remarkably good since the start of its transition process. Nonetheless, inflationary pressures continue to threaten the sustainability of reforms and macroeconomic control seems to be considerably more difficult now than 15 years ago. Inflationary pressures currently being experienced in China may represent the beginning of a structural shift to higher levels of inflation unless remedies can be rapidly introduced into the state-owned enterprise sector. The analytical framework chosen in this paper helps to reconcile a satisfactory growth performance with remaining bottlenecks in the reform process. While we acknowledge the positive role that increasing autonomy, competition with the non-state firm sector and incentives for profit maximisation have played in the improvement of state-owned enterprise performance, a review of a set of indicators for remaining budget softness reveals that loss-makers still face substantial protection in China. The financial costs of this protection in the form of direct and indirect subsidies are estimated to have reached as much as 10 per cent of GNP by 1992, and the economic, opportunity cost of subsidies are likely to be considerably higher than this. It is only because of the dramatic growth of private savings and the dynamism of the non-state sector that China has been able to

finance subsidies of this order of magnitude. However, recent inflationary episodes reveal the limits to this strategy. The current policy challenge is to further improve the efficiency of state-owned enterprises and particularly to reduce the waste of resources by perpetual loss-makers.

With respect to the consequences of Chinese industrial reforms for the behaviour of state-owned enterprises, microeconomic evidence from sample survey data suggests that the majority of state-owned enterprises have improved their allocative efficiency over the course of the 1980s. Since the 1990s there is some indication that the pressures from workers have tended to result in excessive increases in average remunerations compared to the rate of growth of labour productivity. More important for the future development of state-owned enterprises in China is the extremely slow pace of adjustment in employment levels which suggests that state-owned enterprises may be facing an increasing overemployment problem, as market pressures from domestic and international competitors increase. It is essential that the Chinese government permit state-owned enterprises to shed redundant workers rapidly if a further deterioration of their profitability is to be avoided.

Apart from these policy conclusions our microeconomic analysis supports the validity of microeconomic theory in the analysis of enterprise adjustment in China. For the case of non-state firms, the hypothesis of profit maximisation was strongly supported and even for state-owned enterprises it could not be rejected out of hand, at least in recent times. In this respect, we should note that the empirical results were gained from an analysis of firms exclusively located in the coastal regions of China. More research including state-owned enterprises from inland provinces, less subject to competitive pressures from imports and non-state firms, is clearly needed if conclusions about the effects of budget softness on state-owned enterprise behaviour are to be drawn. Moreover, a separate analysis of the behaviour of loss-makers along the lines suggested by Hay et al. (1994) would be helpful in further strengthening the hypotheses about the behavioural consequences of budget softness at the firm level. Finally, our work provides a basis for a more comprehensive analysis of profitability decline in state-owned enterprises. The distinction of behavioural and exogenous causes of profitability decline would clearly enable an improvement in the formulation of Chinese economic policy.

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