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The Impact of Shareholding Reform on Chinese Enterprise, 1995-2001

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Abstract

During the 1980s and early half of the 1990s, the entry of new firms, the strengthening of managerial incentives, and the accumulation of non-state assets in the state sector set the stage for China's shareholding experiment, involving the formal conversion of thousands of state-owned enterprises to joint stock companies. Shareholding conversions have also been extensively employed in China's collective-owned enterprises. This paper examines the impact of the conversion of these state- and collective-owned enterprises on a range of measures relating to both equity and efficiency. The analysis distinguishes between the direct effects of conversion holding the asset structure fixed and the induced effect, which involves reductions in the proportion of state-owned assets. For SOEs and COEs, conversion contributes to overall increases in both current productivity and innovation. At least during 1995-2001, the period spanned by this study, by encouraging employment growth or slowing layoffs, conversion seems to have benefited incumbent workers. Among SOEs, the most robust impact of conversion is the reallocation of resources and effort to R&D and new product development, which suggests greater attention to deep restructuring. Conversion greatly enhances the ability of converted firms to attract new investment from outside the state sector. Within the sample used in this paper, the state typically retains its assets after conversion: an indication that state asset sales or stripping is not widespread. The shareholding experiment seems to be creating a channel, in addition to those served by new domestic private enterprise and foreign-owned firms, for the emergence of a domestic managerial and entrepreneurial class. Due to these efficiency effects, the greater concentration of conversion in wealthier coastal areas is likely to contribute to regional inequality in China.

1.   Introduction

The formal ownership structure of China's enterprise system has changed

dramatically over the past two decades. In 1980, the universe of China's industrial

enterprises consisted almost exclusively of state- and collective-owned enterprises (see

Table 1). Although during the subsequent decade and a half the numbers of state-owned

enterprises (SOEs) and collective-owned enterprises (COEs) both rose, by 1995, as

shown in Table 1, they were outnumbered by the infusion of newly created enterprises.

These included over 29,000 foreign and overseas firms, a proliferation of shareholding

enterprises, and nearly 4,000 private companies. In terms of sheer numbers, the eight

million individually-owned enterprises with eight or fewer employees added a dimension

to China's industrial enterprise sector that could not have been anticipated in 1980.

Beginning in 1998, China's National Bureau of Statistics (NBS) revised its formal

statistical system to include full coverage of only those firms reporting more than five

million yuan in sales per year.[2] Table 1 shows that in 2001, among these 171,256 larger

enterprises, more than three-quarters operated outside the state sector.[3] The 36,000

private sector firms with sales in excess of five million yuan exceeded the number of

collectives and were approaching the number of surviving state-owned enterprises. In

that year, the 46,767 reporting state-owned enterprises represented a precipitous decline

from the number recorded in 1997. Many of the disappearing SOEs had been converted

to shareholding enterprises, so that by 2001, the number of shareholding enterprises had

grown to nearly 25,000, more than double the figure reported just three years earlier.

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[2] The scope of enterprises enjoying full coverage includes all state-owned enterprises, regardless of annual sales.
[3] In the year 2000, these larger enterprises (with sales in excess of 5 million) accounted for approximately 56% of China's total reported industrial output. NBS, 2001, pp. 416, p. 49.

Indeed, during the latter half of the 1990s and continuing to the present, the conversion of former state- and collective-owned enterprises to shareholding enterprises has served as the principal mode of enterprise restructuring in China. These conversions constitute the focus of our study.

While most studies of ownership reform focus narrowly on productivity and profitability, this study investigates the effect of ownership reform and conversion on a broad set of performance measures. In addition to the conventional measures of labor and capital productivity and profitability, we also examine the impact of conversion on employment and wages, taxes, and two dynamic measures of enterprise performance, namely R&D expenditures and new product sales. From our statistical exercise, we infer the distributive impact of shareholder reform on key stakeholders in the reform process.

The impact of conversion on performance may operate through multiple channels. In this paper, we explicitly distinguish between two channels of impact of the conversion process. The first of these is the direct impact of conversion on enterprise performance, holding constant the firm's asset mix. The second channel through which conversion affects firm performance is the induced effect, which results from the ability of converted firms to attract new investment from outside the state sector. We will document the range of impacts of non-state investment on firm performance for firms that have been formally converted as well as those that remain unconverted.

This paper is organized as follows. The next section provides an overview of ownership reform in China. Section 3 presents a literature review, which reviews the growing body of research on enterprise conversion in China and lessons that might be drawn from related research on Eastern Europe and the Commonwealth of Independent

States (CIS). The data set of large and medium-size enterprises that we use in this paper is described in Section 4. In Section 5, so that we might anticipate the direction of the performance effect of enterprise conversion, we estimate differences in performance across established ownership categories. Section 6 delineates the samples that we use for our estimation work. We also test for sample selection bias. Section 7 outlines our research methodology, while Section 8 summarizes the estimation results. Section 9 computes the total impact of conversion on our performance measures. An overview of the distributional implications of our findings is summarized in Section 10, the conclusion.

2. Ownership Reform in China

The reform of China's enterprise system has spanned four related processes. The first is the entry of large numbers of new non-state enterprises. The second is the reform of incentive structures within established systems of public ownership, such as strengthening managerial incentives through the contract responsibility system. The third avenue of enterprise reform has been the change in asset structures resulting from the accumulation of non-state investment in the state sector. The last, definitive form of ownership change – the outright conversion of enterprises, usually from state or collective ownership to some other formal ownership classification – we argue, can be viewed as the outcome of the three preceding reform processes.

New entry. Until the mid-1990s the most dramatic avenue of ownership reform in Chinese industry was the entry of new firms. These firms entered China's enterprise sector through three avenues. The first was the proliferation of collectives, principally,

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township and village enterprises (TVEs) during the 1980s.[4] Individually owned

enterprises (*getihu*) – enterprises with eight or fewer employees – whose numbers

ballooned into the millions by 1994 constituted a second source of domestic entry.

Finally, the third major source of new enterprise formation has been foreign investment,

both from investors in Hong Kong, Taiwan, and Macao (HKT) and from foreign sources,

primarily OECD and Southeast Asian countries (FOR).   The importance of new entry is

underscored by Table 1, which shows that relative to 1980, by 1994 the number of

industrial enterprises in China had multiplied by a factor of approximately 25. An

important consequence of this rapid entry of both domestic and foreign investment was

the creation of intense competition in many sectors. By causing a secular decline in

profitability across all ownership types, the erosion of monopoly rents in state industry

motivated throughout Chinese industry search for technical innovations and new

mechanisms of governance.[5]

Reform of control rights.   The introduction of the enterprise contract

responsibility system in the mid-1980s was intended to strengthen and clarify the system

of incentives and rewards for SOE managers and workers. Jefferson, Zhang, and Zhao

(1999) and Jefferson, Lu, and Zhao (1999) document the *vertical* reassignment of control

rights from government supervisory agencies to enterprises and within enterprises the

horizontal allocation of managerial control rights among managers, workers' councils,

and party secretaries.

The restructuring of state-owned enterprises without formal ownership conversion

met with limited success. McMillan and Naughton (1992) find that managers responded

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[4] Subsequent to the conversion of commune enterprises to TVEs in the early 1980s, in an effort to build on
their success, many townships and villages established new TVEs.

to expanded autonomy, including greater profit retention, by strengthening worker discipline, increasing the proportion of workers' income paid in the form of bonuses, and raising the fraction of workers on fixed term contracts. However, while most studies document efficiency gains in the state sector, productivity growth in state industry has generally lagged behind that outside the state sector.[6] From the long-run perspective of ownership reform in China, the important outcome of the strengthening of managerial control rights is that a managerial class emerged as a group bearing strong vested interest in privatization.

Changing asset structure. One might expect a substantial association between formal ownership classification and the ownership structure of the assets. In China's enterprise sector, this association has become increasingly fluid. Within our data set of large and medium-size enterprises, for example, in 1999, 1,417 of the approximately 11,000 state-owned enterprises, reported a minority of state asset ownership. Conversely, 1,935 of the more than 11,000 so-called non-state enterprises reported that a majority of their assets were state owned. These reconfigured patterns of asset ownership across the range of ownership classifications increasingly bring into question the economic significance of the conventional system of formal classifications. In Section 5, we test the relative economic importance of formal ownership classification and asset composition for a range of performance measures. Within the context of our discussion of the historical progression of ownership reform in China, this asset restructuring often created defacto conversion, thereby enabling formal conversion to become a mere formality.

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[5] For documentation of the rise of competition in state industry, see Naughton (1992).
[6] See Jefferson, Rawski, Li, and Zhang (2000).

Conversion. In the mid-1990s, the results of the three restructuring processes described above – new entry which fostered competition and search for technical and organizational innovations, a strengthening of the managerial control that motivated privatization, and the accumulation of non-state assets that contributed to the defacto erosion of government control – created pressures for deep restructuring, including the formal conversion of SOEs.[7] At the same time, the accumulation of non-performing loans and attention to financial stability associated with the Asian Financial Crisis and the Chinese leadership's quest for entry into the World Trade Organization magnified pressures for enterprise restructuring.

Specifically, three restructuring policies emerged during the mid-1990s. The first of these was a furlough policy (*xiagang*), which by the end of the decade, led to the lay off of approximately six million of 44 million workers in the industrial SOE workforce (Rawski, 2002). During the latter half of the 1990s, two additional policy initiatives shifted the locus of enterprise reform to the formal conversion of both state and collective enterprise. Having diminished the role of the state sector as the locus of guaranteed employment, the government's furlough program made conversion more politically feasible.

Under the slogan "retain the large, release the small" (*juada fangxiao*), China's leadership, in principle, mandated converting all but the largest 300 or so of the nation's industrial SOEs. As part of this initiative, Premier Zhu Rongji placed China's loss-making SOEs on a strict three-year schedule during which they were instructed to implement a "modern enterprise system" and convert losses to surpluses. The principal

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[7] See Su and Jefferson (2003).

response to these mandates was a rapid acceleration in the number of conversions across both China's state and collective sectors.

While the shareholding experiment had been first introduced in 1993, it was not until the restructuring initiatives of 1997-98 that shareholding conversion became a broad-based initiative involving the conversion of large numbers of both SOEs and COEs. In 1997, the Chinese Communist Party's 15th Party Congress made the shareholding system a centerpiece of China's enterprise restructuring. While formal privatization was ruled out for ideological reasons, the shareholding experiment was widely viewed as a covert mandate for privatization (Li, Li, and Zhang, 2000, p. 269). From 1997 to 2001, the number of registered state-owned enterprises declined by nearly one half. According to Fan Gang (2002), "preliminary provincial data indicate that in some regions more than 70 percent of small SOEs have been privatized or restructured" (p. 3). This conversion of state-owned enterprises was not limited to small-size enterprises. During the 1997-2001 period, the number of large and medium-size SOEs declined from 14,811 to 8,675, while the number of large and medium-size shareholding enterprises mushroomed from 1,801 to 5,659.

Furthermore, the conversion process extended to collective-owned enterprises, including the township and village enterprise sector that had earlier been celebrated for its competitive performance (Weitzman and Xu, 1994). Li and Rozelle, in the year 2000, reported that the privatization of rural industry had been "deep and fundamental." They found that "more than 50 percent of local government-owned firms have transferred their shares to the private sector, partially or completely." This process of conversion has been extensive even among the largest, most successful collective-owned enterprises.

During 1998 to 2001, the number of large and medium-size COEs declined by 35 percent from 3,613 in 1998 to 2,465 in 2001.

Summarizing, our view is that the convergence of three factors – new entry and competition, strengthened managerial control, and the accumulation of non-state assets – created the conditions for formal conversion during the latter half of the 1990s. Many local governments were anxious to rid themselves of loss-making enterprises (or to cash in on profitable ones before they turned sour), insider managers were poised to secure greater control over these enterprises, and often asset structures were already extensively diversified. Together, these three conditions together provided strong motive to complete the administrative formalities of shareholder conversion.

3. Literature Review and Comparative Perspective

Our literature review is intended to serve two purposes. The first is to cull lessons from surveys of the enterprise restructuring and privatization literature, most of which is focused on the experiences of Eastern Europe and the CIS, that may relate to China. The second purpose is to review specifically the literature on restructuring China's enterprises.

Review of the literature on privatization and restructuring.

The literature on privatization includes three comprehensive reviews of the privatization experience in transition and developing economies. These are Megginson and Netter ("From State to Market: A Survey of Empirical Studies on Privatization," 2001), Birdsall and Nellis ("Winners and Losers: Assessing the Distributional Impact of

Privatization," 2002), and Djankov and Murrell ("Enterprise Restructuring in Transition," 2002). In each of these reviews, we identify the salient findings.

Megginson and Netter (2001) present a comprehensive review of 12 studies of the effectiveness of privatization in the transition economies of Central and Eastern Europe and six studies from the Commonwealth of Independent States, consisting of Russia and the former Soviet Republics. Their study also reviews salient privatization episodes in OECD and non-transition developing economies. Key conclusions from this sample of privatization experience include (i) privatization improves firm-level performance, (ii) concentrated private ownership, foreign ownership, and majority outside ownership are associated with significantly greater improvement than the alternatives, and (iii) the impact of privatization on employment is ambiguous, since employment falls for virtually all firms in transition economies.

Most of these studies limit their scope to productivity, profitability, and occasionally employment. Among those reviewed by Megginson and Netter, the study by La Porta and Lopez-de-Silanes (1999) of the privatization of 218 Mexican SOEs spans the widest range of performance impacts. According to the authors, as a result of privatization, the output of the privatized firms in their sample increased by 54.3 percent, and employment declined by half, although wages for the surviving workers increased. Firms achieved a 24 percent increase in operating profitability, eliminating the need for subsidies equal to 12.7 percent of GDP. Higher product prices explain five percent of improvement, transfers from laid off workers explain 31 percent, and incentive-related productivity gains account for the remaining 64 percent.

Djankov and Murrell (2002) draw on more than 100 studies of enterprise restructuring in transition economies. Their approach is distinctive in its attempt to synthesize the studies into composite rankings of the effectiveness of various privatization strategies and outcomes. Like Megginson and Netter, Djankov and Murrell find that state ownership within traditional state firms is less effective than all other ownership types. Privatization to outsiders is associated with the largest restructuring gains; furthermore, privatization to workers has no effect in Eastern Europe and is detrimental in the CIS. Privatization to outsiders is associated with 50 percent more restructuring than privatization to insider managers and workers. Investment funds, foreigners, and other block-holders produce more than ten times as much restructuring as diffuse individual ownership. State ownership within partially privatized firms is surprisingly effective, producing more restructuring than enterprise insiders and non-block-holder outsiders. An interesting conclusion of Djankov and Murrell is that different regions – particularly Eastern Europe and the CIS economies – exhibit different responses to similar privatization strategies. Whereas, for example, privatization to workers in Eastern Europe had no significant effect on enterprise performance, in the CIS economies, the same means of privatization resulted in substantial negative effects for the affected firms. Also, opening to import competition had significant and opposite impacts on firm performance in Eastern Europe and the CIS. These disparate impacts across regions raise the possibility that aspects of the privatization experience elsewhere in the world may have limited application to China.

Birdsall and Nellis (2002) develop the theme that, by altering the distribution of costs and benefits of ownership, privatization potentially affects a broader range of

stakeholders than accounted for in the conventional privatization literature. They find that privatization programs appear to have worsened the distribution of assets and income, at least in the short run. This tendency toward a less equal distribution of assets is more evident in transition economies than in Latin America. Birdsall and Nellis also distinguish distributive effects across industries. They find that the adverse distributional effects of privatization have been less severe for utilities, such as electricity and telecommunications, where the poor have tended to benefit from much greater access, than for banks, oil companies, and other natural resource producers.

While the number of China-specific studies included in these three reviews is limited, we are particularly interested in the broad common findings based on a comprehensive review of the literature that may have bearing on China's experience with enterprise restructuring. Among these are: (i) the relative effectiveness of outsider privatization, (ii) the relatively poor performance of insider privatization, (iii) the effectiveness of state ownership within partially privatized firms, (iv) adverse distributional effects of the privatization of assets, and (v) ambiguous employment effects.

Review of the research on Chinese enterprise restructuring.

In recent years, research has begun to appear on the determinants and impacts of privatization and ownership conversion in China. We summarize some of the key research results of that literature.

Tian (2001) uses a sample of 826 corporations listed on China's stock market to study the impact of state shareholding on corporate value. Tian discovers a U-shaped relationship between the proportion of government equity and corporate value with

higher values for low and high shares of government equity than for values associated with intermediate shares of government ownership. He argues that the U-shape reflects the behavior of a government that is maximizing its overall interests. In the intermediate range, governments tend to exhibit a "grabbing hand," which induces lower corporate values. As the government's equity share increases, becoming sufficiently large, the government provides "helping hands" thereby increasing overall corporate value.

Li and Rozelle (2000) focus on a sample of 168 township enterprises in Jiangsu and Zhejiang Provinces of which 88 have been privatized. They find that "transitional costs apparently reduce private firm efficiency in the year that firms are being privatized." However, Li and Rozelle find that two or more years after privatization, private firms produce five to seven percent more output with the same inputs. They further surmise that "as privatized firms complete their ownership transition and continue to learn how to adapt to China's business environment that the gains could rise further." An important insight of this study is the presence of adjustment costs in the conversion process, which may result in a lag between conversion and realized benefits.

Dong, Bowles, and Ho (2002a) investigate the determinants of employee share ownership in Jiangsu and Shandong provinces. Their analysis shows that the privatization process resulted in a higher concentration of share ownership in management and other board members. While regular employees owned shares in 16 of the 39 privatized enterprises in the sample, even in these enterprises, the distribution of shares was highly skewed towards those who were wealthier, male, local residents, and in managerial positions. Dong et al find that the privatization process exhibits an important political dimension in which local leaders sell dominant ownership shares to managers,

subject to the leaders' revenue objectives and the wealth constraints of managers. The effect of this pattern of shareholding is to increase the degree of earnings inequality within the enterprise and presumably more broadly in China's rural society.

Based on the survey used in 2000a, Dong, Bowles, and Ho (2002b) report the impacts of share ownership on employee attitudes. Their results indicate that, in general, employee shareholders have higher levels of job satisfaction, perceive greater degrees of participation in enterprise decision making, display stronger organizational commitment, and exhibit more positive attitudes towards the privatization process than non-shareholders in privatized firms.

Su and Jefferson (2003) investigate the determinants of ownership conversion in China's large and medium-size enterprises. They find that the probability of ownership conversion increases with the firm's profitability, its productivity, and the intensity of competition faced by the firm. The authors further find that the probability of conversion falls with firm size. This latter result is consistent with the government's policy of releasing the smaller firms and retaining the larger firms. These results confirm the presence of selection bias in the privatization process of Chinese SOEs. In evaluating the effects of ownership and ownership restructuring on firm performance, estimation procedures should recognize and account for the phenomenon of selection bias.

Li, Li, and Zhang (2000) enlarge on the finding of Su and Jefferson regarding the role of competition in driving conversion. According to Li, Li, and Zhang, competition requires local governments to improve the efficiency of SOEs and COEs under their jurisdiction. The authors also conclude that because the efforts of managers are not verifiable, local governments often respond by granting total or partial residual shares to

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the managers. By concluding that "intense competition stimulates the rise of a private

property system" (p. 269), the authors postulate a certain inevitable quality to a process in

which reform and competition lead to privatization, with an emphasis on insider

privatization. These findings are consistent with our heuristic model of Chinese enterprise

conversion outlined in Section 2 in which entry and competition and the reform of

managerial control rights served as antecedents to the conversion movement that began in

the late 1990s.

4.   China's Large and Medium-Size Enterprises: The Data Set

The statistical system, which China uses to track its industrial enterprises, can be

enlikened to three concentric circles, or populations, of enterprises. The largest

population consists of a count of all of the enterprises in the industrial system. In 1997,

according to Table 1, this broad measure included 7.9 million enterprises. For this

inclusive enterprise population, China's statistical authorities report only skeletal

information – generally not more than the total number of enterprises and gross industrial

output.

The middle circle, consisting of less than five percent of China's total industrial

enterprise population, includes enterprises reporting more than five million yuan of sales

annually; all state-owned enterprises are included regardless of their annual sales.

Relative to the total enterprise population, the statistical authorities collect and report a

broader set of measures for these enterprises, including basic measures of financial

performance, such as profits and loses.

Finally, the inner circle of China's industrial enterprise statistical system consists of the country's large and medium-size enterprises (LMEs). As shown in Table 2, in the last year of the old accounting system, these LMEs accounted for approximately 57 percent of the total sales of enterprises with annual sales in excess of 5 million yuan; during 1998 to 2001, the share of total industrial sales represented by LMEs rose from 57.9 percent to 62.4 percent. China's industrial authorities collect highly detailed information from the approximately 22,000 firms that it classifies as large and medium size. These firms and the data they report constitute the database for this study.

This collection of large and medium-size enterprises, whose performance is carefully tracked by China's NBS, at once includes China's most successful companies – those that have grown and sustained their status at the pinnacle of China's industrial enterprise sector – as well as many of its most troubled enterprises. As the focus of decades of central planning and administered allocations of subsidized capital, skilled labor, and raw materials, some of these large and medium-size state-owned enterprises continue to impede China's transition to an advanced market economy.

During the period covered by our panel of data – 1995 to 2001 – the NBS changed its system of ownership classification. For the purpose of comparing categories of ownership and tracking ownership reform between 1995 and 2001, we use the concordance shown in Annex I, which aligns the 1998 system of ownership classification with the preexisting system. This aggregation of 23 detailed categories into seven broader categories – state-owned enterprises (SOEs), collective-owned enterprises (COEs), Hong-Kong, Macao, and Taiwan-owned enterprises (HKT), foreign-owned enterprises (FOR), shareholding enterprises (SKT), and other domestic enterprises (OTH)

– closely tracks the classification system currently used in the China Statistical Yearbook.[8] Using this concordance, we have compiled for Table 3 a description of the changing ownership profile of China's LME sector.

5. Performance by Firms with Established Ownership Classifications

Although this study investigates the consequences of a *change* in formal ownership structure, we first focus on the question of why ownership classification matters in Chinese industry. To do this, we compare performance across *established* ownership types. We do this in three ways. The first is to incorporate a set of ownership dummies, which enables direct comparisons by ownership type. The second approach acknowledges the disparities that sometimes exist between the ownership designation of a firm and its mix of assets. Our second approach, therefore, examines the impact of asset composition – the share of state-owned assets and the combined share of foreign and Hong Kong, Macao, and Taiwan-owned assets – on firm performance. The third approach examines the combined impact on performance of both ownership classification and asset composition.

We perform this comparison for eight measures. These are: labor productivity, capital productivity, profitability, employment, wages, taxes paid, new product sales, and R&D intensity. The profitability measure represents the difference between sales revenue and the production costs of sold output. It excludes, therefore, certain taxes,

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[8] The exceptions are that (i) the concordance excludes "individual-owned enterprises" (none of which qualify as large or medium-size enterprises), (ii) it distinguishes between foreign owned and Hong Kong, Macao, and Taiwan-owned enterprises, and (iii) it breaks out private-ownership from the category of "enterprises of other type of ownership." (NBS, 2000, p. 407).

pension payments, welfare subsidies, and other costs that are not directly associated with production.

The results, shown in Tables 4a-c, are summarized below:

- Table 4a shows that ownership classifications exhibit a highly significant association with performance. SOEs tend to report lower labor and capital productivity and wages,[9] yet SOEs exhibit higher profitability than all the other classifications with the exception of the collective and shareholding sectors. While lower wages in SOEs may explain a tendency for sales profits in SOEs to be higher, Table 4a also shows that employment and taxes are higher in SOEs than for other ownership classifications. The tendency for SOEs to operate in less competitive industries, such as tobacco and petroleum, may also explain the relative profit advantage of SOEs, although some of this effect is captured by the inclusion of regression dummies at the 2-digit industry level.

- Table 4b reports the estimation results for the impact on performance of asset composition alone. We construct two measures of asset shares – those for state-owned assets (STATE) and assets originating from foreign sources, which include investors in Hong Kong, Macao, and Taiwan (FOR/HKT). The omitted third category of assets is other domestic assets, whose impact is represented by the constant in each of the equations. The coefficients on STATE and FOR/HKT should therefore be interpreted in relation to the magnitudes shown in the constants. Our results show that STATE impacts negatively on labor and capital productivity and on wages; conversely STATE is positively associated with profitability, employment,

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[9] Because SOEs may provide other forms of compensation – welfare and pension support – total compensation provided by SOEs may not be relatively low.

new products and R&D expenditures. The FOR/HKT asset share exhibits a pattern

of performance outcomes, which is virtually the inverse of the STATE asset shares.

Enterprises that are rich in FOR/HKT assets exhibit high levels of labor and capital

productivity and wages. Conversely, FOR/HKT is strongly associated with

profitability, employment, taxes, new product sales, and R&D intensity.

- Table 4c includes estimates of the performance impact of both ownership

  classification and asset composition. We can see in the table that for the most part

  the estimates of the coefficients on both ownership classification and asset type are

  statistically significant.

Overall, the results in Tables 4a-c demonstrate the explanatory powers of both

ownership classification and asset shares. This conclusion is based on the fact that the

adjusted R-square values for all eight performance equations in Table 4c that include

both classification and asset share are larger than the adjusted R-squares reported for the

ownership classification and asset share equations separately. This result underscores the

importance of distinguishing between the impact of a change in ownership classification

and a change of asset composition on enterprise performance.

While Tables 4a-c provide a useful perspective on performance differences across

ownership types, this analysis may be of limited predictive value regarding the impact on

a given firm of change in ownership from state ownership to shareholding status. This

ambiguity is true for the following reasons:

- Selection bias. The differential quality of converted and unconverted firms may

  reflect selection bias. That is, SOEs that are chosen for conversion may not be

  typical of the existing population of SOEs. The notable consequence of selection

bias is that, if relative to the average, converted SOEs are say high-quality SOEs, then following a period after the conversion, any measured quality advantage of the converted SOEs may reflect selection bias rather than the salutary consequences of conversion.

- Adjustment costs. Following the conversion, time may be required to adjust to new governance arrangements and achieve efficiency improvements associated with changes in the firm's labor force, asset composition, and product mix. Li and Rozelle (2000) find evidence of "transitional costs" in their investigation of the privatization of rural collectives. The result is that gains ensuing from privatization may appear only one-to-two years after conversion.

We formally test for selection bias but can only speculate on the importance of transition costs.

6. The Sample of Converted Enterprises

Using our samples of converted and unconverted SOEs and COEs, we test for patterns of selection bias. We do this by testing whether the firms that have been selected for conversion are more or less likely in the year prior to their conversion, t-1, to have exhibited a high or low measure of any of the eight performance measures.

Before conducting the selection bias analysis, we construct samples of both converted and unconverted enterprises for which we use the latter as a control. The data set consists of a balanced sample of SOEs and COEs. To be included in the sample a firm must report data for the year prior to its conversion (i.e. t-1) continuously through 2001. Within the sample, the included conversion years are t =1996, 1997, 1998, and

1999. Because the proximity of 2000 to 2001 is likely to diminish the realized impact of conversion, we exclude firms that were converted in 2000. We also eliminate enterprises that report multiple conversions, i.e. those that convert from SOE or COE to STK and then again convert to some other ownership type. Finally, we eliminate firms that report implausible figures for key variables, such as zero or negative sales or fixed capital stock.[10]

Tables 5a and 5b profile the conversions of SOEs and COEs during 1996 to 2001. Table 6a shows that over the period 1996 to 2001 a total of 3,036 state-owned enterprises were converted to non-state enterprises. Among these, 2,265, i.e. 75 percent, entailed conversions of SOEs to shareholding enterprises. The lower panel identifies the number of enterprises that report a single conversion, for which the key data are continuously available from t-1 to 2001, and for which the data observations are plausible. Within our sample, 404 enterprises satisfy these criteria. Since we do not include conversions that were reported in the year 2000, our effective sample size for the SOE conversions is 258.[11] The 3,569 SOEs that were not converted constitute the part of the sample that allows us to identify the nature of selection bias and the independent impact of conversion. For the collectives, Table 5b shows that among the 1,614 reported conversions, 970 were conversions of COEs to shareholding enterprises. Among these,

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[10] Note in Annex 1 that three kinds of state-owned enterprises are specified. Our sample includes only two of these – state-owned enterprises and wholly state-owned enterprises. We do not include state-owned jointly operated enterprises, which involve hybrid ownership and already include some of the attributes of shareholding enterprises.

[11] A substantial number of converted enterprises change their ID in the conversion process and therefore cannot be tracked before and after the conversion process. Efforts to match these pre- and post-converted enterprises indicate that conversions involving changing in industry classifications, size classifications, or locations raise the likelihood of the issuance of a new ID. Our sample, therefore, while a fraction of the total number of converted enterprises, tends to control for industry, size, and location, so that the comparative statistical analysis focuses on the independent effect of conversion.

103 enterprises satisfy the criteria for a single conversion, continuous data, and plausible observations. The unconverted subset consists of 858 COEs.

Applying logit analysis to the sample described above, we estimate the probability of firms with certain performance characteristics being converted. As shown in Table 6, our principal findings are that, relative to the unconverted SOEs, the firms that are selected for conversion exhibit high levels of both labor and capital productivity and profitability. They also exhibit relatively low levels of employment and relatively high tax burdens. The COEs that are selected for conversion are distinguished by relatively high R&D intensity and marginally greater profitability.

Table 7 identifies the distribution of converted enterprises across industry classifications. The table shows that the profiles of the total sample and the converted firms are similar, with several exceptions. Only 2 percent of the converted enterprises are mining firms compared with 7.4 percent of the total sample. Also, electric power firms are substantially underrepresented in the sample of conversions. By contrast, nearly one-quarter of the converted firms, twice as many as those that appear in the underlying sample, are located in the chemical sector. Like SOEs, the machinery sector accounts for nearly one-third of COE conversions. The textile, apparel and leather products industries, which were not highly represented among SOE conversions, account for nearly one-quarter of COE conversions.

Finally, we examine the regional bias of the conversion process. Because we find a tendency for the more successful firms to enjoy a higher probability of conversion, we are not surprised to see in Table 8 that relative to other regions, SOEs located in China's eastern and southern provinces enjoy a larger probability of conversion. While, like

SOEs, COEs located in the eastern provinces exhibit a higher probability of conversion, COEs located in China's southern provinces are among the least likely to be converted.

7. Impact of Conversion on Enterprise Performance: Research Methodology

Our research method for analyzing the performance impact of the conversion of SOEs and COEs to shareholding enterprises is as follows:

1. Identify the relevant set of performance variables. The study examines the impact of conversion and asset ownership change on eight performance measures. These are: labor productivity, capital productivity, profitability, employment, wages, taxes paid, new product sales, and R&D intensity. For each of our performance measures, we compare for converted vs. unconverted enterprises their levels of performance in 2001 controlling for performance levels in t-1, the year prior to conversion. By controlling for the performance levels of firms in the year prior to conversion, our research methodology controls for selection bias.

2. Estimate the contributions of six factors to each of the eight performance measures. Our formal estimation equation is:

$$\ln Z_{j,01} = \alpha_0 + \alpha_1 STK_t + \alpha_2 \Delta \ln ST\_SH_{t\text{-}1 \text{ to } 01} + \alpha_3 (\Delta \ln ST\_SH_{t\text{-}1 \text{ to } 01}) * DSTK$$
$$+ \alpha_4 DSTA\_LP_{t\text{-}1 \text{ to } 01} + \alpha_5 \ln Zj_{,t\text{-}1} + \varepsilon_1, \qquad (1)$$

where $Z_{j,01}$ includes the set of eight performance measures (i.e. $j = 1\ldots8$). The six factors that determine $Z_{j,01}$ are:

- the independent effect of conversion, holding the firm's asset structure fixed (i.e., $\alpha_1 STK_t$);

- a reduction in the share of state-owned assets, controlling for the firm's formal ownership classification (i.e., $\alpha_2 \Delta \ln ST\_SH_{t-1 \text{ to } 01}$);

- the differential impact of the effect of reductions in the share of state-owned assets in converted versus unconverted enterprises [i.e., $\alpha_3 (\Delta \ln ST\_SH_{t-1 \text{ to } 01})*DSTK$]. If $\alpha_3 < 0$; the implication is that a given reduction in the state-owned asset share of a converted enterprise has a larger impact on the relevant performance measure than a similar reduction in the state-owned asset share for an unconverted enterprise.

- an increase (rather than a decrease) in the share of state-owned assets (i.e., $\alpha_4 DSTA\_LP_{t-1 \text{ to } 01}$); we use a (0,1) dummy to capture the effect of an increase in the state's asset share following conversion.

- a tendency for catch-up by lagging firms (i.e. reversion to the mean) (i.e., $\alpha_5 \ln Zj_{,t-1}$), and

- the unexplained part captured by the residual or error term (i.e. ε_6).

We estimate equation (1) and report the results in the following section.

8. Estimation Results

We estimate equation (1) using the sample described in Section 6; the estimation results are shown in Table 9a, for SOEs, and Table 9b, for COEs. Both sets of estimates used pooled data for both converted and unconverted enterprises.

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Estimates of the conversion equations. We first review our regression results for the SOE sample. In addition to the results shown in Table 9a, a summary list of outcomes are grouped in the left-hand column of Table 10.

- Direct impact of conversion. Absent changes in asset structure, the effects of the conversion of SOEs to shareholding enterprises include increases in capital productivity, employment, new product sales, and R&D intensity. Wages and profitability decline. Three of these impacts invite commentary. One is the growth (or slower decline) of employment resulting from conversion. These conversions occurred during a period when furloughs of workers (i.e. *xiagang*) were widespread within the state sector. Moreover, we see in Table 6 that the enterprises selected for conversion exhibited relatively low levels of employment prior to conversion. Efforts to obtain approval from public authorities to convert state-owned enterprises to shareholding enterprises may have included negotiations and agreements with workers, a key stakeholder in the conversion process, that layoffs would be avoided or limited. The additional finding that conversion by itself tends to be associated with downward wage adjustments suggests that the quid pro quo for the retention of workers was wage reductions or slower wage growth. Finally, the reduction in profit associated with conversions may reflect what Li and Rozelle characterize (2000) as "transitional costs." They may also reflect the "grabbing hand" of the government (Tian, 2001) or other stakeholders during the conversion process.
- Impact of a reduction in the state's asset share. A reduction in the state's asset ownership share subsequent to conversion accounts for some of the most robust impacts of the conversion process. Reductions in state asset shares are significantly

associated with rising labor and capital productivity. Paradoxically, notwithstanding the rise in labor and capital productivity, profitability is relatively unaffected by declining state asset shares. We see that the elasticities of gains in labor productivity growth and wage growth with respect to declines in state asset shares are of similar magnitude and may therefore cancel. However, the gain in capital productivity, coupled with the reduction in tax burden, might be expected to translate into higher profitability. Reductions in the share of non-state assets are also associated with both a rise in R&D intensity and new product sales, which may auger still greater productivity advantages for the converted shareholding enterprises. The increase in R&D spending may help to explain the apparent decline in profitability. A comparison of the induced impacts of conversion relative to the direct impacts indicates that some of the impacts operate in opposite directions (i.e. employment and wages), whereas others (i.e. capital productivity, new product sales, and R&D intensity) are directly enhanced by conversion as well as associated reductions in state asset shares.

- Differential impact of reduced state asset shares for converted vs. unconverted enterprises. For all but two performance measures, we find that the impact of reductions in state asset shares exhibit no distinguishable differences as between our samples of converted and unconverted enterprises. Where we find no significant effect, we restrict the coefficient $\alpha_3 = 0$. For our sample of converted SOEs, equivalent reductions in state asset shares appear to have comparatively smaller impacts on new product sales and R&D intensity. We account for these differences in the calculation of the total conversion effects.

- Impact of an increase in state asset share. Some enterprises experience increases in the share of state-owned assets over the period t-1 to 2001.[12] The inclusion of a dummy variable for enterprises in which the post-conversion share of state assets rise allows us to test whether increases and decreases in state-owned asset shares exhibit opposite impacts on enterprises performance. We find that increases in asset shares of the state generally have no effect; while larger state shares are associated with higher labor productivity growth and lower growth in profitability, the statistical significance of these associations is not very robust.

- Catch-up. The coefficient on the lagged performance measure, i.e. $\alpha_5 \ln Zj_{,t-1}$, identifies the degree of catch-up or convergence, i.e. the extent to which by firms with unusually high or low initial performance levels tend by 2001 to revert to the mean. For example, the profitability equation, for which $\alpha_5 = 0.500$, indicates substantial catch-up, i.e. firms with high profitability in t-1 tend to sustain only half of their initial advantage, after controlling for conversion and asset mix. By comparison, the employment equation for which $\alpha_5 = 0.944$ indicates little change in relative employment levels over the period t-1 to 2001. The phenomenon of catch-up may overturn the anticipated impacts of conversion on actual measures of performance. In particular, since selection bias is associated with higher levels of productivity and profitability, the impact of conversion on these performance measures may be diminished by the phenomenon of catch-up.

Table 9b reports the estimation results for the sample of collective-owned enterprises; the results are summarized in Table 10.

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[12] Our sample of converted SOEs includes just 3 such cases.

- Direct impact of conversion. Conversion of COEs to shareholding enterprises accelerates the growth of capital productivity and weakly improves profitability. Similar to converted SOEs, we find that a consequence of conversion is the tendency to retain or add employment relative to the unconverted sample. Again, this outcome may be a reflection of the efforts of workers and local leaders to use conversion as an opportunity to stem layoffs or increase jobs. Relative to unconverted COEs, new product sales rise. None of the other performance measures is significantly affected by the independent effect of conversion.

- Impact of a reduction in the state's asset share. For collective-owned enterprises, reductions in the state's asset share have no highly significant impact on firm performance. This outcome is unsurprising, since the share of state ownership in COEs is relatively low. As shown in Table 11, for unconverted firms, the state's asset share falls from 7.3 to 3.2 percent; for converted firms, the share declines from 9.1 to 2.1 percent. We find no evidence that reductions in the state's asset share exert differential impacts on converted and unconverted COEs.

- Impact of an increase in the state's asset share. An increase in the share of state-owned assets subsequent to conversion exhibits no impact on any of the eight performance measures.

- Catch-up. As with state-owned enterprises, we find a general pattern of catch-up or reversion to the mean, conditional on controlling for the conversion variables. With the exception of labor, for which we find little tendency for catch-up, most of the variables exhibit a substantial tendency to revert to the mean.

The impact of conversion on asset structure. For SOEs, we find that reductions in state asset shares substantially impact many of the performance measures that we examine in this study. It may be that formal conversion of an SOE to a shareholding enterprise has no affect on the asset composition of the firm; alternatively, it may be that conversion substantially enhances the ability of the firm to reduce the state-owned share of its assets. We use the following equation to test the impact of conversion on the firm's asset composition.

$$\Delta \ln ST\_SH_{t-1 \text{ to } 01} = \beta_0 + \beta_1 STK_t + \varepsilon_2 \tag{2}$$

If in equation (2) $\beta_1 > 0$, we conclude that conversion speeds the reduction in the state's asset share. Table 11 shows that the estimate of β_1 is highly statistically significant; converted SOEs are significantly more able than unconverted SOEs to reduce their share of state owned assets. Consistent with this result, we see in Table 12 that for converted SOEs the ratio of state-owned assets falls to nearly one-half of the ratio prior to conversion, whereas for unconverted enterprises, the decline is closer to 20 percent.   By comparison with SOEs, Table 11 shows that converted COEs seem not to enjoy an advantage relative to their unconverted counterparts in achieving reductions in their state-owned asset shares.

Means of reducing the state's share of assets. We further investigate the issue of whether measured reductions in the state's asset ownership share result from the accumulation of new non-state investment or from the conversion of state-owned assets to non-state ownership. Examining our sample of converted enterprises, we find that the

quantity of state owned assets rises from an average of 38.6 billion yuan in t-1 to 43.1 billion yuan in 2001. The concurrent increase in non-state assets from 47.6 billion yuan to 98.6 billion yuan accounts for the decline in state-owned asset ownership in 2001 to nearly one half (i.e. 0.540) of their share in t-1. We draw two conclusions from these findings. First, conversion results in a substantially enhanced ability to attract non-state investment. The associated finding that conversion tends not to reduce the volume of existing state-owned assets carries two implications. One is that conversion does not seem to result in the transfer – either through sale or "give-away" – of state-owned assets to non-state interests. The second is that conversion is not associated with the break up of the SOE into parts with high-performing state assets being captured by the converted enterprise, while chronic non-performing assets and debt obligations are left behind as wards of the state and banking system. While examples of these arrangements – involving both stripping and creaming the best of the state-owned assets – exist, they do not appear to characterize the firms in our sample.

The issue of endogeneity. Before we settle on these regression results, we need to address the issue of potential endogeneity bias in the estimates of Equation (1). Specifically, we are concerned about the case in which non-state investors take into account the rate of change in one of our performance measures in determining where to invest. Specifically, suppose that investment is attracted to the firms that enjoy the most robust growth of profitability, i.e. for a given level of profit in t-1, they enjoy a high level of profit in 2001. This sensitivity of the investment decision to the dependent profit variable causes the rate of non-state investment – and hence $\Delta \ln ST\_SH_{t-1 \text{ to } 01}$ – to be correlated not only because investment reduced the state's asset share, which, in turn

raised profitability – that is, the impact that the coefficient α_2 is intended to capture – but also because the robust growth of profit has attracted more investment. The introduction of this additional source of correlation – causality running from the growth of profit to the reduction in state-owned asset share – causes the (absolute) magnitude of α_2 to be biased upward. Under these conditions, we would attribute more importance to the impact of reductions in the state-asset share to increases in profitability than we should.

In principle, we can use one of two approaches to address the problem of simultaneity bias. The first is to create an instrumental variable for $\Delta \ln ST\_SH_{t-1\,to\,01}$. We attempted this without success.[13] The second approach is to create a lag structure between the dependent and independent variables. This approach can be justified if we expect the variable $\Delta \ln ST\_SH_{t-1}$ to act on the dependent variable $\Delta \ln Z_{j,t-1\,to\,01}$ with a lag, but we do not expect the dependent variable to act on past values of the right-hand-side variable. While in principle, a lag structure can lead to as robust a, or an even more robust, relationship than the contemporaneous form, it has the advantage of reducing the likelihood that the dependent variable, which is moved toward the future, can effectively influence the quasi-historical pattern of investment. By substituting a one-year lag of the state asset share variable, i.e. $\Delta \ln ST\_SH_{t-2\,to\,00}$, for the t-1 to 2001 variable, we might still anticipate that investment will drive firm performance, while at the same time curtailing the potential for simultaneity bias, i.e. the impact of performance on the firm's asset mix.

When we lag the asset ownership variable by one year, we find some change in the estimates.[14] The most notable is that whereas in Table 9a, the coefficient on the asset

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[13] We attempted a variety of IVs, for $\Delta \ln Z_{j,t-1\,to\,01}$, but none of the IV's reported an adjusted R-square in excess of 0.06.

[14] This set of results is not reported. Results can be made available upon request to the authors.

variable in the capital productivity equation is quite robust, when we lag the asset

variable one period, the coefficient on asset mix becomes insignificant. At the same

time, the asset mix coefficient in the profit equation becomes statistically significant.

The remaining estimates retain levels of statistical significance that are comparable to

those reported using the original contemporaneous time structure. That estimates of the

coefficient on lagged values of $\Delta \ln ST\_SH_{t-1 \text{ to } 01}$ in the capital productivity equation turn

insignificant suggest that investment behavior may be particularly sensitive to capital

productivity. None of the other estimates exhibits nearly as much sensitivity to this

indirect test of endogeneity as does the capital productivity equation.[15]

9.   Estimating the Total Impact of Conversion

In order to estimate the total impact of conversion, we evaluate the combined

impact of two avenues of impact associated with the conversion process. These are the

direct impact (α_1) and the impact of the reduction in the share of state-owned assets that

results from conversion [$\alpha_3(\Delta \ln ST\_SH_{t-1 \text{ to } 01})$]. Because for the innovation variables –

new products and R&D spending - the reduction in state-asset shares affects performance

differently for the converted and unconverted firms; for these two performance measures

we incorporate these differences into the calculations [$\alpha_3(\Delta \ln ST\_SH_{t-1 \text{ to } 01})$*DSTK].

Although we have estimated and reported the impact of an *increase* in the share of state-

owned assets in Table 9, because only a small number of firms exhibit such increases, we

omit this factor from our calculations. By computing rates of growth in the performance

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[15] When we lag the independent variable, $\Delta \ln ST\_SH_{t-1 \text{ to } 01}$, the number of observations drops to
approximately 9,000 from the larger sample number of observations of 13,243. We have, therefore,
implemented the test described above with this smaller sample.

measures from t-1 to 2001, which we present as average annual rates, our estimates are not affected by selection bias. The results are shown in Table 13.

 We first focus on the state-owned sector. Table 13 shows three sets of growth rates. Two actual rates compare the overall rates of growth of the performance measures for converted and unconverted enterprises. The third set uses the method above to compute only that portion of each growth rate, which is attributable to conversion. These are to be compared with zero (0), the comparable implicit rates of growth for the unconverted SOEs. This third set of rates shows that conversion results in systematic and extensive impacts on the newly created shareholding enterprises. The growth of labor and capital productivity, employment, and taxes resulting from conversion each exceeds that of their counterpart unconverted enterprises, controlling for the catch-up factor. The most dramatic impacts of conversion are on rates of growth of innovation expenditure and activity, i.e. R&D spending and new product sales. Simultaneously, in comparison with the counterpart unconverted SOEs, we observe negative rates of growth of profit and wages. Where the directions of impact of the direct and induced channels differ, as for employment and wages, we see that, at least within the period of our sample the direct impact dominates. For employment, the direct impact of an increase in employment associated with the conversion event dominates the attrition of workers resulting from additional non-state investment. Likewise, the dampening direct impact of conversion on wage growth persists even as converted firms succeed in attracting new non-state investment, which works to increase the pace of wage growth.

 The lower half of Table 13 shows our estimates of the total impact of conversion on performance for our sample of converted collectives. For each performance measures

in which none of the relevant estimated coefficients shown in Table 9b is significant at least the 10 percent level, we assume that the relevant figure displayed in Table 13 is not statistically significant and therefore ignore it. In Table 13, we find that conversion creates increases in rates of growth of capital productivity, profitability, employment, and new product sales.

10. Conclusions and Implications for Governance and Distribution

Our analysis examines the statistical link between enterprise conversion associated with China's shareholding experiment, including its tendency to motivate new non-state investment and enhance measures of firm performance. In concluding we attempt to infer or extend findings from the empirical results presented in this paper.

First we attempt to infer the impact of the shareholding experiment on corporate governance and control. Commenting on an earlier version of this paper, Bert Keidel observed: "…control rather than ownership in China is clearly the most important issue. Because the ownership classification very often doesn't give you a clue about who really controls the enterprise…the Party can govern who is the manager; [it] governs a lot of the goals of the enterprise in terms of its ancillary social investments…even [for a] privately-owned enterprise…"[16] While we do not have access to direct observations on pre- and post-conversion managerial control rights, the most robust of the documented performance changes spur us to speculate on comparisons of conversion changes in corporate goals and behavior. The systematic and extensive reallocation of effort and resources toward innovation – both R&D and new product development and sales –

suggest two forms of change. One is an emphasis on "deep restructuring" that entails process and product innovation; the second, related shift, is an extension of the time horizon of the firm's owners and management.

Because our analytical interests extend beyond the conventional interest concerning the impact of conversion on efficiency, we first examine the evidence from this study to determine the distributive impact of the conversion of Chinese SOEs to shareholding enterprises. We then examine the normative or public policy implications of these distribution effects of conversion.

Reviewing Table 13, we infer the following conclusions regarding the impact of conversion on the distribution of income and wealth across the stakeholders of China's shareholding experiment.

- Over the time horizon of our analysis, we find that conversion increases the rate of growth (reduces the rate of decline) of employment. It also slows wage growth. Table 13 shows that the rate of change of these variables is of equal and opposite magnitude. We surmise, therefore, that in the near to medium term, the tenure of incumbent workers is extended by conversion, while the growth of their compensation is curtailed. Over the long-term, the accumulation of non-state investment and decline in the state's asset share tend to reverse the directions of change in employment and wages.

- A test of the impact of conversion on labor's factor income share, i.e. the share of the wage bill (the product of employment and the wage) in total sales revenue, shows no change as a result of either the direct impact of conversion or the

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[16] Transcript of Bert Keidel's comments on an earlier draft of this paper presented at the Conference on the Distributional Consequences of Privatization" (p. 3). Minxin Pei also raised the issue of the implications of

subsequent decline in the state's asset share. Conversion, therefore, does not appear to affect appreciably the distribution of revenues between labor and capital. Within the wage pool, wage compensation may be skewed toward management and away from less skilled labor, but it is not substantially reallocated to bonuses and owners of capital.

- Subsequent to conversion, at least among the shareholding enterprises within our sample, the state – and the public – retain the assets that had existed in the pre-converted SOEs. The decline in the state's asset shares seem to result not from the dissolution of state assets either by sale or "stripping"; rather the decline in shares results from the ability of converted enterprises to attract new investment.

- We do not have data on the asset ownership of managers. However, because managers tend to serve as key players in the process of conversion of Chinese SOEs to shareholding enterprises, and because we observe significant increases in asset ownership by non-state stakeholders, we anticipate that managers capture a portion of the new assets that enter the firm. We have no reason to believe that the finding of Li, Li and Zhang (2000) and Dong, Bowles, and Ho (2002a) are not applicable to our sample. That is, as the principal instigators of ownership reform, which results on average in a doubling in non-state assets within the firm, managers of converted enterprises increase their net wealth.

- The evidence in support of deep restructuring, i.e. the expansion of R&D and new product development, as well as short- to medium-term efficiency gains that result from conversion, suggests that those who maintain an employment or financial interest in the firm will stand to gain with time. Beyond the immediate stakeholders

enterprise restructuring in China for governance.

of the firm, China's consumer sector benefits from resources that are drawn into R&D and innovation. During the past 10 to 15 years, a striking range of consumer goods as well as improvements in medical technologies and equipment for education, including a thriving computer industry have become widely available in China.

- As a result of the concentration of SOEs in China's northeast and eastern regions, and the somewhat higher probability of their conversion in these regions, stakeholders who reside in coastal provinces are more likely to benefit from China's shareholding experiment than those in other regions. By comparison, the numbers of SOEs in China's north and southwestern regions are relatively sparse and their probability of conversion is somewhat less than elsewhere. Because these latter two regions are China's poorest, these regional biases may cause China's shareholding experiment to contribute to China's growing regional inequalities.

We have outlined the empirical findings relating to the impact of conversion on distribution. What are the public policy implications of these findings? We examine two normative aspects of the distributive findings outlined above. These are the role of growing inequality in China's economy and the appropriate public policy measures to deal with China's growing inequality.

First, we suggest that the implications of the distributive effect of enterprise restructuring differ across countries. For a region like Latin America, privatization that exacerbates an already skewed distribution of income should be viewed critically . Restructuring that creates a skewing of asset-ownership in China, by contrast, may be a welcome phenomenon. First, since prior to China's economic reforms the accumulation

of personal wealth was generally banned, it is inevitable that the introduction of elements of a market economy would lead to greater inequality of wages and assets. Independent of the conversion of China's domestic SOEs, the introduction of foreign investment and the entry of private enterprise would lead to skewing.

We make two points. The first is that seen from the narrow perspective of the impact of conversion of the original stakeholders of an SOE, conversion may lead to an unequal distribution of assets. From a broader perspective, by contributing to the size of China's emergent managerial and entrepreneurial class, the conversion of SOEs is creating a source of entrepreneurship and innovation in the Chinese economy that had been in scarce supply prior to China's ownership reform. By contributing to the size of China's entrepreneurial and investment class and possibly competing away some of the monopoly rents being captured by China's emergent entrepreneurs and investors, it is arguable that the shareholding experiment is creating more, not less, equality.

The second issue concerns the notion of an "ideal" distribution of income.[17] Most would agree that during the period of central planning and socialist ownership, opportunities for personal investment in human, financial, and physical capital and the prospects of a "competitive" return on such investment were too limited. China's income and asset distribution was far too uniform. The conversion of SOEs may be viewed as one avenue to redress this social inefficiency. Within this context the issue is whether the reallocation and accumulation of income and assets is being accomplished through means that are appropriately transparent and fair. Since Chinese society may be approaching a more efficient and desirable distribution of income – in terms of its ability to promote

growth and rising living standards – the question facing the shareholding experiment is not so much whether the outcomes are equal, but rather whether the processes of conversion are transparent and equitable. While anecdotal evidence suggests that aspects of the conversion process are not transparent and equitable, we infer, at least from our limited sample, that the assets the state retained at the beginning of the process remain intact. We do not find in our sample widespread evidence of asset stripping.

A further normative issue concerns the appropriate policy response to the finding that enterprise conversion contributes to inequality – assuming a legitimate process. The question is the appropriate role that constraints on corporate governance should play in society's quest for achieving its equity goals. Public control over corporate governance should be viewed as but one of many instruments to be used by governments in the public pursuit of equity. Others include taxation, education, economic freedom, such as mobility, and international trade policies. As a matter of positive analysis, we wish to understand the broad distribution implications of conversion or privatization on the distribution of income and wealth. Empirical results focused narrowly on outcomes at the firm level do not necessary provide a useful guide for the most useful policy response.

In China, our finding that a rise in employment – or fewer layoffs – is often a direct effect of conversion suggests that the role of government and/or workers in the conversion process involves commitments to retain incumbent workers. Across China, provincial and local governments continue efforts to construct effective social insurance systems, particularly unemployment insurance systems and pension systems that – at least in urban areas where SOEs are being converted – are able to provide a measure of

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[17] See, for example, Forbes (2000) who finds that while on average countries grow faster if their Gini coefficient is lower, over time, individual countries that lower their Gini coefficients face slower growth of

security. Many of these institutional arrangements, however, remain rudimentary in comparison with established systems in the industrial economies.

It remains too early in China's process of enterprise restructuring to draw hard conclusions regarding its impact on the distribution of income and wealth in Chinese society. One reason, as we demonstrate is that different channels through which conversion impacts enterprise performance and the distribution of rewards operate in countervailing directions. Through 2001, it appears that the shareholding experiment has reduced layoffs and slowed wage growth. The longer-term induced effect suggests that these impacts may be reversed so as to be consistent with privatization outcomes in other countries. We observe a robust shift in resources toward innovation, but it is premature to anticipate the sustainability or measure the impact of these changes. Finally, the distribution impact of the China's shareholding experiment will ultimately have to be viewed within the context of its complementary institutions. If growth remains robust, furloughed workers are more likely to transition successfully to new employment, wages will rise throughout the economy, and a managerial class will become absorbed into an increasingly broad-based managerial and professional class.

Table 1
Change in ownership distribution
of industrial enterprises (%)

Measure	Old accounting system[1]				New accounting system[2]	
Ownership type	1980[3]	1985	1994	1997	1998	2001
State-owned	62,437	69,834	85,334	84,397	64,737	46,767
Collective-owned	263,378	300,687	342,908	319,438	47,745	31,018

overall living standards.

H.K, Macao, Taiwan	-	-	16,388	23,020	15,725	18,257
Foreign	-	-	12,713	19,861	10,717	13,166
Shareholding	-	-	4,359	3,898	11,411	24,648
Private	-	-	3,898	13,188	10,667	36,218
Other domestic	-	1,522	627	1,356	224	321
Total in the system	326,160	372,043	465,239	468,506	165,080	171,256
Total GVIO (billion yuan)	471	839	5,135	6,835	6,774	9,545
Individual enterprises	-	-	8,007,400	5,974,700	-	-
National total	377,066	463,210	10,017,100	7,922,900	7,974,600	-
Total GVIO (billion yuan)	490	972	7,018	11,373	11,905	-

[1] Includes all industrial enterprises that operate as independent accounting units at or above the township level.

[2] Includes all state-owned enterprises plus non-state enterprises that report annual sales in excess of 5 million yuan.

[3] NBS (1998).

Table 2
Shares of LMEs in aggregate industry (%)

Measure	Old accounting system[1]		New Accounting system[2]	
	1994	1997	1998	2001
Sales	58.2	57.4	57.9	62.4
Employment	43.5	47.4	55.1	51.1
Assets	65.5	65.9	69.9	69.2
# of enterprises	4.4	5.1	14.2	13.4

[1] Includes all industrial enterprises that operate as independent accounting units at or above the township level.

[2] Includes all industrial enterprises that report annual sales in excess of 5 million yuan.

Table 3
LME ownership distribution [%]

Ownership type	1994	2001
State-owned	15,533 [67.9]	8675 [37.9]
Collective-owned	4,068 [17.8]	2465 [10.8]
Hong-Kong, Macao, Taiwan	967 [4.2]	2271 [9.9]
Foreign	1,041 [4.6]	2675 [11.7]
Shareholding	961 [4.2]	5659 [24.7]
Private	7 [0.0]	984 [4.3]
Other domestic	293 [1.3]	149 [0.7]
Total	22,870 [100.0]	22878 [100.0]

Table 4a
Comparison by ownership type only
(panel, 1996-2001)

Variable	VA/L	VA/K	Profit/ sales	Employ- ment	Wages (average)	Taxes/ sales	New prod/sales	R&D exp/sales
Constant	0.659 (45.607)	0.659 (45.607)	-2.369 (273.692)	7.108 (776.069)	1.605 (251.415)	-4.889 (398.462)	-13.443 (174.883)	-17.427 (267.528)
K/L	0.459 (153.335)	-0.541 (180.615)	-	-	-	-	-	-
COE	0.597 (72.284)	0.597 (72.284)	0.067 (9.917)	-0.553 (75.731)	0.007 (1.436)	0.050 (5.137)	-1.845 (-30.087)	-1.385 (26.647)
FOR	1.102 (95.535)	1.102 (95.535)	-0.031 (3.373)	-0.876 (90.211)	0.913 (134.861)	-0.927 (68.361)	-3.245 (-39.840)	-2.565 (37.162)
GAT	0.901 (74.334)	0.901 (74.334)	-0.150 (15.139)	-0.802 (76.584)	0.621 (85.039)	-0.972 (65.816)	-2.706 (30.797)	-1.514 (20.335)
OTH	0.455 (16.632)	0.455 (16.632)	-0.093 (4.101)	-0.562 (23.268)	0.254 (15.048)	-0.155 (4.838)	-1.100 (5.425)	-1.475 (8.581)
PRI	0.846 (34.663)	0.846 (34.663)	-0.219 (10.968)	-0.821 (37.988)	0.141 (9.388)	0.043 (1.490)	-2.739 (15.104)	-1.490 (9.695)
STK	0.602 (68.646)	0.602 (68.646)	0.054 (7.536)	-0.124 (16.083)	0.177 (32.836)	0.252 (24.610)	0.088 (1.361)	0.354 (6.433)
IND	yes	yes	yes	yes	yes	yes	yes	yes
Year	yes	yes	yes	yes	yes	yes	yes	yes
Adj. R-sq (obs)	0.375 (138843)	0.262 (138843)	0.098 (12.5611)	0.249 (138843)	0.231 (138843)	0.238 (133064)	0.176 (138843)	0.088 (138843)

Table 4b
Comparison by asset composition only

Variable	VA/L	VA/K	Profit/ sales	Employ- ment	Wage (average)	Taxes/ sales	New prod/sales	R&D exp/sales
Constant	1.279 (60.905)	1.279 (60.905)	-2.273 (169.920)	7.004 (481.074)	2.004 (203.266)	-5.756 (294.064)	-13.930 (116.022)	-19.551 (193.317)
K/L	0.574 (162.856)	-0.426 (120.759)	-	-	-	-	-	-
STATE asset share	-0.077 (68.632)	-0.077 (68.632)	0.006 (6.540)	0.070 (67.315)	-0.019 (27.217)	0.001 (0.745)	0.169 (19.864)	0.160 (22.232)
FOR/HKT asset share	0.088 (57.535)	0.088 (57.535)	-0.003 (2.112)	-0.039 (29.498)	0.094 (104.158)	-0.138 (75.499)	-0.194 (17.638)	-0.203 (21.900)
IND	yes	yes	yes	yes	yes	yes	yes	yes
YEAR	yes	yes	yes	yes	yes	yes	yes	yes
Adj. R-sq (obs)	0.379 96908	0.283 96908	0.101 87820	0.231 96908	0.244 96908	0.226 92718	0.170 96908	0.093 96908

Table 4c
Comparison by ownership classification and asset composition

Variable	VA/L	VA/K	Profit/ sales	Employ- ment	Wages (average)	Taxes/ sales	New prod/sales	R&D exp/sales
Constant	1.086 (44.507)	1.086 (44.508)	-2.295 (130.261)	7.697 (402.711)	1.700 (130.869)	-5.214 (203.023)	-11.257 (70.368)	-18.015 (133.412)
K/L	0.580 (164.763)	-0.420 (119.419)		-	-	-	-	-
COE	0.308 (24.005)	0.308 (24.005)	-0.054 (4.983)	-0.335 (28.698)	-0.175 (22.016)	0.110 (7.030)	-1.655 (16.940)	-0.994 (12.046)
FOR	0.563 (26.914)	0.563 (26.914)	0.118 (6.741)	-1.013 (53.505)	0.507 (39.395)	-0.599 (23.211)	-3.958 (24.988)	-2.677 (20.018)
GAT	0.342 (16.404)	0.342 (16.404)	-0.038 (2.161)	-0.902 (47.689)	0.206 (16.025)	-0.659 (25.333)	-3.333 (21.047)	-1.576 (11.789)
OTH	0.315 (9.398)	0.315 (9.398)	-0.065 (2.297)	-0.422 (13.821)	0.146 (7.015)	-0.113 (2.773)	-0.838 (3.282)	-1.240 (5.749)
PRI	0.509 (19.609)	0.509 (19.609)	-0.108 (4.942)	-0.494 (20.919)	-0.129 (8.064)	0.072 (2.268)	-1.901 (9.630)	-1.569 (9.413)
STK	0.428 (40.585)	0.428 (40.585)	0.118 (13.31)	0.017 (1.740)	0.024 (3.662)	0.261 (20.438)	0.401 (4.986)	0.217 (3.203)
STATE asset share	-0.046 (31.394)	-0.046 (31.394)	0.004 (3.257)	0.041 (30.673)	-0.028 (30.674)	0.009 (4.912)	0.044 (3.941)	0.080 (8.461)
FOR/HKT asset share	0.062 (23.786)	0.062 (23.786)	-0.008 (-3.571)	0.062 (26.563)	0.041 (25.782)	-0.05 (-15.71)	0.193 (9.793)	0.022 (1.304)
IND	yes	yes	yes	yes	yes	yes	yes	yes
Time	yes	yes	yes	yes	yes	yes	yes	yes
Adj. R-sq (obs)	0.392 (96908)	0.298 (96908)	0.106 (87820)	0.261 (96908)	0.268 (96908)	0.240 (92718)	0.179 (96908)	0.099 (96908)

Table 5a
Converted SOEs

Total population of SOE conversions								
Old	New	1996	1997	1998	1999	2000	2001	Total
SOE	DSOE	12909	13268	11326	9824	8711	6899	62937
SOE	DCOE	16	69	145	64	52	52	398
SOE	DSTK	87	342	546	319	517	454	2265
SOE	DPRV	1	10	31	14	30	36	122
SOE	DFOR	11	15	21	5	5	6	63
SOE	DGAT	3	13	16	14	10	14	70
SOE	DOTH	5	28	40	23	12	10	118
TOTAL		13032	13745	12125	10263	9337	7471	3,036
Conversions for which data are continuously available from 1995-2001								
Old	New	1996	1997	1998	1999	2000	2001	Total
SOE	DSOE	5343	5235	4964	4887	4697	4425	29551
SOE	DCOE	5	17	66	26	18	30	162
SOE	DSTK	31	110	210	110	204	236	901
SOE	DPRV	0	2	8	5	10	19	44
SOE	DFOR	2	4	5	3	2	2	18
SOE	DGAT	0	3	3	6	1	4	17
SOE	DOTH	2	10	18	4	5	5	44
TOTAL		5383	5381	5274	5041	4937	4721	1,186
Conversions for which data are continuously available from 1995-2001, there is only one conversion, and data are plausible								
Old	New	1996	1997	1998	1999	2000	2001	Total (96-99)
SOE	SOE	3484	3413	3225	3170	3107	-	3,569
SOE	SHR	13	48	128	69	146	-	258

Table 5b
Converted COEs

Total population of COE conversions								
Old	New	1996	1997	1998	1999	2000	2001	Total
COE	DSOE	37	45	56	27	12	22	199
COE	DCOE	3109	3526	2566	2698	2539	1716	16154
COE	DSTK	35	124	211	157	187	256	970
COE	DPRV	5	8	35	30	73	65	216
COE	DFOR	8	10	18	10	10	11	67
COE	DGAT	6	9	41	15	14	12	97
COE	DOTH	11	12	24	8	4	6	65
TOTAL		3211	3734	2951	2945	2839	2088	1,614
Conversions for which data are continuously available from 1995-2001								
Old	New	1996	1997	1998	1999	2000	2001	Total
COE	DSOE	9	14	21	9	2	12	67
COE	DCOE	1053	1008	924	968	938	834	5725
COE	DSTK	12	44	64	42	49	91	302
COE	DPRV	1	2	7	9	20	26	65
COE	DFOR	3	2	5	4	2	4	20
COE	DGAT	3	1	14	7	3	2	30
COE	DOTH	2	5	7	6	1	1	22
TOTAL		1083	1076	1042	1045	1015	970	506
Conversions for which data are continuously available from 1995-2001, there is only one conversion, and data are plausible								
Old	New	1996	1997	1998	1999	2000	2001	Total
COE	COE	1053	1002	849	787	723	-	858
COE	SHR	3	20	47	23	-	-	103

Table 6
Characteristics of converted enterprises in t-1
(includes conversions for 1996-2000)*

	SOE-STK conversions	COE-STK conversions
$(VA/L)_{t-1}$	0.004 (2.916)	0.005 (1.230)
$(VA/K)_{t-1}$	0.006 (4.115)	0.003 (0.781)
$(Profit/sales)_{t-1}$	0.005 (2.764)	0.008 (1.501)
$(Employment)_{t-1}$	-0.003 (1.852)	0.004 (0.754)
$Wage_{t-1}$	-0.001 (0.228)	0.008 (1.215)
$(Taxes/sales)_{t-1}$	0.007 (5.945)	0.006 (1.633)
$(NP/sales)_{t-1}$	-0.000 (0.872)	0.001 (2.259)
$(RDE/sales)_{t-1}$	-0.000 (0.591)	0.001 (1.096)
IND	yes	yes
Region	yes	yes
Year	yes	yes

*The estimation results for each variable are drawn from regressions that include
the *single* performance measure with control dummies for industry, region, and year.

Table 7
Distribution of conversions by industry

Industry Group	SOEs				COEs			
	Total Sample		Converted		Total Sample		Converted	
	#	%	#	%	#	%	#	%
Mining(6-12)	975	7.4	5	2.0	26	0.9	1	1.0
Food and beverage(13-16)	1362	10.3	28	10.9	123	4.2	2	1.9
Textile, apparel, and leather products(17-19)	962	7.3	19	7.4	693	23.4	24	23.3
Timber, furniture, and paper (20-24)	766	5.8	19	7.4	177	6.0	5	4.9
Petroleum processing and coking (25)	140	1.1	3	1.2	14	0.5	1	1.0
Chemicals (26-28)	1639	12.4	60	23.4	283	9.6	15	14.6
Rubber and plastic (29-30)	322	2.4	8	3.1	252	8.5	5	4.9
Non-metal mineral products (31)	949	7.2	19	7.4	258	8.7	11	10.7
Metal processing and products (32-34)	505	3.8	7	2.7	226	7.6	5	4.9
Electric power (44)	832	6.3	2	0.8	6	0.2	0	0.0
Machinery (35-42)	4285	32.4	84	32.8	802	27.1	33	32.0
Other (43, 45, 46)	506	3.8	2	0.8	96	3.2	1	1.0
Total	13243	100	256	100	2956	100	103	100

Table 8
Regional distribution and selection

	North (D1)	Northeast (D2)	East (D3)	South (D4)	Southwest (D5)	Northwest (D6)
SOEs	0.0468 (1.428)	-	0.853 (2.896)	0.896 (2.964)	0.359 (0.942)	0.180 (0.413)
Total # of firms	2200	1336	4968	3191	1081	774
Sample of converted	34	13	112	75	15	9
% converted	1.5	1.0	2.3	2.4	1.4	1.2
COEs	0.658 (1.032)	0.839 (1.237)	1.300 (2.810)	-	n.a.	n.a.
Total # of firms	225	151	2150	316	98	16
Sample of converted	5	4	89	5	0	0
% converted	2.2	2.6	4.1	1.6	0	0

Independent Variable (Z_{2001})	VA/ LABOR	VA/ CAPITAL	PROFIT/ SALES	EMPLOY- MENT	WAGES (average)	TAXES/ SALES	NP/ SALES	RDE/ SALES
Constant	1.512 (53.863)	-0.394 (20.430)	-1.192 (46.845)	0.094 (3.110)	0.927 (46.760)	-1.594 (37.472)	-7.639 (44.201)	-9.271 (43.165)
STKdummy	0.020 (0.344)	0.146 (2.224)	-0.124 (2.174)	0.073 (2.274)	-0.095 (2.456)	-0.050 (0.709)	1.476 (2.432)	1.262 (2.155)
Δ in share state assets, t-1 to 01	-0.039 (7.179)	-0.023 (3.923)	-0.003 (0.487)	0.011 (3.912)	-0.035 (10.070)	0.015 (2.319)	-0.200 (4.125)	-0.099 (2.117)
Δ in share state assets, t-1 to 01 *STK	-	-	-	-	-	-	0.603 (2.092)	0.454 (1.634)
Dummy for "increase" in state asset share	0.049 (1.632)	0.001 (0.305)	-0.051 (1.741)	-0.010 (0.629)	-0.002 (0.093)	-0.033 (0.935)	0.133 (0.502)	0.194 (0.762)
$\ln Z_{t-1}$	0.497 (54.591)	0.579 (57.697)	0.500 (43.423)	0.944 (234.471)	0.637 (65.329)	0.632 (71.601)	0.506 (62.506)	0.308 (31.518)
1997	-0.033 (1.488)	-0.164 (6.716)	0.040 (1.851)	0.008 (0.679)	-0.039 (2.732)	0.029 (1.103)	0.174 (0.885)	-0.520 (2.737)
1998	-0.058 (2.584)	-0.238 (9.582)	0.060 (2.709)	0.010 (0.800)	-0.048 (3.312)	0.042 (1.568)	0.483 (2.431)	-0.557 (2.894)
1999	-0.065 (2.877)	-0.221 (8.747)	0.125 (5.607)	0.078 (6.418)	-0.065 (4.421)	0.026 (0.980)	0.374 (1.870)	-0.667 (3.440)
Adj R-sq (obs)	0.226 (10,758)	0.263 (10,758)	0.171 (9,232)	0.837 (10.758)	0.298 (10,722)	0.329 (10,497)	0.273 (10,758)	0.087 (10,758)

Table 9b
All COE conversions (1996, 1997, 1998, 1999)
$\ln Z_{2001}$

Independent Variable (Z_{2001})	VA/ LABOR	VA/ CAPITAL	PROFIT/ SALES	EMPLOY -MENT	WAGES (average)	TAXES/ SALES	NP/ SALES	RDE/ SALES
Constant	1.214	-0.092	-1.152	-0.043	1.053	-2.490	-8.983	-11.492
	(17.222)	(2.586)	(20.224)	(0.475)	(28.902)	(24.697)	(23.453)	(25.574)
STKdummy	0.130	0.266	0.136	0.152	0.044	0.098)	2.084	0.083
	(1.554)	(2.809)	(1.788)	(3.071))	(0.935)	(0.931)	(2.645)	(0.122)
increase in share state assets, t-1 to 01	-0.014	0.001	-0.024	0.004	0.009	0.003	0.235	-0.101
	(0.859)	(0.052)	(1.550)	(0.427	(1.013)	(0.155)	(1.553)	(0.775)
Dummy for "increase" in state asset share	0.087	0.047	0.143	-0.055	-0.030	0.216	-0.458	0.469
	(0.861)	(0.411)	(1.443)	(0.911)	(0.522)	(1.638)	(0.481)	(0.571)
$\ln Z_{t-1}$	0.688	0.754	0.607	0.967	0.555	0.445	0.397	0.268
	(35.679)	(33.587)	(24.625)	(71.573)	(30.434)	(21.444)	(20.672)	(12.226)
1998	0.005	-0.025	0.014	-0.009	-0.037	0.030	0.044	-0.112
	(0.127)	(0.517)	(0.348)	(0.363)	(1.521)	(0.548)	(0.110)	(0.322)
1999	0.017	0.018	0.122	0.058	-0.021	0.012	0.129	0.118
	(0.389)	(0.369)	(3.013)	(2.277)	(0.850)	(0.217)	(0.321)	(0.337)
Adj R-sq (obs)	0.369	0.346	0.235	0.705	0.303	0.180	0.169	0.065
	(2,184)	(2,184)	(2,003)	(2,184)	(2,168)	(2,121)	(2,184)	(2,184)

Table 10
Summary of selection bias conversion results
Ranked in terms of statistical significance
(all are statistically significant at $\geq$ 90% level)

Variable change	sign	SOEs	COEs
Selection bias (baseline perform-ance relative to unconverted firms) (see Table 6)	+	VA/L* VA/K* Profit/sales* Tax/sales*	-
	-	Employment***	-
Direct conversion effect (assuming no change in asset structure)	+	VA/labor* VA/capital* Employment** RDE/sales** NP/sales**	VA/capital* Profit/sales*** Employment* NP/sales*
	-	Avg. wage** Profit/sales*	-
Effect of an decrease in state-owned asset share	+	VA/labor* VA/capital* Wages* NP/sales? RDE/sales?	-
	-	Employment* Taxes/sales**	-
Dummy for an increase in state-owned asset share	+	-	-
	-	Profit/sales***	-

*statistically significant at the 1% level
**statistically significant at the 5% level
***statistically significant at the 10% level.
? The effect consists of two estimated coefficients.

Table 11
Change in state asset share (i.e. $\Delta\ln ST\_SH_{t-1\ to\ 01}$) in
converted enterprises relative to unconverted enterprises

variable	SOE-SHR conversions	COE-SHR conversions
Constant	-0.017 (15.579)	-0.075 (2.255)
DSTK	-0.078 (9.209)	-0.052 (0.317)
Adj. R-sq (obs)	0.008 (3,851)	0.000 (961)

Table 12
Reduction in state asset share, t-1 to 2001

$\Delta\ln ST\_SH_{t-1\ to\ 01}$	Unconverted			Firms converted to SHRs		
	t-1	2001	Ratio 2001/t-1	t-1	2001	Ratio 2001/t-1
SOEs	91.6	72.5	0.792	78.1	40.6	0.520
COEs	7.3	3.2	0.438	9.1	2.1	0.231

Table 13
Comparison of rates of growth and levels: converted and non-converted

	VA/ LABOR	VA/ CAPITAL	PROFIT/ SALES	EMPLOY -MENT	AVG. WAGE	TAX/ SALES	NP/ SALES	RDE/ SALES
SOE-converted vs. non-converted								
Actual growth rates, t-1 to 2001								
converted	0.026	-0.028	-0.092	-0.054	0.047	-0.036	0.021	0.377
non-converted	0.042	-0.025	-0.050	-0.067	0.058	0.007	-0.264	0.202
Estimated rates of growth resulting from conversion	0.012*	0.041*	-0.032*	0.020*	-0.020*	0.007*	-0.268*	0.197*
COE-converted vs. non-converted								
Actual growth rates, t-1 to 2001								
converted	0.054	0.032	-0.037	-0.021	0.049	0.007	-0.217	0.081
non-converted	0.043	-0.022	-0.071	-0.065	0.053	0.001	-0.278	0.153
Estimated rates of growth resulting from conversion	0.033	0.067*	0.035*	0.035*	0.011	0.025	0.511*	0.025

*At least one of the coefficients relevant to the total conversion impact is statistically significant at the 10% level or greater.

References

Birdsall, Nancy and John Nellis. 2002. *Winners and Losers: Assessing the Distributional Impact of Privatization*, working paper no. 6 (May), Washington, D.C.: Center for Global Development.

Djankov, Simeon and Peter Murrell. 2002. Enterprise Restructuring in Transition: A Quantitative Survey, *Journal of Economic Literature*, 40, no. 3:739-792.

Dong, Xiao-yuan, Paul Bowles, and Samuel P.S. Ho. 2002. Share Ownership and Employee Attitudes: Some Evidence from China's Postprivatization Rural Industry, *Journal of Comparative Economics*, 30, no. 4: 812-835.

Dong, Xiao-yuan, Paul Bowles, and Samuel P.S. Ho. 2002. The Determinancts of Employee Ownership in China's Privatized Rural Industry: Evidence from Jiangsu and Shandong, *Journal of Comparative Economics*, 30: 415-437.

Fan Gang. 2002. Progress in Ownership Changes and Hidden Risks in China's Transition, *Transition Newsletter*, 13, no. 3 (May-June):1-5.

Forbes, Kristen. J 2000. A Reassessment of the Relationship Between Inequality and Growth. *American Economic Review*, 90, no. 4:868-887.

Jefferson, Gary H., Zhang Ping, and John. Z.Q. Zhao, 1998. Structure, Authority, and Incentives in Chinese Industry. In *Enterprise Reform in China: Ownership, Transition, and Performance,* ed. G. Jefferson and I. Singh. New York: Oxford University Press.

Jefferson, Gary H., Lu Mai, and John Z.Q. Zhao. 1998. Reforming Property Rights in Chinese Industry. In *Enterprise Reform in China: Ownership, Transition, and Performance,* ed. G. Jefferson and I. Singh. New York: Oxford University Press.

Jefferson, Gary H., Thomas G. Rawski, Li Wang, and Yuxin Zheng. 2000. Ownership, Productivity Change, and Financial Performance in Chinese Industry. *Journal of Comparative Economics*. 28, no. 4: 786-813.

La Porta and Florencio Lopez-de-Silanes. 1999. Benefits of Privatization - Evidence from Mexico. *Quarterly Journal of Economics* 114, no. 4: 193-242.

Li, Hongbin and Scott Rozelle, 2000. Savings or Stripping Rural Industry: An Analysis of Privatization and Efficiency in China. *Agricultural Economics* 23, no. 3:241-252.

Li Shaomin, Li Shuhe, and Zhang Weiying. 2000. The Road to Capitalism: Competition and Insitutional Change in China. *Journal of Comparative Economics* 28: 269-292.

Lin, Justin Yifu: Fang Cai, and Zhou Li. 1998. Competition, Policy Burdens, and State-Owned Enterprise Reform. *American Economic Review* 88:422-27.

McMillan, John and Barry Naughton. 1992. How to Reform a Planned Economy: Lessons from China. *Oxford Review of Economics and Politics* 8, no. 1: 130-143.

Megginson, William L. and Jeffrey M. Netter. 2001. From State to Market: A Survey of Empirical Studies on Privatization. *Journal of Economic Literature* 39, no. 2: 321-389.

Naughton, Barry. 1992. Implications of the State Monopoly over Industry and its Relaxation. *Modern China* 18, no. 1 (January 1992): 14-41.

NBS (National Bureau of Statistics). various years. *China Statistical Yearbook,* Beijing: China Statistics Press.

Rawski, Thomas G. 2002. *Recent Developments in China's Labor Market*. Report prepared for the International Policy Group, International Labor Office, Geneva.

Tian, George Lihu, 2000. State Shareholding and Corporate Performance: A Study of a Unique Chinese Enterprise Data Set. working paper, London Business School.

Su Jian and Gary H. Jefferson. 2003. The Determinants of Decentralized Privatization:Theory and Evidence from China. Graduate School of Economics and Finance, Brandeis University (Photocopy) (May 29).

Weitzman, Martin and Xu Chenggang.1994. Chinese Township and Village Enterprises as Vaguely Defined Cooperatives. *Journal of Comparative Economics* 18, no 2: 121-45.

Annex 1
Concordance of Ownership Classifications, 1994-1999

1994		1999	
Code	Ownership category	Code	Ownership category
State-owned			
11	State-owned enterprises	110	State-owned enterprises
12	State owned jointly operated enterprises	141	State owned jointly operated enterprises
11	Wholly state-owned companies	151	Wholly state-owned companies
Collective-owned			
21	Collective-owned enterprises	120	Collective-owned enterprises
		130	Shareholding cooperatives
22	Collective jointly operated enterprises	142	Collective jointly operated enterprises
Hong Kong, Macao, Taiwan-owned			
81	Overseas joint ventures	210	Overseas joint ventures
82	Overseas cooperatives	220	Overseas cooperatives
83	Overseas wholly-owned enterprises	230	Overseas wholly-owned enterprises
		240	Overseas shareholding limited companies
Foreign-owned			
71	Foreign joint ventures	310	Foreign joint ventures
72	Foreign cooperatives	320	Foreign cooperatives
73	Foreign wholly-owned enterprises	330	Foreign wholly-owned enterprises
		340	Foreign shareholding limited companies
Shareholding			
62	Limited liability company	159	Other limited liability companies
61	Shareholding limited companies	160	Shareholding limited companies
Private			
31	Private wholly-owned enterprises	171	Private wholly-owned enterprises
32	Private cooperative enterprises	172	Private cooperative enterprises
33	Private limited liability companies	173	Private limited liability companies
		174	Private shareholding companies
Other domestic			
51	State-collective jointly operated enterprises	143	State-collective jointly operated enterprises
		149	Other jointly operated enterprises
52	State-private jointly operated enterprises		
53	Collective-private jointly operated enter.		
54	State-collective-private jointly operated enter.		
9	Other enterprises	190	Other enterprises

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