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Product Market Regulation and Competition in China

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by Paul Conway, Richard Herd, Thomas Chalaux, Ping He and Jianxun Yu

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ABSTRACT/RESUMÉ

Product market regulation and competition in China

The extent of competition in product markets is an important determinant of economic growth in both developed and developing countries. This paper uses the 2008 vintage of the OECD indicators of product market regulation to assess the extent to which China's regulatory environment is supportive of competition in markets for goods and services. The results indicate that, although competition is increasingly robust across most markets, the overall level of product market regulation is still restrictive in international comparison. These impediments to competition are likely to constrain economic growth as the Chinese economy continues to develop and becomes more sophisticated. The paper goes on to review various aspects of China's regulatory framework and suggests a number of policy initiatives that would improve the extent to which competitive market forces are able to operate. Breaking the traditional links between state-owned enterprises and government agencies is an ongoing challenge. Reducing administrative burdens, increasing private sector involvement in network sectors and lowering barriers to foreign direct investment in services would also increase competition and enhance productivity growth going forward. Some of the reforms introduced by the Chinese government over the past two years go in this direction and should therefore help foster growth. This paper relates to the *2010 OECD Economic Review of China* (www.oecd.org/eco/surveys/china).

JEL Classification: F4 ; K2 ; L5 ; D2

Keywords: Regulation; macroeconomic policy; China; productivity

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Règlementation du marché des produits et concurrence en Chine

L'étendue de la concurrence sur le marché des produits est un déterminant important de la croissance économique dans les pays développés et en développement. Ce papier utilise la version 2008 des indicateurs de réglementation du marché des produits de l'OCDE pour évaluer dans quelle mesure l'environnement règlementaire en Chine favorise la concurrence sur les marchés de biens et services. Les résultats indiquent que, bien que la concurrence s'intensifie sur la plupart des marchés, le niveau général de la réglementation demeure restrictif au plan international. Ces entraves à la concurrence sont susceptibles de freiner la croissance à mesure que l'économie chinoise continue de se développer et devient plus sophistiquée. Ce papier examine ensuite différents aspects du cadre règlementaire chinois, et suggère différents types de mesures qui donneraient une plus grande latitude aux forces de marché. Briser les liens traditionnels entre entreprises publiques et agences gouvernementales reste un défi. Réduire les contraintes administratives, accroître la participation du secteur privé dans les secteurs de réseau et abaisser les barrières à l'investissement direct étranger dans les services stimuleraient aussi la concurrence et les progrès de productivité. Certaines des réformes introduites par le gouvernement chinois durant les deux dernières années vont dans ce sens et devraient donc encourager la croissance. Ce document se rapporte à *l'Étude économique de la Chine de l'OCDE, 2010,* (www.oecd.org/eco/etudes/chine).

Classification JEL : F4 ; K2 ; L5 ; D2

Mots-clés: Règlementation ; politique macroéconomique ; Chine ; productivité

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Product market regulation and competition in China

Paul Conway, Richard Herd, Thomas Chalaux, Ping He and Jianxun Yu[1]

Introduction and main findings

China' transition from a centrally-controlled economic system to a competitive environment driven by the private sector has been nothing short of extraordinary. After three decades of liberalisation, product markets have become increasingly competitive and market forces are now generally the main determinant of price formation and economic behaviour. Since China's accession to the World Trade Organisation (WTO) in 2001, the government has enacted a raft of pro-competition measures including a landmark law explicitly recognising the equivalence of private assets with state and collective property. A competition policy framework has also been established and the regulation of firm entry and exit has been improved. In addition, administrative reforms have enhanced the capacity of central government to oversee a market economy and regulation has become less reliant on microeconomic interventions and increasingly focused on setting framework conditions. In conjunction with fundamental changes in the relationship between the government and state-owned enterprises (SOEs), these measures have redrawn the boundary between the state and market and made a strong contribution to China's increasing prosperity.

This paper uses OECD indicators of the extent to which regulations that shape the business environment in markets for goods and services – henceforth referred to as product market regulation (PMR) – are conducive to competition and highlights areas in need of further improvement. These PMR indicators are new for China, but are based on a standardised procedure that has been used extensively to evaluate the stance of regulation in OECD and other countries. In Section 2, the paper sets out the underlying methodology and presents the overall indicator results for China. Although the elements of a competitive market-based economy are becoming increasingly well established, these results indicate that

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the transition is far from complete and that the reduction in the extent of government intervention lags behind China's impressive economic development.

In Section 3, firm-level data is used to assess the impact of an increasingly important private enterprise sector on the extent of competition in Chinese product markets. In Section 4, changes in the governance arrangements for SOEs and the impact on performance are evaluated. This section also reviews the structure of the industrial sector of the economy using the methodology adopted in previous OECD studies (Dougherty *et al*., 2007).

In Section 5, the paper goes on to outline the detailed PMR indicator results and associated policy recommendations that would increase the role of competition in resource allocation and improve China's future economic performance. If China is to maintain strong economic growth over the coming decades, policymakers must continue working to complete the institutional frameworks and processes that are already in place and strengthen implementation. In addition, ongoing improvements in SOE governance aimed at encouraging dividend payouts over industrial expansion would go a long way towards improving capital productivity in the state enterprise sector. Further reductions in the extent of state ownership in markets that are inherently competitive would also help in this regard. In some of the network sectors, regulatory changes have improved the scope for competition to some extent. However, ongoing work needs to focus on separating competitive and monopoly market segments and eliminating barriers to entry and public sector domination. In addition, the authorities need to develop the capacity and strengthen the hands of the sectoral regulators and further reduce direct intervention in the economy. Continuing to liberalise the regulation of foreign direct investment in services sectors would also benefit China's economic performance going forward.

The OECD's PMR indicators[2]

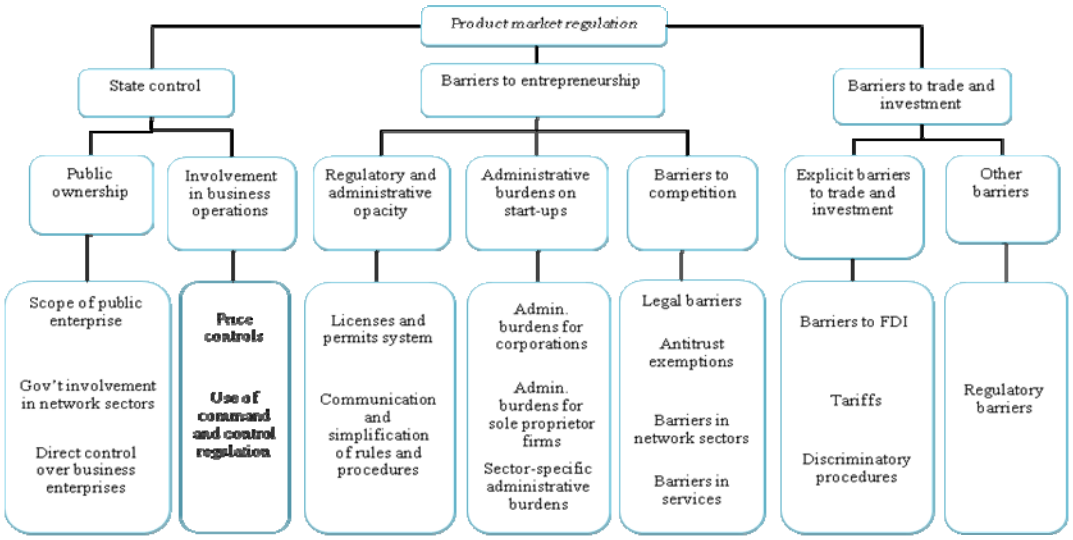
The OECD's PMR indicators assess the extent to which the regulatory environment promotes or inhibits competition in markets where technology and market conditions make competition viable. These indicators have been used extensively over the past decade to benchmark regulatory frameworks in OECD and other countries and have helped spur structural reforms that enhance economic performance.

The PMR indicator system summarises a large number of formal rules and regulations that have a bearing on competition. These regulatory data cover most of the important aspects of general regulatory practice as well as a range of industry-specific regulatory policies, particularly in network sectors. This regulatory information feeds into 18 low-level indicators that form the base of the PMR indicator system (Figure 1). These low-level indicators are progressively aggregated into three broad regulatory areas: *i) state control*; *ii) barriers to entrepreneurship*; and *iii) barriers to international trade and investment*.[3] In turn, at the top of the structure, the *overall PMR indicator* serves as a summary statistic of the general stance of product market regulation.

2. For a detailed presentation of the PMR indicators and the results for OECD countries, see Wölfl *et al*. (2009).

3. For ease of exposition, direct references to the names of PMR indicators are italicised throughout this paper.

Figure 1. The structure of the PMR indicator system



Source: Wölfl *et al*. (2009).

The PMR indicators have a number of characteristics that differentiate them from other indicators of the business environment. First, in principle, the low-level indicators only record "objective" information about rules and regulations, as opposed to "subjective" assessments of market participants as in indicators based on opinion surveys. This insulates the indicators from context-specific assessments and makes them comparable across time and countries. Second, the PMR indicators follow a bottom-up approach, in which indicator values can be related to specific underlying policies. One of the advantages of this system is that the values of higher-level indicators can be traced with an increasing degree of detail to the values of the more disaggregated indicators and, eventually, to specific data points in the regulation database. This is not possible with indicator systems based on opinion surveys, which can identify perceived areas of policy weakness, but are less able to relate these to specific policy settings.

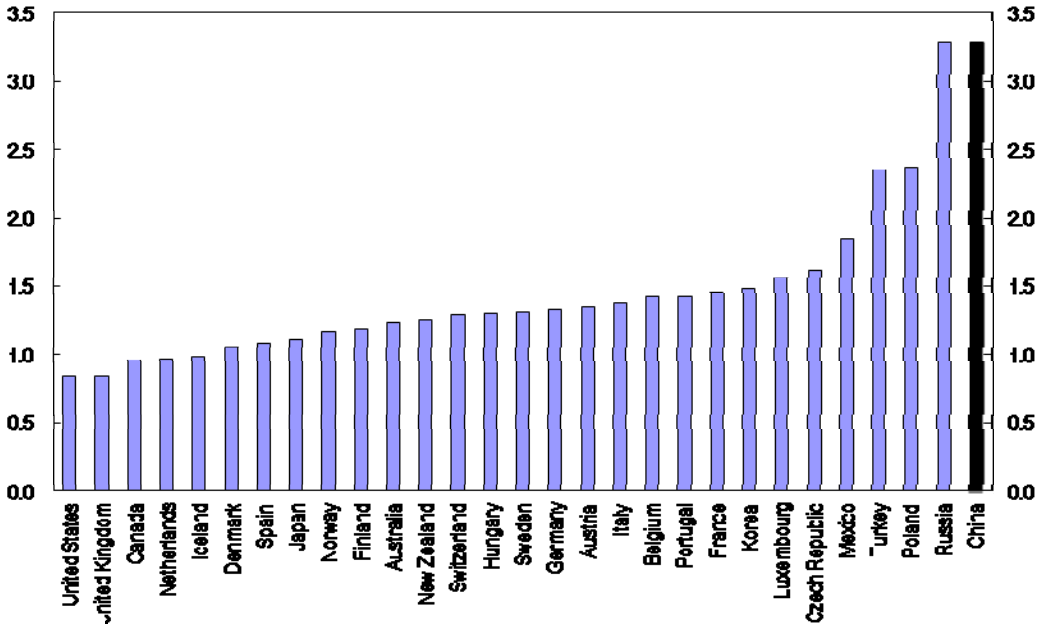
Product market regulation is still restrictive in China

The OECD's PMR indicators have been estimated for the first time for China based on regulatory data collected in 2008. They reveal that, despite liberalisation across a number of areas, product market regulation continues to substantially restrict competition. The *overall PMR indicator* is higher than in any of the OECD countries, including the emerging market economies within the OECD area (Figure 2).[4] All three of the high-level sub-components of the overall PMR index are elevated in China relative to comparator countries, particularly *state control* and *barriers to international trade and investment*, and the overall indicator is around the same level as in Russia (Figure 3). As discussed below, this implies ample scope for improving the regulatory environment, which would help sustain China's impressive economic performance going forward. Indeed, in fast-reforming countries, the situation is likely to have changed since the PMR data was collected.

4. By design, all the indicators in the PMR system range from 0 to 6 from least to most restrictive of competition.

Figure 2. The overall indicator of product market regulation as of 2008

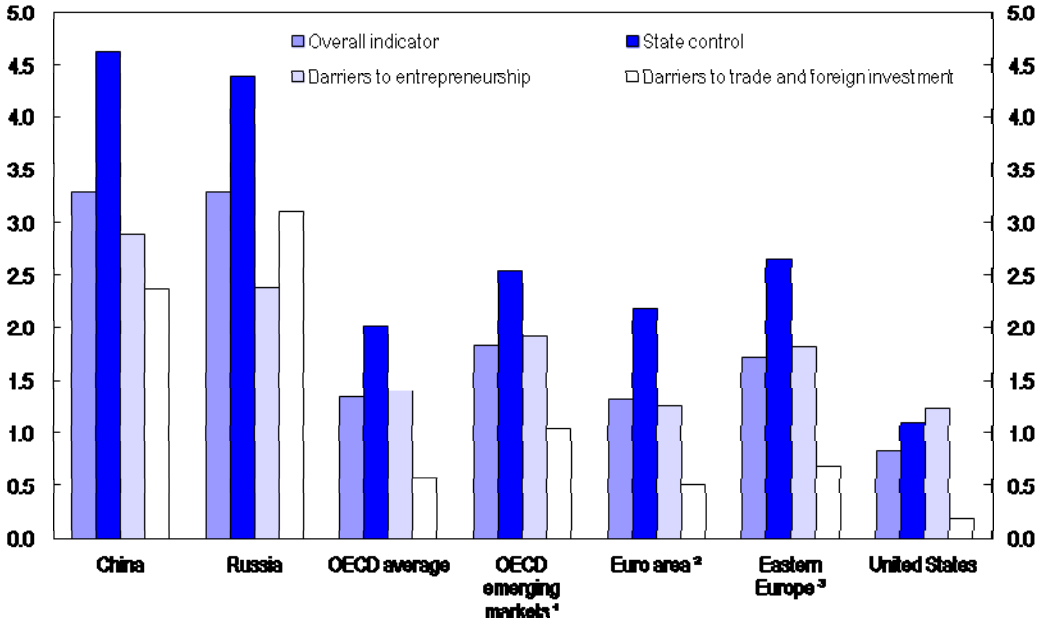
The indicator score runs from 0−6, representing the least to most restrictive regulatory regime



Note: Users of the data must be aware that they may no longer fully reflect the current situation.

Source: OECD, Product Market Regulation database.

Figure 3. Product market regulation in China, an international comparaison as of 2008



Note: Users of the data must be aware that they may no longer fully reflect the current situation.

Source: OECD, Product Market Regulation database.

The World Bank "Doing Business" indicators (World Bank, 2010) provide alternative and broader source of rankings that show China in more favourable light relative to other major emerging market economies. With respect to comparisons with advanced countries, the rankings in the combined indicator from this source are in broad agreement with those of PMR indicators. China is shown lower down the ranking than all but two of the countries shown above. In particular, the "Doing Business" indicators would rank the Russian Federation and Italy as worse places to do business than China, mainly because of implementation problems which are not covered by the product market indicators which focuses just on laws. However, only one of the four other major emerging market economies (South Africa) performs better than China. The other three (Brazil, India, Indonesia) perform markedly worse.

The business environment in China has also improved considerably over the past five years according to this indicator. In terms of the reduction in the average barrier to business, China was one of the countries where barriers fell the most between 2005 and 2010. Two reforms in particular were at the root of this improvement: the new company law and the new bankruptcy law (OECD, 2005). These new laws helped reduce the time needed to close a business and increase the recovery rate from bankruptcy. The company law helped reduce the time needed to register a business and also reduce the minimum capital needed to start a company. Elsewhere a number of administrative improvements appear to have been made notable in reducing the number of tax payments and lowering cost of construction permits.

Competition is increasingly robust in most markets

Notwithstanding the overall PMR indicator score, competition is robust and increasing across much of China's industrial sector. Indeed, the number of industrial sectors at the four-digit level that are assessed to be highly or moderately concentrated has decreased from just over one in four in 1998 to around one in eight in 2007 (Table 1), which is low by international standards, including in comparison with the United States (OECD, 2005a).[5]

Table 1. Market concentration in the industrial sector

Number of industrial sectors in selected ranges of the Herfindahl-Hirschman concentration index[1]
(grouped by the US Department of Justice merger thresholds)

	1998		2007	
	Number of industries	%	Number of industries	%
Highly concentrated (over 1 800 points)	88	15	34	7
Moderately concentrated (1 000 to 1 800)	70	12	36	7
Not concentrated (under 1 000)	433	73	453	87
Total number of industries	591	100	523	100

1 The Herfindahl-Hirschman index is the sum of squared market shares, out of 10 000; Industrial sectors used correspond to 4-digit ISIC industries for China.

Source: China National Bureau of Statistics (NBS) industrial micro data and joint NBS-OECD analysis.

5 . Because direct measures of competition do not exist, proxy measures are typically used in practice. Unfortunately, all proxies are imperfect and it is often possible to find examples where they do not accurately reflect competitive conditions. For example, economies of scale or scope may result in relatively high concentration ratios or prices that exceed marginal costs even when rivalry among firms may be strong. Despite these potential difficulties, concentration ratios are often used as a measure of competitive pressures.

Ironically, the foundations for robust product market competition in China are in part a legacy of the central planning era during which "complete sets" of manufacturing industries were established in many of the regions (Rawski, 2008). Compared to the Soviet Union, the management of industry was also significantly less centralised in China, with substantial authority given to provincial and local bureaucracies (Wong, 1986). Policymakers were also quick to see the benefits of competition early in the reform period and tended to divide the production bureaus of the line ministries into several SOEs within the same industry.[6] At the same time, restrictions on intermediate inputs were eased through the dual-track system, permitting a large expansion of the Township and Village Enterprises. Many of these enterprises began by supplying the SOEs, but ended up competing with them.

Although these factors may have laid the groundwork, the rise of market competition in China largely reflects the exit of SOEs and the burgeoning of the private sector. Thirty years ago the Chinese economy was virtually fully owned and operated by different levels of government. At their peak in 1978, SOEs produced 78% of total industrial output and employed 60% of the non-farm workforce. Collectively-owned enterprises accounted for the rest, with no other type of business enterprise permitted at the time. After the approval of private firms in 1979, the share of output produced by non-state and non-collective enterprises increased rapidly. Although SOEs continued to expand until 1990, their employment share gradually declined over this period as the private sector grew more quickly.

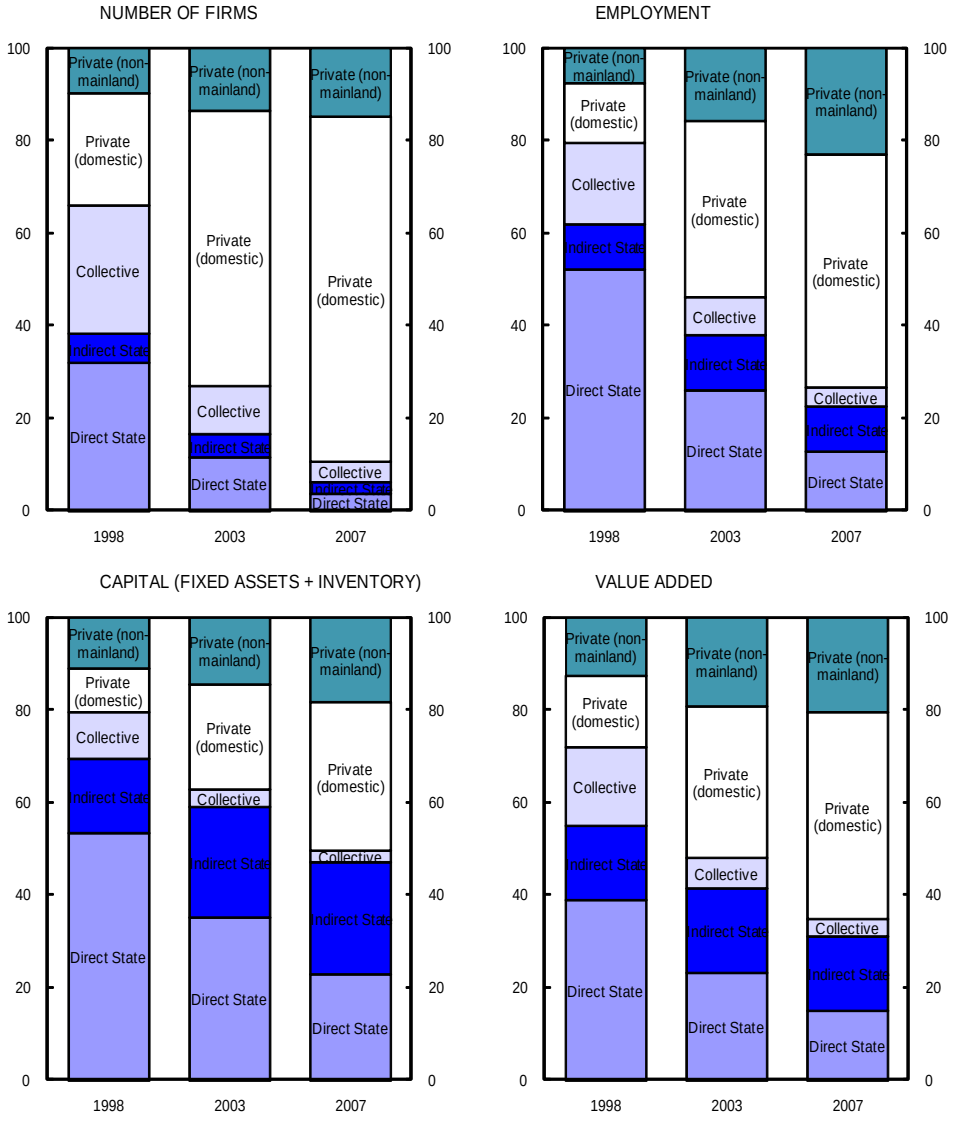
During the 1990s and early 2000s, the rationalisation of SOEs and liberalisation of the private sector were two key policy priorities underlying China's industrial development. The ownership of small and mid-sized SOEs was diversified and privatised and SOEs incurring large losses were encouraged to merge or go bankrupt. As a result, the state-owned sector of the economy was dramatically reduced. After peaking at over 112 million workers in the mid-1990s, SOE employment began to fall in absolute terms and from 1997 to 2001 the relative reduction in SOE employment was higher than in the previous 20-year period.[7]

In 2004, the privatisation process slowed. In the industrial sector, where the exit of SOEs has been the most rapid, the downsizing of SOE employment slowed down. With rapid growth in the private sector, however, the SOE share of employment, fixed assets and value added continued to decline, albeit at a slower pace (Figure 4). By 2007, despite only accounting for 6% of firms, SOEs directly controlled by the state produced 31% of the value added in the industrial sector, employed 22% of the workforce and controlled 47% of the stock of fixed assets, suggesting that SOEs tend to be relatively large and capital intensive.

6 . For example, the telecommunications monopoly enjoyed by the Ministry of Post and Telecommunication (MPT) was disrupted in 1994 by the introduction of a competitor, China Unicom. In 2000, the assets of the MPT were corporatised into two companies – China Telecom and China Mobile. A fourth major company, China Netcom, was hived off from China Telecom in 2002. This pattern of creating competing SOEs was repeated in other industries including oil, aviation, steel and power generation.

7 . Many of the privatisations that took place during this period simply involved recognising that a lot of the township and village enterprises formed in the 1980s were essentially private firms. Beginning in the mid-1980s, many firms registered as collectives, meaning they were controlled by local governments, re-registered as private firms when it because acceptable to "take off their red hats".

Figure 4. The relative size of the state-enterprise sector



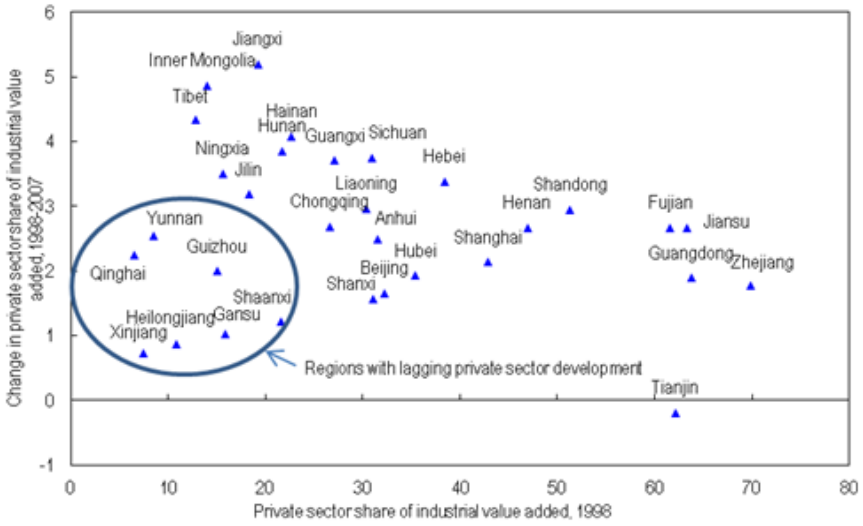
Source: Joint NBS-OECD analysis.

The exodus of SOEs from China's industrial sector has been more than offset by rapid private sector growth. Exiting SOEs have generally been small and medium-sized enterprises (SMEs) and their departure has tilted the employment distribution of the remaining SOEs towards larger firms. However, the influx of private-sector firms has driven a large increase in the number of SMEs operating in China's industrial sector. Overall, since the late 1990s, average employment at the firm level has fallen slightly as fewer and increasingly large SOEs are more than offset by a proliferation of smaller private-sector firms (Table 4 below).

The development of the private enterprise sector began in China's eastern coastal provinces that were at the forefront of many of the early reforms – in particular, Zhejiang, Guangdong, Jiangsu, Tianjin and Fujian. In 1998, 64% of industrial value added in these regions was produced by the private sector,

compared to an average of only 24% across China's other regions. By 2007, although the private-sector share of value added in the five leading eastern coastal provinces had increased to 80%, it had doubled to almost 50% in China's other regions, narrowing the gap relative to the coastal regions. This burgeoning of private enterprises across China displays a pattern of "convergence" whereby the private-sector share of value added has grown fastest in provinces previously dominated by the state-enterprise sector (Figure 5). This pattern of the private sector "spreading out" across China is clearly apparent across most regions with the exception of some of the relatively undeveloped western provinces and Heilongjiang in the Northeast.

Figure 5. Private sector development (industrial sector) by region, 1998-2007



Source: Joint NBS-OECD analysis.

Redrawing the boundary between the public and private sectors has heightened product market competition. In 1998, SOEs produced more than half of value added in 36% of industrial sectors. In turn, around 40% of these sectors were highly or moderately concentrated (Table 2). By 2007, the number of industrial sectors dominated by SOEs had dropped to one in ten, although the percentage of these sectors with inadequate competition remained more or less unchanged. At the other end of the spectrum, in 1998 SOEs produced less than 5% of value added in only 8% of industrial sectors whereas by 2007 this figure had risen to almost 45%. The percentage of these sectors with inadequate competition fell markedly over this period, indicative of large increases in the number of private sector firms with dispersed market share.

Table 2. Industry concentration and state ownership in the industrial sector[1]

	Number and Share of state controlled enterprises in value added							
1988	Less than 5%		5 to 25%		25 to 50%		Greater than 50%	
	Number	%	Number	%	Number	%	Number	%
Highly concentrated	16	35.6	13	7.6	9	5.6	50	23.3
Concentrated	3	6.7	12	7.1	15	9.4	40	18.6
Not concentrated	26	57.8	145	85.3	136	85.0	125	58.1
All above sectors	45	7.6	170	28.8	160	27.1	215	36.4
2007								
Highly concentrated	17	7.3	4	2.2	3	5.9	9	16.4
Concentrated	10	4.3	6	3.3	8	15.7	12	21.8
Not concentrated	205	88.4	173	94.5	40	78.4	34	61.8
All above sectors	232	44.5	183	35.1	51	9.8	55	106

[1] The extent of concentration across sectors is assessed using the Herfindahl-Hirschman index at the four-digit level.

Source: Joint NBS-OECD analysis.

This increase in product market competition has been a key driver of productivity gains. After a prolonged period of very low and volatile productivity growth, the commencement of economic reform triggered a large and sustained increase in total factor productivity (TFP). Recent studies estimate that TFP growth has averaged 2.7% to 3.8% per annum since the late 1970s, which compares favourably internationally (Table 3).

Table 3. Various estimates of TFP growth over the reform period

	Various authors	OECD
	Perkins and Rawski (2008)	(2010)
1978-2005	3.8	3.8
1995-2005	3.2	3.3
2005-2008		4.4
1978-2008		3.8
	Chow (2008)	
1979-2005	2.7	3.8
	Wu (2008)	
1993-2004	2.9	4.0
1993-1997	1.6	5.1
1997-2000	4.3	2.7
2000-2004	3.6	3.5
	Zheng *et al.* (2009)	
1978-2005	3.0	3.8
1978-1995	3.7	4.1
1995-2005	1.8	3.3

Source: As in table.

Some moves may reduce competition

There have been several industries where the extent of competition has been reduced. In *the aviation industry*, the government first consolidated the numerous existing state-owned airlines into three groups (China Air, China Eastern and China Southern), although the airlines continued to operate under their previous names. This process was finished in 2002. Then in 2005, the government allowed the entry of private companies into aviation. Quickly 14 companies were established. A number were weak managerially and some had a poor safety record. During 2009, air travel was hit by the slowing in Chinese growth and the fall in world trade. The three main airline groups received funds from the government to enable them to keep trading. However, the difficult trading environment meant that, by 2010, only one private company remained in business.

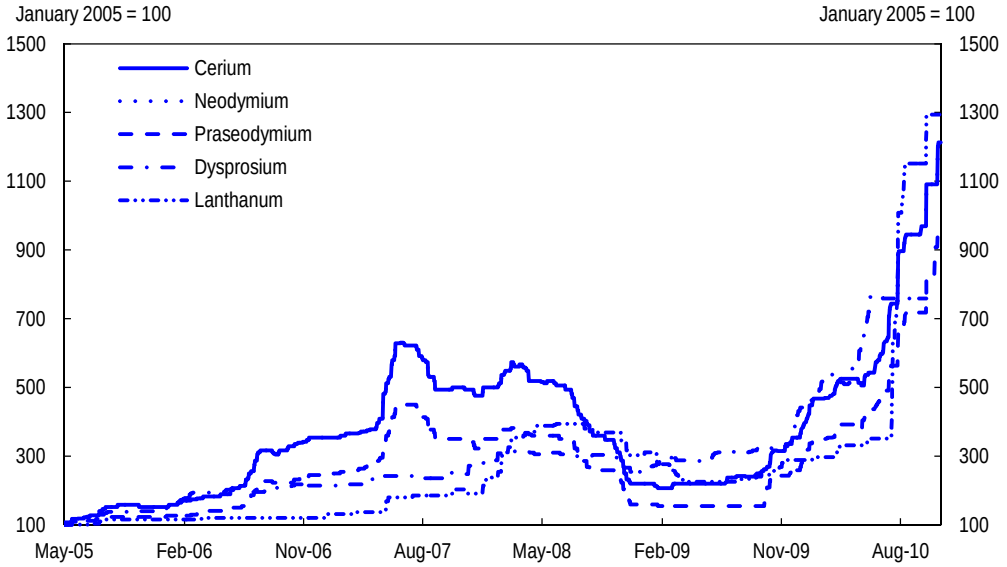
In *the telecommunications industry* competition had been markedly increased at the beginning of the past decade, when the historic telephone company was split into two (land-lines and mobile), new entrants allowed into mobile telephony and two essentially network companies created. As a result, there were two companies with land line and mobile branches, one mobile only company and two network companies. The network companies specialised in delivering IP telephony and internet services to cable TV companies. All companies were state-owned. However, in 2008/9 the government decided to merge the network companies into the three more retail-oriented companies, reducing a potential source of competition. There are now just three companies operating in telecommunications, all listed on the Hong Kong Stock Exchange.

The rare earth industry is another sector where the government has been trying to reduce the number of producers. At present, half of the output of the industry is obtained as the by-product of iron ore extraction at one large mine in Inner Mongolia. The remainder of the industry is spread across southern China in over 100 mines. In 1996, China accounted for 43% of world reserves. By 2009, China accounted for 96% of world production (Long *et al.,* 2010), as its production costs are low and its environmental controls poor. This high production rate has led to China's share of world reserves falling to 30% of total world reserves by 2009. This movement has prompted concerns on the part of the Ministry of Commerce that current rates of production and exports are depleting national reserves which may be exhausted in 15 to 20 years. As a result, the Ministry of Land and Resources cut the 2010 production quota by 25% and the Ministry of Commerce reduced the export quota. In addition, the Ministry of Industry and Information Technology (MIIIT) produced a development plan for the sector that resulted in the State Council announcing on September 6th 2010 that the consolidation of the industry would be pursued actively though mergers and acquisitions. The objective of the plan is to reduce the number of companies operating in the area from 90 in 2010 to 20 by 2015. Fifteen cities in the producing areas of Guangdong, Guangxi, Fujian, Jiangxi and Hunan provinces, accounting for 38% of output, signed an agreement to jointly supervise and regulate rare earth mining. The cities aim to:

- strictly follow a quota system for developing rare earth minerals,
- establish an integrated rare earth market,
- create a union of rare earth mining companies in southern China,
- adopt better pricing and distribution mechanisms through negotiations,
- reduce the extent of illegal exports.

The result of these production cuts and the related exports cuts (see below) has been a surge in world prices for these products (Figure 6).

Figure 6. World prices for rare earth metals



Source: Thomson Reuters Datastream.

The State Council *Guidelines,* announced on September 6th 2010, also focussed on consolidating the automobile, steel, aluminium cement and machinery manufacturing industries. Other sectors that are covered, but not specifically mentioned by the *Guidelines* include coal, non-ferrous metal and ship manufacturing. The *Guidelines* state that local governments should respect the will of the companies, follow market rules and not promote mergers of enterprises irresponsibly or arbitrarily. The new policy also requires the Central Bank, the China Banking Regulatory Commission and the Ministry of Land and Resources to support the reorganisation of SOEs by ensuring that there is an adequate flow of bonds; sufficient bank loans to provide capital and merger loans and offering land to facilitate mergers. In the steel industry, the pursuit of consolidation was a major feature of the 2009 stimulus plan for the industry, but plans have not yet been as successful as expected because private steel companies have resisted being merged into SOEs. However, in a number of provinces, privately-owned coal mines have been merged into state-controlled enterprises. While the new *Guidelines* remove bans on cross-province mergers, these are proving difficult to achieve. Most of the plans are being implemented by provincial governments and they are reluctant to share tax revenues with other provinces. In the aluminium industry, the government has been trying to consolidate the industry since 2006. Local governments have to report their plans for consolidation of these industries to the MIIT which hopes to increase industry concentration ratios by 2015.

SOE governance has been comprehensively reformed

Prior to reform, public enterprises were essentially government bureaus producing under the direct control of the line ministries. Pay and conditions of staff were sent according to civil service scales, though progressively in the 1980s and 1990s, pricing became market-oriented. Over recent years, reflecting a strong commitment to improving the performance of the state-enterprise sector, SOE governance has been comprehensively reformed. Early reforms included corporatising SOEs and increasing managerial independence by delegating decision making from supervisory government bureaus to SOE management. More recently, as part of ongoing efforts to separate the ownership function from other aspects of government policymaking, the *ad hoc* institutional structures that oversaw the major SOEs were

centralised in 2003. The newly-created State-owned Assets Supervision and Administration Commission (SASAC) was given the primary mandate of exercising the government's ownership rights in state assets, including overseeing SOE restructuring.[8]

With the objective of creating internationally competitive firms large enough to join the ranks of the global Fortune 500, SASAC has progressively overseen a number of mergers and currently supervises 141 SOEs, down from 196 at its inception.[9] Many of the larger companies in SASAC's portfolio were converted from the industrial ministries and operate as holding companies with a large number of subsidiaries. Collectively, SOEs under SASAC control at the central level employ around 8.5 million workers, implying an average firm size of more than 50 000 employees. SASAC plans further consolidation and aims to reduce the number of SOEs at the central level to between 80 and 100 by 2010. To speed up this process, SASAC has recently announced the formation of asset management companies to administer some of the smaller and underperforming SOEs.

As well as operating at the central level, a number of provinces and municipalities have also established local-level SASAC branches to oversee SOEs owned by lower levels of government, significantly helping to clarify local control over local SOEs. In terms of capital employed, the local state enterprise sector is about as big as the central state sector but employs around 75% of the total SOE workforce.

The introduction of SASAC marked the beginning of a new phase in SOE governance during which corporatisation was accelerated and a number of reforms aimed at improving governance implemented.[10] In many cases, SASAC is fulfilling an ownership function that had not always been fully legally exercised by government in the past, with negative implications for management incentives and monitoring. In addition, the overriding theme of recent reforms has been to lessen the Government's direct involvement in SOEs. Boards of directors have been introduced in most SOEs, including independent directors, along with clearer corporate structures. SASAC has also strengthened managerial incentives by introducing monitoring systems and contracts that link the salaries of SOE management to performance.

With improved governance and other reforms, SOEs are, in some ways, operating more like private-sector firms. In the past, SOEs tended to carry larger inventories compared to private firms, perhaps reflecting greater access to credit and less exposure to competition (Table 4). However, this differential has fallen over recent years as the onus on SOE management to become more efficient and profitable has increased. In addition, government subsidies have heavily favoured SOEs in the past but this gap has also closed over recent years, reflecting the government's commitment, made as part of China's bid for WTO membership, to substantially reduce subsidies to the state enterprise sector.

In other important ways, however, China's SOEs still differ substantially from their private sector counterparts. First and foremost, as well as being larger, SOEs are much more capital-intensive. Since the late 1990s, capital employed per worker in the state-enterprise sector has increased enormously and is now

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8 . SASAC is a ministerial-level "special organisation" reporting directly to the Sate Council. Its mandate does not extent to the financial sector where the ownership role is performed by the Central Huijin Investment Company and supervision is the responsibility of the Central Banking Supervisory Committee.

9 . The Chinese government aims to increase the number of Chinese firms listed in Global Fortune 500 to around 50 by 2015, up from 37 in 2009. In 1995, only 3 Chinese companies were in the Global Fortune 500.

10 . At end 2006, the process of corporatising the SOEs was approaching completion with more than 80% of all SOEs, and virtually all of those controlled by the central government, incorporated under the Company Law (OECD, 2009).

almost four times greater than in the private sector. As well as reflecting the intrinsic nature of the sectors in which SOEs have become increasingly concentrated, this may also be indicative of a lingering lending bias towards SOEs in the predominantly state-owned banking sector (OECD, 2010). Indeed, the share of long-term liabilities in total assets is almost 2.5 times larger in SOEs compared to private firms, indicative of preferential access to bank financing. Finally, private firms, particularly those owned by non-mainland investors, are much more likely to export than state-controlled firms.

Table 4. Comparison of SOEs and private firms in the industrial sector

		1998	2003	2007
Employment	Average number of employees			
Public sector		662.1	716.8	887.9
Non-state sector		250.0	229.0	200.0
Capital intensity	000 yuan per employee			
Public sector		82.2	193.5	364
Non-state sector		51.6	68.1	97.7
Inventory	% of annual sales			
Public sector		27.2	16.2	12.6
Non-state sector		19.7	13.5	11.0
Long-term liabilities	% of total assets			
Public sector		22.2	19.1	17.1
Non-state sector		11.3	8	6.9
Exports	% of total exports by sector			
Public sector		25.7	13.7	9.8
Non-state sector		74.3	86.3	90.2
Subsidies	% of value added			
Public sector		2.1	1.5	0.8
Non-state sector		0.6	0.9	0.7

Source: Joint NBS-OECD Analysis.

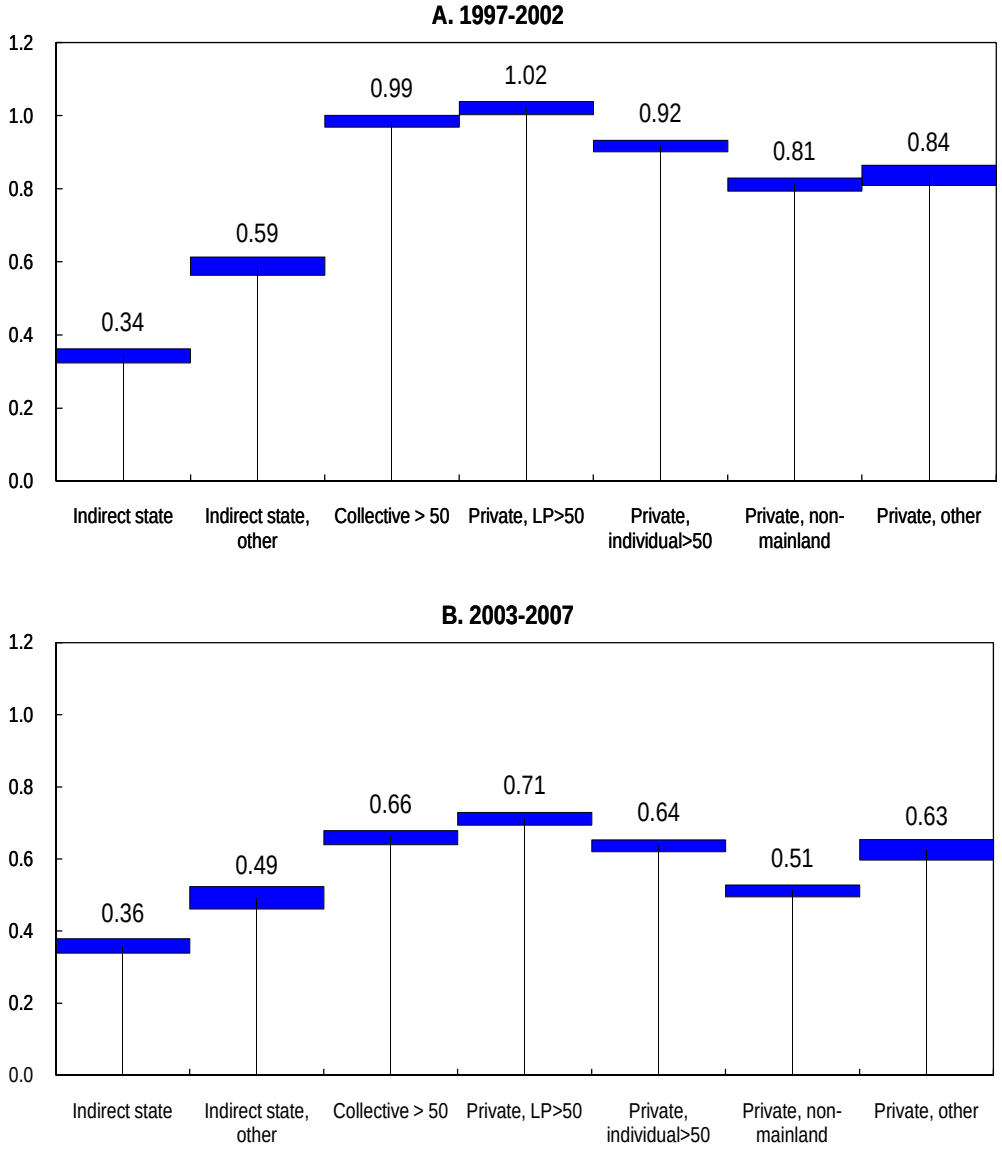
SOE performance has improved but still lags the private sector

The overall productivity of state-owned or controlled companies remains well below that of privately controlled companies despite evidence that their productivity has increased in recent years. This holds even when allowing for the different industries and the varying location of private and state-owned companies and differences in size (Figure 7).[11] This is consistent with the results presented in (Dougherty *et al*., 2007) and many other studies that use a wide range of methodologies. Between 2004 and 2007, total factor productivity (TFP) in the state-owned sector started to catch up with that in the state-enterprise sector relative to the private sector: while TFP in the state-enterprise sector averaged half that of the private sector over 1997-2003, it rose to close to two thirds in 2004-07. Underscoring the benefits that even partial privatisation can bring, industrial firms with state ownership of less than 50% are around 40% more productive than fully-state-owned firms. Lower productivity in the SOEs is systemic across China's industrial sector and does not simply reflect regional and sectoral differences.

11 . Technical details of the estimated production function underlying the results presented in Figure 7 are given in the Annex.

Figure 7. Differences in total factor productivity by firm ownership[1]

Relative to directly state controlled (state > 50%)



[1] Technical details of the model underlying these results are given in the Annex. The 95% confidence interval is shown by the thickness of the bar.

Source: Joint NBS-OECD analysis.

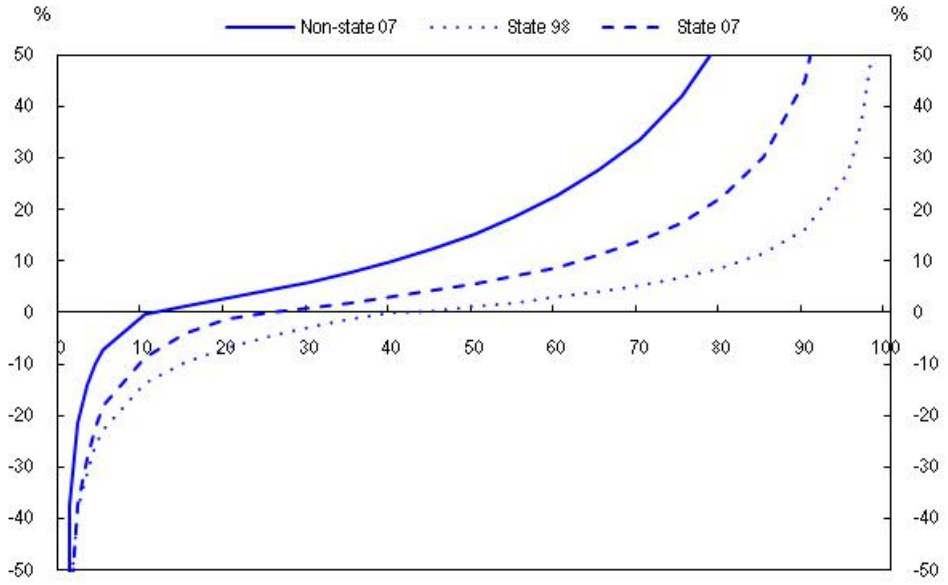
This pattern of relatively high labour productivity and low TFP indicates that SOEs use their capital stock less efficiently than private sector firms. With capital accumulation a key driver of GDP growth and SOEs responsible for a large share of total investment, low capital productivity in the state enterprise sector amounts to a significant drag on economic growth. For instance, Dollar and Wei (2007) find that systemic distortions in capital allocation arising from government ownership have a large negative impact on GDP. According to their simulations, if capital were allocated more efficiently, total investment could fall by 5% of GDP without any sacrifice of economic growth.

Reflecting the productivity results, the rate of return on assets employed by the state enterprise sector has significantly improved over recent years but still lags that of the private sector. In the mid-1990s, the entire public enterprise sector only just broke even as a plethora of technically insolvent SOEs cancelled out most of the profits of the SOEs in better financial health. Since then, the state enterprise sector has moved strongly into profitability with the average return on the assets of industrial-sector SOEs increasing almost ten-fold from 2.2% in 1998 to 21% in 2007.[12]

This impressive profitability improvement has not been even across all state-controlled firms, with the largest gains occurring at the upper end of the distribution – from 1998 to 2007, 90% of the improvement in returns was generated by the top 30% of SOEs (Figure 8). Indeed, much of the resurgence in SOE profitability is explained by a relatively small number of central SOEs operating in resource extraction and processing sectors which experienced a period of unprecedented demand that massively boosted commodity prices. Although the best-performing SOEs earn the bulk of profits, there has been some improvement across the distribution and the median return for industrial SOEs increased from only 1.1% to 5.5% between 1998 and 2007. In no small part, this reflects reforms enacted at the firm level to restructure and rehabilitate unprofitable SOEs as well as a raft of bankruptcies that closed thousands of loss-making SOEs.

In spite of these positive developments, many of the smaller SOEs still make losses or barely break even – in 2007 one in five SOEs earned a negative return. State enterprises under provincial and local SASACs have also increased profitability, but still lag behind the central SOEs. Overall, SOEs typically continue to be less profitable than private-sector firms in the same region and industry.

Figure 8. Distribution of rates of return on physical assets



Source: Joint NBS-OECD analysis.

12 . There was a temporary reversal of firtunes in 2008, when related to the global recession, the profits of the central SOEs fell by 30%, the first decline since 2002. Profits rebounded, however in 2010.

Detailed PMR indicator results and policy recommendations

The paradox of China's stellar economic performance over the reform period is that it has occurred while the transformation of institutions is still far from complete and aspects of the regulatory environment continue to bear some of the hallmarks of the planning era. Indeed, the overall PMR indicator reported in Figure 2 above points to a regulatory environment that is significantly less conducive to competition than in OECD countries, suggesting that institutional development has, in some ways, lagged behind China's economic transformation. It would seem that the benefits of the substantial reforms that have been put in place as well as the rise of the private sector – in conjunction with "creative improvisation" to bridge institutional gaps – have so far outweighed the costs implicit in the remaining policy-induced distortions (Brandt and Rawski, 2008).[13]

Going forward, the regulatory impediments implicit in the current framework are increasingly likely to constrain growth as the Chinese economy continues to develop and becomes more sophisticated. In what follows, the mid and low-level PMR indicators are used to identify regulatory areas where China's policy environment lags even the worst-performing OECD countries and which therefore offer the greatest scope for reforms to boost economic performance. The discussion is ordered according to the three broad regulatory areas summarised by the PMR indicators – *state control*, *barriers to entrepreneurship*, and *barriers to international trade and investment*.

State control is still pervasive compared with OECD countries

Despite rapid privatisation and widespread improvements in SOE governance, the extent of *state control* in the Chinese economy is, according to the PMR indicators, still higher than in any OECD country (Table 5). This arises from a high degree of both *public ownership* and government *involvement in business operations*. As mentioned above, these indicators do not take into account the impact of recent policy statements such as the State Council's "Several Opinions on Encouraging and Guiding the Healthy Development of Private Investment" issued in May 2010. The policy aims at facilitating the raising of private capital. Cross-region and cross-industry mergers, acquisitions and re-organisations will be launched, while the proportion of state-owned capital in state-controlled enterprises will be reduced. One of the objectives is to open up sectors such as telecommunications, banking and electricity to private investment. These sectors have, to date, been dominated by public enterprises.

13 . As well as a legacy of competitive markets, a number of other potential explanations for China's strong economic performance given institutional shortcomings have been proposed. Rawski and Rawski (2008) argue that historical and cultural factors have endowed the Chinese population with a rich and flexible portfolio of organisational skills well suited to entrepreneurial development. Knowledge transfers from foreign firms, which entered early in the reform process, and the influence of the overseas Chinese community may also be part of the reason productivity growth has been strong despite weaknesses in the regulatory framework.

Table 5. State control in China, international comparison

	China	Russia	OECD average	OECD emerging markets[1]	Euro area[2]	United States
Overall PMR indicator	3.30	3.30	1.34	1.83	1.32	0.84
State control	4.63	4.39	2.03	2.54	2.19	1.10
Public ownership	5.33	4.28	2.91	3.46	3.08	1.30
Scope of public enterprise sector	6.00	4.64	3.10	3.54	3.23	2.25
Direct control over business enterprises	4.50	4.19	2.86	3.67	2.93	0.68
Government control in infrastructure sectors	5.48	4.02	2.76	3.18	3.08	0.99
Involvement in business operations	3.94	4.50	1.15	1.61	1.30	0.90
Use of command and control regulation	3.50	4.00	1.52	1.94	1.88	1.30
Price controls	4.38	5.00	0.78	1.29	0.71	0.50

[1] Czech Republic, Hungary, Korea, Mexico, Poland, Turkey.
[2] Austria, Belgium, Finland, France, Germany, Italy, Luxemburg, Netherlands, Portugal, Spain.

Source: OECD Product Market Regulations database.

SOEs still dominate some sectors

In December 2006, SASAC issued a policy directive unveiling plans to maintain absolute control through sole ownership or an absolute controlling stake in SOEs operating in seven sectors declared to be "strategic" – that is, defence, electrical power and distribution, oil and chemicals, telecommunications, coal, civil aviation and shipping (Table 6). In addition, the government also aims to maintain significant absolute or relative controlling stakes in a range of sectors described as "basic or pillar industries". This marked a shift in policy away from encouraging private-sector involvement in all competitive sectors of the economy to one of privatising smaller SOEs in non-strategic sectors while increasing state ownership in enterprises deemed to be strategic. This is consistent with the approach first expressed in the 9th Five-Year Plan of "grasp the big, let go of the small".

Table 6. Policy goals on state ownership across sectors

Description	Sectors	Ownership goal
Strategic and key	Defence, power generation and distribution, oil and petrochem, telecom, coal, civil aviation, shipping	Maintaining 100% state ownership or absolute control; increasing state-owned assets in these sectors
Basic and piller industries	Machinery, auto, IT, construction, steel, base metals, chemicals, land surveying, R&D	Absolute or conditional relative controlling stake; enhancing the influence of state ownership even as the ownership share is reduced where appropriate
Other industries	Trading, investment, medicine, construction materials, agriculture, geological exploration	Maintaining necessary influence by controlling stakes in key companies; in non-key companies stage ownership will be clearly reduced

Source: Mattlin (2007).

In line with this policy, SOEs continue to dominate some key sectors. In particular, the upstream extraction and production of natural resources (oil, gas, coal and some ores) as well as large-scale machinery building are subject to a large SOE presence. State-run firms also control a number of the network sectors, particularly electricity generation and distribution, natural gas and water. In some of these sectors the share of value added produced by SOEs has declined very little since the late 1990s (Table 7). Outside of the industrial sector, SOEs continue to dominate banking, telecommunications and the media.

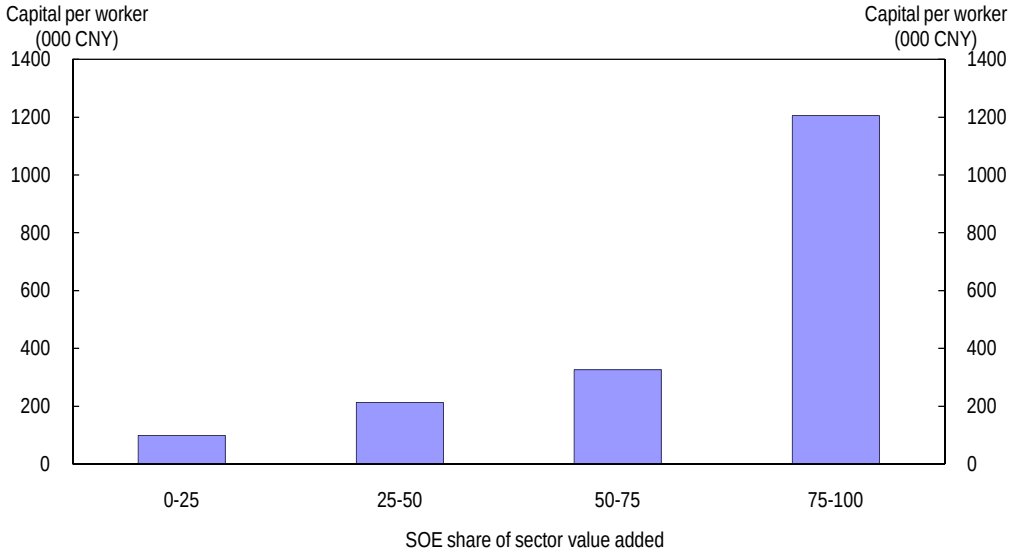
Table 7. Industries with the highest degree of state ownership

	Value added			Fixed capital and inventory	Employ-ment	Number of com-panies
	1998	2003	2007	2007		
Manufacture of tobacco	98.9	99.3	99.8	99.2	95.5	78.6
Extraction of petroleum and natural gas	99.9	93.9	97.2	97.0	97.7	50.6
Production and supply of electric power and heat power	87.5	84.0	88.6	87.9	87.6	62.4
Production and supply of water	95.4	86.1	68.2	82.1	86.2	70.4
Mining and washing of coal	83.3	80.8	66.5	80.8	70.0	11.2
Processing of petroleum, coking, etc.	87.5	81.0	62.3	68.5	50.0	10.3
Manufacture of transport equipment	69.3	64.6	48.9	55.3	37.1	9.5
Production and supply of gas	82.7	74.9	46.2	61.0	65.8	36.8
Smelting and pressing of ferrous metals	78.7	66.0	45.4	61.2	43.9	4.6
Mining and processing of non-ferrous metal ores	57.1	44.5	34.6	45.4	41.9	14.1
Smelting and pressing of non-ferrous metals	58.5	48.1	34.1	47.2	36.3	6.5

Source: Joint NBS-OECD analysis.

In less capital-intensive industries the SOE share of value added is typically much lower and declining (Figure 9). However, despite the increasing concentration of state enterprises in sectors deemed to be strategic, SOEs continue to operate in all industrial sectors at the 2-digit level, as evidenced by the maximum value for the PMR indicator of the *scope of public enterprise sector* (Table 5 above). Such an indicator may, however, overstate the influence of state-owned companies in the economy, as while state companies are omnipresent, their share of output and impact on competition is limited in a number of sectors.

Figure 9. Capital intensity and state ownership



Source: Joint NBS-OECD analysis.

SOE governance needs to be improved further

Given the prevalence of SOEs in key sectors of the Chinese economy, overcoming weaknesses in corporate governance under state ownership is a key issue. An overriding theme of recent reforms in this area has been to lessen the government's direct control over SOEs by allowing them to operate in their commercial interests while at the same time maintaining proper and efficient supervision. As detailed in the *OECD Guidelines on Corporate Governance of State-Owned Enterprises* (OECD, 2005b), priority areas include:

- ensuring a level playing field with the private sector;
- improving the transparency of SOEs objectives and performance;
- strengthening and empowering SOE boards;
- reinforcing the ownership function within the state administration;
- providing equitable treatment of minority shareholders.

Although important steps have been taken along these lines, high PMR indicator values for *direct control over business operations* and *government control in infrastructure sectors* suggest that the line between government and the SOEs is still blurred. This indicates that SOE decisions still sometimes reflect the government's intentions, rather than purely commercial goals. Further reform and better implementation of existing policies is necessary to encourage greater commercialisation of the SOEs and improve competition.

Decisively cutting the traditional ties between SOEs, government agencies and the Communist Party is an ongoing challenge for SOE governance in China. This is proving difficult given that almost half of the chairpersons and more than one third of chief executive officers of central SOEs were appointed by the Central Organisation Department of the Communist Party and have civil servant status (Hu, 2007). In addition, party committees in SOEs imbue corporate governance with party principles and often play an active role in human resources and the strategic decision making of the enterprise.

If SASAC is to achieve its original intention of separating government ownership from policymaking and regulation, then its supervisory role needs to be clearly defined and adhered to.[14] The core business of SASAC should involve monitoring SOE performance and planning, participating in shareholder meetings, appointing SOE directors, and periodically organising and monitoring sales of SOE shares. Strategic decisions on human resources, budgets and investment strategies should be left in the hands of the SOEs and the government's ownership role should not be used to pursue the objectives of industrial policy. Government interference in corporate operations outside its scope of responsibility as capital provider has a negative impact on competition and runs contrary to the original principles on which SASAC is based. Experience in other countries indicates that mixing regulatory and ownership functions tends to degrade the quality of both.

Another ongoing challenge for SOE governance in China is to eliminate investment distortions arising from government ownership. Increasing the share of SOE profits paid as dividends would help in this regard. Instead of paying dividends, SOEs have generally ploughed increasing profits back into investments that have in some cases been undisciplined and contributed to a pattern of "boom and bust" investment cycles.[15] SASAC has been working to change this and since 2008 has required SOEs to distribute part of their profits as dividends. Although this is a useful start, the prescribed dividend rates are low by OECD norms and should be increased.[16] Larger SOEs also need to put formal dividend policies in place that return to shareholders surplus earnings on which management cannot expect to earn an adequate risk-adjusted return.

In 2005, SASAC announced its intention to introduce a "state assets management budget" to consolidate the investment funds of the central SOEs. Under this scheme, SOE dividends are remitted to SASAC which then allocates them in line with the government's industrial policy. This risks merely transferring the inefficiencies inherent in a non-market based approach to capital formation to SASAC. Instead, SOE dividends and privatisation proceeds should be paid directly to the Ministry of Finance and integrated into the budgeting process, as is standard practise in OECD countries.

SOE governance could also benefit from better implementation and increased enforcement of reforms that are already in place. For example, information disclosure and transparency of the SOEs lags behind existing rules and standards. SASAC's plan to require all 141 SOEs under its control to publish annual reports from 2008 should improve transparency and help untangle the opaque mass of cross shareholdings between a number of the middle-tier SOEs and their subordinate firms. Although being strengthened, limited protection for minority shareholders also diminishes the effectiveness of the governance structures in promoting the interests of all owners (OECD, 2008).

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14 . This is the intention behind the "State-owned Assets Law of the People's Republic of China", which came into force in May 2009 after ten years of deliberation. Prior to this law, SOE policies were governed by the "Interim Measures for the Transfer of Enterprise State-owned Property Rights", issued in December 2003.

15 . During the planning era the financing needs and profits of the SOEs were included as part of the state budget with more than half of the government's budget revenues in the late 1970s being generated by SOEs. The government stopped collecting dividends from SOEs in 1994 because their profitability was so weak that it was considered better for the SOEs to retain profits so as to strengthen incentives.

16 . SOEs operating in the tobacco, petrochemicals, coal, electricity and telecommunications sectors are required to pay out 10% of gross profits as dividends. For SOEs in the steel, transport, electronics and retail trade sectors the analogous figure is 5% while SOEs in the defence sector and state-owned R&D institutions will continue to be exempt from dividend payments.

Policymakers need to focus on setting framework conditions

A corollary of increased SOE independence in strategic decision making is that Chinese policymakers need to increasingly focus on setting framework conditions for private sector activity and maintaining an arm's length relationship between the state and market. Organisational and administrative reforms taken over the past decade have considerably improved the capacity of the central government to effectively regulate a market-based economy. The 2003 government reorganisation, during which the industrial ministries – once the core of the planned economy – were abolished, marked a decisive shift towards market-based regulation. However, although policymaking has moved a long way from the previous system of open economic interventions, the PMR indicators still imply a degree of *command and control* type regulation that is higher than in most OECD countries, implying that further progress would be beneficial for competition.

There is empirical evidence from China that creating a good institutional environment improves the performance of companies through increasing outlays on research and development (R&D). This can be seen by comparing the business environment in different cities in China across several dimensions (Lin *et al.*, 2010). In particular, the extent to which entrepreneurs felt that contracts were enforceable at a local level and the extent to which local governments were felt to encourage business (as opposed to acting in a predatory fashion) both raised the R&D effort of local firms, while the direct appointment of the CEOs of local SOEs by the government adversely impacted on R&D.

Reflecting the lingering tendency for command and control regulation, *price controls* are, according to the PMR indicators, used to a much greater degree in China than in any OECD country.[17] Policy-induced price distortions can stifle industry development and impose major costs through inefficient resource allocation. Price controls continue to be applied to a range of goods in China including oil and natural gas, electricity, water, tobacco, and grains and petroleum products. In May 2010, the government moved the regulation of petroleum prices closer to a market basis by allowing a price change if international crude oil prices have moved, on average over a period of 22 days, by more than 4% since the latest adjustment date.

Privatisation is the best cure

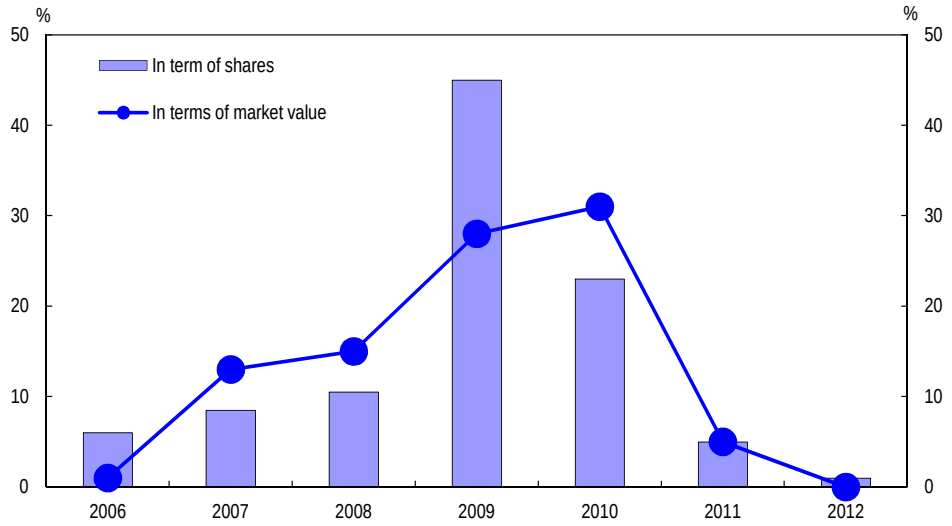
Revitalising the privatisation process is the ultimate way of ensuring that SOEs operate on commercial grounds and ending the harmful practice of state-owned banks skewing lending towards the state enterprise sector. The rolling back of the state enterprise sector and rise of the private sector has been at the epicentre of China's economic reforms over the past 30 years and a key driver of improvements in capital allocation and TFP. This has also been the experience in many developed and developing countries in which privatisation has been found to improve firm profitability, real output and efficiency (*e.g.* Megginson and Netter, 2001; Kikeri and Nellis, 2004). In the case of China, further reductions in the scope of state ownership would help minimise government interference in business decisions and allow SASAC to focus on ownership oversight and transfer its regulatory responsibilities to other agencies.

When privatisation began in the 1990s, the Chinese government instigated a two-tier structure under which its original equity formed a class of non-tradable shares distinct from new equity. Although both

17 . Price controls are established under the Pricing Law and set by the NDRC at the central level and by the Bureau of Commodity Pricing in each province. Government prices are fixed prices whereas government guidance prices are usually set as a basic price, and a range within which prices can fluctuate. In 2006, 4.7% of total retail goods were subject to price controls.

share types had the same profit and voting rights in principle, the state's non-tradable shares were designed to be held in perpetuity and could not be sold on public markets.[18] In 2005, concerned by the negative impact of non-traded shares on the development of equity markets and corporate governance, the government abandoned this policy and required SOEs to implement plans to merge the two share classes.[19] On current plans, all SOE shares are due to become fully tradable by 2012 .This reform has entailed a number of important benefits including improving corporate governance and liquidity in China's capital markets. The reform has been particularly important in improving the share price of smaller companies, those with Chinese auditors and those where the turnover was low (Beltratti *et al*., 2010). While nearly all of the restructuring plans were completed by 2006, the owners of the newly transferable shares were not able to sell the share for periods of up to five years after the share became transferable in principle.

Figure 10. Proportion of non-tradable shares becoming tradable



Source: Yeung (2009).

The reform should make mergers and acquisitions of listed companies easier to undertake. It might also allow SASAC to consolidate and simplify the government's SOE portfolio. It also removes a significant barrier to privatisation, although several government agencies have stated that the objective of the reform is not to reduce state holdings, only to make non-tradable shares tradable. For example,one state-owned company holding a controlling interest in a company might sell the stake to another state-owned company. Moreover, the impact on ownership is likely to be limited as almost 60% of the non-traded shares are concentrated in 10 large companies which are regarded as strategic enterprises by the government.

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18 . Until 2005, around two-thirds of the shares on China's equity markets were non-tradable. These non-tradable shares can be exchanged outside of the market in a number of ways including: arranged sale, indirect takeover, free or judicial transfer, or entrusted shares (Mattlin, 2007). Transactions involving non-traded shares have to be approved by SASAC.

19 . The specifics of the merger were left to the discretion of the company, provided it was supported by two thirds of tradable and non-tradable shareholders. These plans generally involved holders of non-tradable shares compensating tradable shareholders to offset the negative impact of a flood of shares on the market price. A consensus emerged that tradable shareholders receive a bonus, usually paid in equity, worth 30% of their stake.

Notwithstanding the benefits of privatisation, increasing concentration of state ownership in large companies has seen the stock market capitalisation of China's SOEs increase markedly over recent years. Currently, SOEs that have been corporatised and partially privatised account for well over 80% of market capitalisation. Although partial privatisation can improve firm performance, cross-country studies in OECD countries indicate that the gains in profitability and productivity are typically larger in firms that are fully privatised (OECD, 2003). This is echoed in the firm-level performance results across different ownership classes reported above. The disadvantage of partial privatisation is that it usually does not result in management control being passed to private owners or an infusion of new technology necessary to improve firm performance to that of the private sector. If China is to maintain high rates of economic growth driven by productivity improvements, the share of productive assets controlled by profit-seeking entrepreneurs and managers must continue to increase.

First, and perhaps most easily, government-owned equity in small SOEs in non-strategic sectors could be disposed of through public auctions to the highest bidder. Indeed, SASAC's designation of strategic sectors leaves a lot of ground from which the government has effectively announced that it intends to withdraw completely. Many of these smaller SOEs are loss-making and non-transparent, implying additional liability risks. They also typically operate in sectors in which competition is robust. In addition, as discussed below, a sound competition framework has recently been introduced, implying minimal risk in privatising these SOEs. As such, the government needs to follow through on its decision to "let go of the small".

The list of "strategic" and "basic or pillar" industries also needs to be reviewed. All of the sectors included in the latter category are inherently competitive and typically not subjected to high rates of government ownership in OECD countries. Along with foreign firms, private sector enterprises in China now have the financial capacity to acquire large SOEs or significant parts of their equity.[20] Similarly, all of the network sectors deemed to be "strategic" by SASAC have competitive subsectors in which participation by private firms has led to impressive gains in productivity in both developed and developing countries. In the non-competitive segments of the network sectors, as discussed below, an effective regulatory regime and oversight by independent regulators is required prior to privatisation.

Further privatisation of China's SOEs would necessitate a large number of transactions, implying a need for an efficient method of disposal. In the past, many ownership transfers to the private sector have been conducted through management-employee buyouts that have been closed to outside scrutiny and ultimately controversial, with widespread reports of asset stripping. These issues have been addressed with the passing of the "State-owned Assets Law" which establishes in legislation a number of principles for the transfer of state assets via management buyouts including an appraisal prior to the sale. This law also gives SASAC the power to terminate an asset transfer or declare it invalid if it considers malicious collusion to have occurred. This sends a clear warning signal that this issue is of high importance to law makers. Timely and proper enforcement of these new regulations will be key to ensuring that they change market practices. The OECD experience has been that more open processes of asset transfer are more beneficial for the state and enterprise concerned (OECD, 2003). In addition, "golden shares", which allow the state to exercise a level of control beyond the level of risk implied by its ownership stake, carry the potential for abuse and should be avoided.

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20 . This has not always been the case and there have been examples of private firms being unable to manage large complex SOEs in the past. For example, D'Long Group acquired four listed SOEs beginning in the late 1990s. As monetary policy tightened in early 2004, the group failed under the weight of excessive debt leaving debts of approximately CNY 10 billion.

Barriers to entrepreneurship restrict private sector development

Low *barriers to entrepreneurship* are critical for encouraging private sector firms and creating competitive markets. China performs well in some of the regulatory areas covered by this indicator (Table 8). In particular, the indicator of *regulatory and administrative opacity* is below the OECD average, reflecting progress in improving the transparency of the regulatory system. Despite these efforts, however, the *administrative burden* that the government places on entrepreneurs is still very high and acts as an obstacle to entry, implying that efforts to improve the government bureaucracy are yet to pay significant dividends. *Barriers to competition* are also high compared to OECD countries, reflecting ongoing regulatory challenges in network and service sectors.

Table 8. Barriers to entrepreneurship in China, international comparison

	China	Russia	OECD average	OECD emerging markets[1]	Euro area[2]	United States
Barriers to entrepreneurship	2.9	2.4	1.4	1.9	1.3	1.2
Regulatory and administrative opacity	0.3	1.0	1.0	1.2	0.6	0.2
Licenses and permit system	0.0	2.0	1.8	2.0	1.2	0.0
Communication and simplification of rules and procedures	0.5	0.0	0.2	0.4	0.1	0.4
Administrative burdens on start ups	5.6	3.3	1.5	2.7	1.6	1.0
Administrative burdens for corporations	5.2	3.5	1.6	2.8	1.6	0.8
Administrative burdens for sole proprietor firms	5.5	4.0	1.6	2.7	1.8	1.2
Sector-specific administrative burdens	6.0	2.3	1.4	2.6	1.5	1.0
Barriers to competition	2.8	2.9	1.7	1.9	1.5	2.5
Legal barriers	1.4	2.0	1.1	1.1	0.8	1.1
Antitrust exemptions	0.00	4.6	0.5	0.6	0.0	2.3
Barriers to entry in network sectors	5.4	2.2	1.9	2.3	1.7	3.1
Barrier to entry in services	4.5	2.7	3.2	3.4	3.6	3.6

1 Czech Republic, Hungary, Korea, Mexico, Poland, Turkey.

2 Austria, Belgium, Finland, France, Germany, Italy, Luxemburg, Netherlands, Portugal, Spain.

Source: OECD Product Market Regulation database.

Regulatory and administrative transparency has improved but administrative burdens remain excessive

Major efforts to reform China's systems of administrative governance and promote regulatory transparency have been an important part of the reform process (OECD, 2009). Most recently, the "Regulations on Open Government Information", which came into force in May 2008, provide a legal basis for China's first nationwide information disclosure system applicable at all levels of government. Increasing the transparency of public sector institutions will act as a powerful incentive for institutional reform and strengthen accountability and efficiency. The quality of legal drafting has also improved but is still less than plain language, with a tendency towards principle-like pronouncements that increase uncertainty over market rules. Public consultation on new regulations has increased and, although not legally required at present, has been included in recent rules for drafting regulations.

Beginning in 2001, major efforts have also been directed at administrative simplification. A number of programmes have been implemented with the aim of reducing the scope and impact of regulatory requirements inherited from the central planning era and curbing widespread bureaucratic fragmentation. Although internet penetration remains low outside of the urban areas, an ambitious e-government programme is also being promoted as part of broader reforms in law and administrative institutions. As a result of these and other initiatives, China has been improving regulatory transparency and open access to government information and the indicators of *regulatory and administrative opacity* compare favourably internationally. The indicator of the *licence and permits system* is also low, given the introduction of "one-stop shops" and other initiatives designed to reduce red tape and simplify the rules and procedures that enterprises must comply with.

Despite efforts to improve the functioning of the public bureaucracy, *administrative burdens on start-ups* remain high compared with other countries, implying elaborate and cumbersome systems of administrative approval.[21] These high indicator values could also be indicative of more widespread inefficiencies in government administration and suggest that barriers to entrepreneurship stem not so much from formal regulations but in large part from difficulties in implementation. Recent attempts at administrative reform have repeatedly run up against certain intransigent aspects of the existing system and, as a result, China continues to have a complex array of institutions and agencies with varying degrees of legal power to make and administer new regulations. This allows government bureaucrats to make decisions that should be left to the market and creates corruption opportunities that serve as powerful incentives to block reform.

With an interventionist tradition and administrative structures that in many cases have not kept pace with economic liberalisation and are highly fragmented, a significant re-engineering of administrative processes is needed to improve service delivery and simplify the interaction between government and firms. The OECD experience has been that a long-term strategy for regulatory reform needs to be explicit, coherent and supported by the highest levels of government. Recognising the scope of this challenge, most OECD governments have established regulatory oversight bodies with "whole-of-government" responsibility for regulatory policy to promote consistent reform across the entire administration. In China, although the Legislative Affairs Office of the State Council assumes some responsibility for regulatory quality, there is currently no centralised oversight body charged with reviewing regulatory proposals to ensure they do not impose unnecessary or unreasonable administrative burdens on firms and citizens.[22] This would involve the use of regulatory impact analysis, which is a process of evidence-based decision making designed to ensure regulatory quality. An oversight body could also help integrate regulatory functions across different levels of government, thereby ensuring that progress in regulatory reform is more uniform across the country.

Internal markets have been liberalised but SOEs still restrict entry in some sectors

In 2005 the State Council issued "Guidelines on Encouraging and Supporting the Development of the Non-Public Sector including Individual and Private Enterprises" with the intention of enhancing market access for private firms in previously restricted industries. As noted, these guidelines were strengthened and updated in May 2010. Along with market-opening commitments made as part of China's WTO entry, the 2005 guidelines opened a number of sectors to non-state competition and moved a long way towards

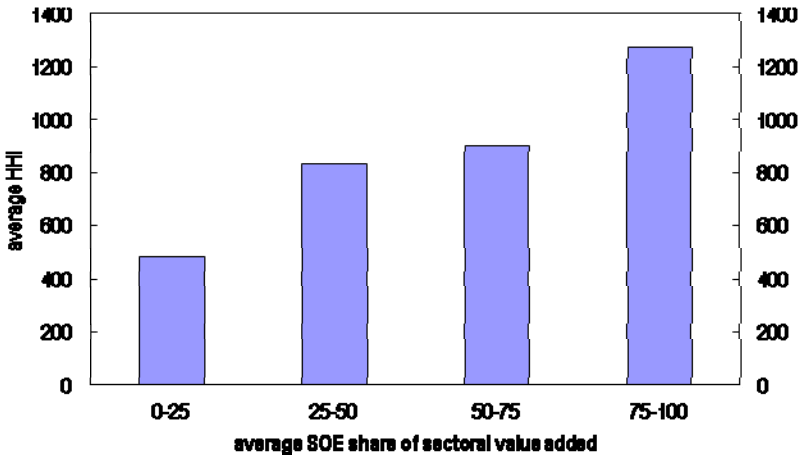
21 . The World Bank's *Doing Business 2011* indicators, which also assess administrative burdens on start-ups, placed China at the 70th percentile of the countries surveyed in 2010 compared to the 69th percentile in 2006.

22 . Note, however, that the "Legislation Law" does endorse a more open and consultative legislative process.

creating a level playing field. As a result, formal *legal barriers to entry* are, according to the PMR indicators, broadly comparable to those in OECD emerging markets.

As noted above, with the retreat of the state-enterprise sector and rise of private enterprise, fierce competition has developed in many industries, particularly labour-intensive sectors. However, in a number of the "strategic" and "pillar" sectors where SOEs have become increasingly concentrated, private-sector participation is much more limited or non-existent, with negative implications for market competition (Table 2 above and Figure 11). Although some of these sectors are technically open to private firms, discriminatory regulatory treatment is often used to discourage non-state entrants. In addition, the government's explicit expectation that SOEs dominate these sectors acts as a powerful disincentive to entry.

Figure 11. SOE penetration and market concentration, 1998-2007[1]



[1] Market concentration is calculated as the un-weighted average of HHI scores at the 4-digit sectoral level.

Source: NBS and OECD.

The lack of competitive pressures in sectors dominated by state enterprises detracts from performance and increases the risk that SOEs will again become a major drain on public finances. Short of privatisation, increased private sector participation and competition in these sectors is necessary to ensure that incumbent SOEs strive to improve efficiency. Ensuring that the 2005 Guidelines on private sector participation are effectively implemented would go a long way towards removing implicit barriers to entry in "strategic" sectors. Rules discriminating against private companies need to be rescinded while access to bank, equity and bond financing for private-sector firms needs to be improved. Government procurement also needs to be made neutral between private and public enterprises, as required under the new Anti-Monopoly Law.

The new competition law is a big step forward[23]

The new Anti-Monopoly Law (AML) entered into force in April 2008 and addresses many of the gaps and other weaknesses in the 1993 Anti-Unfair Competition Law. Key regulations concerning the definitions of markets and the thresholds for reporting mergers were announced in 2009.The AML aligns

23 . See OECD (2009) for a comprehensive review of the AML.

China's competition framework with international practices and is an important step forward in safeguarding product market competition. The new law provides an updated and comprehensive legal framework for dealing with mergers and combating a wide range of anticompetitive practices including monopoly agreements, abuse of market dominance and the concentration of business operators. Importantly, the AML also addresses abuses of competition by SOEs and state-mandated actions, hence the low PMR indicator value for *antitrust exemptions*.

Implementation and judicial interpretation will be critical in ensuring that the new law performs as expected and resolving conflicts between competition considerations and China's relatively activist industrial policy. For example, previous government directives calling for rationalisation and consolidation in sectors with overcapacity have involved agreements among firms that would be in conflict with the new AML.

Enforcement of the AML is divided between the State Administration for Industry and Commerce, the Ministry for Commerce and the National Development and Reform Commission. This is in contrast to typical arrangements in OECD countries where the implementation of competition law is typically vested in a single national competition body. The advantage of this approach is that it enhances information exchange and minimises outside interference in competition enforcement decisions. The new AML does, however, provide for the establishment of a State Anti-Monopoly Commission under the State Council, which should be given overall responsibility for competition law enforcement.

Major regulatory challenges remain in network sectors

Over the past decade China has made some progress in reforming the regulation of network sectors. In general, although the pace and scope has differed across sectors, the government has adopted a more liberal regulatory approach by vertically and horizontally unbundling state monopolies and mandating private-sector involvement in some sub-sectors. Despite some improvement, however, the PMR indicator of *barriers to entry in network sectors* is still high in China relative to comparator countries, implying that impediments to private sector involvement continue to restrict competition. In addition, the high value of the indicator of *government involvement in network sectors* implies that, despite the possibility of competition, SOEs continue to dominate.

In the electricity sector, The State Power Corporation, which took over most of the assets of the Ministry of Power in the late 1990s, was unbundled into two transmission companies and five generators in 2002. This, in conjunction with the 2002 Electricity Law allowing private-sector generation, was an important precondition for competition. In addition, The State Electricity Regulatory Commission began operating in 2003. Since these reforms, a number of private firms have entered the generation market and several regional wholesale electricity markets have been launched on a trial basis.

Price setting in the electricity sector continues to be a source of inefficiency that exerts a drag on productivity. In generation, prices vary according to the generator's costs on the basis of a cost-plus methodology. Although this may encourage investment, it provides no incentives for efficiency improvements. At the retail level, the failure of regulated prices to keep pace with cost changes has increased fiscal pressures and led to other serious recurring problems; in 2008, price controls on electricity prompted suppliers to reduce generation leading to blackouts in some areas. Artificially low energy prices also lead to energy wastage, to the detriment of the environment. Future pricing reforms are expected to allow wholesale markets to determine tariffs on the generation side while the government will regulate transmission and distribution prices along with prices for end users. However, specific details of these reforms and implementation timetables are yet to be published. More generally, the government has adopted a gradual approach to the reform of the energy sector, which is deemed to be strategic. However, it

remains to be seen whether this approach will be sufficient to address the challenges the sector faces, notably the tension between large and growing energy demand and environmental protection (IEA, 2006).

Regulatory reform in the telecommunications sector has, to some extent, encouraged competition and produced impressive results. The Telecom Law, adopted in 2000, calls for the separation of policy, regulatory and management functions within government and prohibits monopolies. Leading telecommunication operators may not refuse requests for network connections and predatory pricing and unjustified cross-subsidies are prohibited. The rules are administered by the Ministry of Information Industry, which is the principal regulator of the telecoms industry. Since these reforms, China's telecommunications network has become the largest and fastest growing in the world. There are, however, still a number of regulatory areas that need to be spelled out in new legislation. For example, the rules around licensing new entrants and third-party access to networks need to be clarified and made more transparent.

Independent regulators have been introduced in a number of China's network sectors. In some cases, however, they are subordinated to the ministry of the sector that they regulate or appointed on the basis of political connections, which limits their independence and reduces the scope for efficient markets with increased private sector participation. Independent regulators need to strike a balance between promoting efficiency gains and attracting investment while protecting consumers from potential monopolist abuses and firms from political interference. This is no easy task, especially in a country such as China with a large concentration of SOEs in a number of industries. To generate the expected benefits of a high-quality regulatory environment, independent regulators need to be based on proper institutional design within strong governance frameworks. Independence should go hand-in-hand with accountability, stability and expertise. Accountability requires that the decision-making process be transparent and subject to clear and simple procedural requirements and checks and balances, including opportunities for public hearings and appeal provisions. In OECD countries, regulators have been most effective and credible when their independence and roles are made explicit in a distinct statute with well-defined functions and objectives.

Barriers to international trade and investment

China has benefited enormously from its rapid integration into the global economy. Both international trade and foreign direct investment have encouraged domestic firms to incorporate foreign technologies into the production process, thereby facilitating technological diffusion and productivity growth. Although China has committed to further liberalisation of its trade and foreign direct investment regimes, the PMR indicator of *barriers to trade and investment* is high compared to OECD countries. This indicates that ongoing reforms to open sectors of the economy that are still sheltered from the global economy would pay additional dividends (Table 9).

Greater FDI in the service sector would produce large benefits

In contrast to tight restrictions on foreign portfolio investment, the Chinese government has actively encouraged foreign direct investment (FDI) and China is now the largest recipient of FDI in the world. Notwithstanding this impressive performance, the indicator of *foreign ownership barriers*, which measures FDI barriers in service sectors, is relatively high. In addition, the share of Chinese investment funded by FDI has been steadily declining since the mid-1990s.

Table 9. Barriers to international trade and investment, international comparison

	China	Russia	OECD average	OECD emerging markets[1]	Euro area[2]	United States
Barriers to trade and investment	2.4	3.1	0.6	1.0	0.5	0.2
Explicit barriers to trade and investment	2.5	2.6	1.0	1.7	0.9	0.4
Foreign ownership barriers	3.2	3.5	1.3	1.7	1.4	1.1
Discriminatory procedures	2.2	1.4	0.5	1.1	0.2	0.0
Tariffs	2.0	3.0	1.1	2.3	1.0	0.0
Other barriers	2.3	3.6	0.2	0.4	0.1	0.0
Regulatory barriers	2.3	3.6	0.2	0.4	0.1	0.0

1 Czech Republic, Hungary, Korea, Mexico, Poland, Turkey.
2 Austria, Belgium, Finland, France, Germany, Italy, Luxemburg, Netherlands, Portugal, Spain.

Source: OECD Product Market Regulation database.

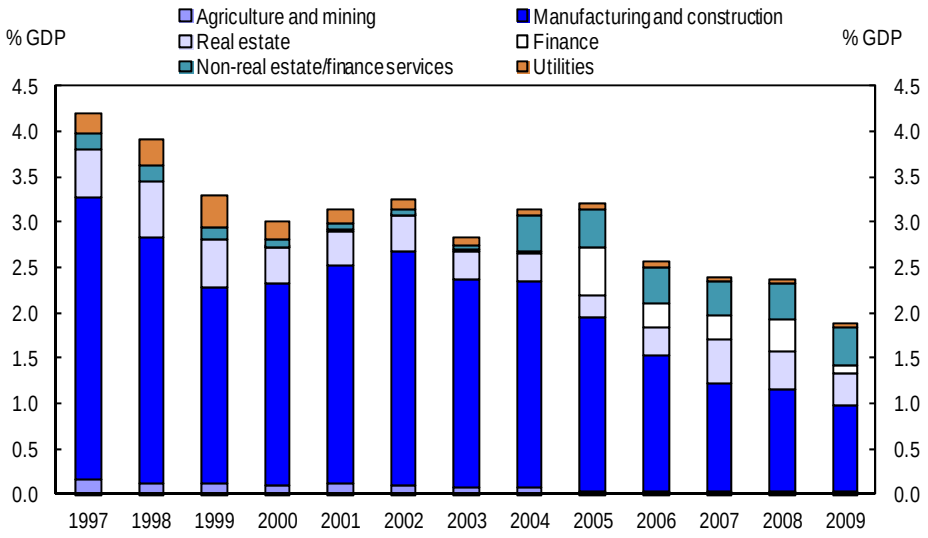
These policy-induced barriers to FDI are reflected in the composition of inflows into China. Until the mid-2000s, FDI was heavily concentrated in manufacturing while services attracted far less foreign investment than in other developing countries (World Bank, 2007). More recently, driven in part by policy changes enacted as part of China's entry into the WTO in 2001, the service-sector share of FDI has risen markedly, as the investment flows into the manufacturing sector falled to keep pace witht he growth of GDP (Figure 12). Much of this increase in FDI has been in the real estate and financial sectors while inflows into other service sectors have remained relatively modest.[24]

In broad terms, foreign service providers face three types of FDI barriers in China: *i)* restrictions on the form of ownership and ceilings on the maximum equity stake they may hold in domestic firms; *ii)* restrictions on the geographic scope and lines of business; and *iii)* other requirements, such as minimum capital requirements that are not imposed on domestic competitors or imposed to a lesser degree (OECD, 2009). In some service sectors, barriers to FDI remain pervasive. For instance, foreign participants in the telecommunications and electricity sectors face ownership restrictions and are confined to value-added services and power generation respectively. Limitations on foreign participation also still exist in the maritime and air transport, legal and accounting, tourism, and postal sectors.[25] These restrictions limit not only the market share of foreign providers, but also the breadth and sophistication of the services they provide, given a reluctance to transfer technology and expertise to firms where their control is limited. In addition to explicit barriers to FDI, regulatory policies that restrict market access in one way or another also negatively influence the share of FDI (see Nicoletti *et al*., 2003 for the OECD experience). This suggests that the intention of the Chinese government to dominate strategic and pillar sectors discourages FDI investment in those sectors.

24 . The negative impact of barriers to FDI in China's service sectors is typical, with empirical work across developed and developing countries finding a strong negative correlation between indicators of policy barriers to FDI and FDI inflows (Golub, 2009).

25 . In an important reform to separate government ownership and policy functions, China Post Group Corporation was formally established in January 2007.

Figure 12. FDI inflows to China by sector



Source: CEIC.

In some service sectors, restrictions on FDI have been relaxed somewhat as part of China's WTO commitments. In particular, foreign banks and non-life insurance companies now enjoy close to national treatment, although ceilings on foreign investment in domestic banks and insurers remain in place.[26] However, further liberalisation of access for foreign investors and business would bring substantial benefits. As in manufacturing, countries benefit from FDI in services through employment creation, capital accumulation, foreign technology transfer, improved service and increased competition. These improvements can have important spill-over effects and contribute to productivity gains in manufacturing by improving the quality and availability of intermediate inputs. Moreover, in the case of China, increased FDI in service sectors would also help reduce the dominance of the SOEs. The Government's plans to open the services sector further to private and foreign participation need to be actively pursued.

Other barriers also limit the benefits of trade and foreign investment

China has made significant efforts to reduce *discriminatory procedures* and other *regulatory barriers* to foreign firms. To enhance transparency, all laws, regulations and other measures concerning trade are published in the *Foreign Trade and Economic Co-operation Gazette*. There is also an enquiry point through which foreign firms can ask for clarification of laws and regulations affecting trade. The provision of draft legislation with adequate time for meaningful consultations with all relevant stakeholders has also been improved with the passing of the Legislation Law (2000). Foreign businesses have had the opportunity to comment on the draft Labour Contract Law, the Anti-Monopoly Law as well as many industry-specific regulations. Efforts have also been made by China to move its standards regime towards international practice and efforts by Chinese regulators to reduce unnecessary trade restrictiveness in domestic regulation have been advancing.

26 . Foreign securities companies and mutual fund companies are still prohibited from establishing wholly-owned subsidiaries and their maximum stake in a joint-venture or domestic company is subject to ceilings (OECD, 2010).

Tariffs on manufactured goods are fairly low in China compared to some other large emerging economies. Moreover, the degree of discretion available for raising tariffs is limited, as the average actual rate is close to the bound rate, in contrast to other major emerging economies. In addition, the dispersion of tariff rates over all products is much lower than in nearly all other emerging markets, indicating that the tariff structure is relatively neutral and the degree to which tariffs are used to protect particular industries is relatively low. Even so, compared to the United States the average level of tariffs is still high (Table 10).

The liberalisation of China's export regime has not proceeded at the same pace as its import regime. There are a significant number of differentiated value-added tax rebates on exports of different products. Notably, rebates are lower on products that are particularly resource or energy intensive. The scale of the reduction in rebates and the sectors to which they are applied change frequently. In addition, China maintains export quotas or taxes on a growing number of products (World Trade Organisation, 2010). These products are generally raw materials and serve to depress domestic prices for the products below world prices. In this way exports of finished products that use these products are effectively subsidised. The quota on rare earth exports is of particular note (see above). Chinese state-owned companies have also, in the past, attempted to purchase the main advanced economy producers of rare earths, but faced refusals from the United States and Australian government (Hurst, 2010).

With WTO accession, China has effectively locked in many of its trade liberalisation commitments. Important areas for future reforms include improving the transparency of regulations for foreign firms wishing to do business in China. Procedures for appealing against regulatory changes also need to be opened to foreign parties and specific provisions requiring that regulatory administrative procedures avoid unnecessary trade restrictiveness need to be introduced. Improvements could also be made in government procurement and China's accession to the WTO's Government Procurement Agreement is a high priority. Finally, although clear efforts have been made to move China's standards regime towards international practice, foreign enterprises continue to experience difficulties becoming members of private standards-setting bodies. Renewed effort to engage all stakeholders is needed to improve transparency in China's standards-setting process.

Table 10. Tariff rates in China and selected other countries

2009

	China	India	Indonesia	South Africa	Brazil	Russia	United States
Food & live animals							
Simple average							
Actual	13.4	34.6	4.3	7.8	10.1	8.1	2.2
Bound	15.6	108.1	45.9	40.3	36.2	n.a.	4.1
Most favoured nation	15.6	32.4	5.2	9.2	11.0	9.4	4.1
Weighted average							
Actual	9.7	33.9	4.0	5.4	3.3	5.9	1.3
Bound	13.1	96.2	63.0	47.0	40.0	n.a.	4.0
Most favoured nation	12.7	39.2	5.2	6.6	10.4	8.1	4.0
Standard deviation of rates							
Actual	10.6	37.3	23.4	10.4	7.4	5.6	7.3
Bound	10.4	38.1	20.0	39.4	10.2	n.a.	9.7
Most favoured nation	11.1	23.5	11.2	12.2	5.3	4.3	9.8
Manufactured goods							
Simple average							
Actual	8.1	8.8	5.7	7.9	14.5	10.5	3.2
Bound	9.0	35.1	34.2	17.2	33.7	n.a.	4.2
Most favoured nation	8.8	8.9	7.7	9.9	16.1	10.8	4.2
Weighted average							
Actual	4.5	8.8	4.1	5.3	11.1	7.9	1.6
Bound	5.7	39.0	35.9	14.5	31.7	n.a.	2.3
Most favoured nation	5.1	8.9	7.6	6.8	12.9	9.8	2.3
Standard deviation of rates							
Actual	4.8	2.4	5.0	8.7	8.0	6.2	4.7
Bound	4.5	7.6	7.3	8.1	5.4	n.a.	4.7
Most favoured nation	4.6	2.2	4.6	9.6	7.8	5.6	5.0
Total trade							
Simple average							
Actual	8.2	10.2	5.2	7.6	13.4	8.1	2.9
Bound	10.0	50.2	37.5	19.4	31.4	n.a.	3.7
Most favoured nation	9.7	12.4	6.8	7.8	13.7	8.7	3.8
Weighted average							
Actual	4.2	7.9	3.1	3.9	7.6	5.9	1.8
Bound	5.2	33.1	36.9	19.7	30.5	n.a.	2.8
Most favoured nation	4.6	8.1	5.3	4.9	10.1	6.7	3.0
Standard deviation of rates							
Actual	6.5	14.8	11.8	10.5	8.2	6.6	10.0
Bound	7.1	39.2	12.3	25.4	8.4	n.a.	11.5
Most favoured nation	7.4	15.9	12.7	11.0	8.4	6.1	11.6

N.A. Not applicable as the Russian Federation is not a member of the World Trade Organisation

Source: WTO Tariff Database.

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TECHNICAL ANNEX A1

To assess differences in TFP across firm ownership classes (Section 4.1 above), a production function that accounts for capital intensity, firm size, location and industry is estimated at the micro level. This estimation updates the work of Dougherty *et al*. (2007) and is discussed in detail in that paper. Specifically, the following equation is estimated:

$$\ln(VA) = a + \alpha_1 \ln(L) + \alpha_2 \ln(K) + \beta \ln(W) + D.\gamma_1 + O.\gamma_2 + \varepsilon \qquad (1)$$

where *VA* is value added (pre-tax, deflated using the implicit gross output deflator), *L* labour input (in full time equivalents), *K* the capital stock (based on the book value of net fixed assets), *W* is the relative wage (mean-differenced), and the matrix *D* is a set of control dummies for scale, time, region, and industry; ε is the error term.

The matrix *O* of dummy variables represents the various forms of ownership. No dummy has been introduced for the group of enterprises directly controlled by the state. Accordingly, the exponential of the coefficients on *O* can be directly interpreted as per cent differences in the constant term, total factor productivity. Thus, differences in productivity levels between directly state controlled companies and various forms of non-state control are simply the exponential of the estimated coefficients. This equation is estimated at the firm level using the industrial firm database of the Chinese National Bureau of Statistics (NBS) (see Dougherty *et al*. (2007) for a full description of this database). To give insight into changes in relative productivity levels across ownership classes, the equation is estimated over two sub-sample periods: 1997-2002 and 2003-07.

The estimation results are given in Table A1. As was the case in Dougherty *et al*. (2007), the estimated equation appears to be quite robust across both sample periods, with an adjusted R-squared of 57% and 58% respectively and highly significant coefficients on all terms, including capital. As discussed in detail in the main text, these results confirm that overall productivity is markedly higher in private sector companies, whether they are owned by non-mainland shareholders, other private sector companies or individuals.

Table A1. Firm-based value added production function regression estimates

	1997-2002	2003-2007
	Coeff.	Coeff.
Regression of log (real value added) on:		
log (net fixed assets)	0.223***	0.247***
log (employees)	0.645***	0.588***
log (average wage rel. to mean)	0.462***	0.548***
Type of controlling shareholder - relative to direct state control (state>50%)		
Indirect state, LP>50%	0.295***	0.307***
Indirect state, other	0.463***	0.400***
Collective, collective>50%	0.686***	0.506***
Private, LP>50%	0.703***	0.537***
Private, individual>50%	0.651***	0.493***
Private, non-mainland>50%	0.594***	0.413***
Private, other	0.608***	0.486***
Scale - relative to under 51 employees		
51-100 employees	-0.158***	-0.149***
101-500 employees	-0.219***	-0.133***
501-1000 employees	-0.131***	0.0247***
over 1000 employees	0.128***	0.258***
Year dummies	significant	significant
Dummies for provincial regions	significant	significant
Dummies for 2-digit industries	significant	significant
Dummies for age of firm	insignificant	significant
Constant term	significant	significant
Number of observations (pooled)	877654	1267189
Adjusted R-squared	0.571	0.579
*** p<0.01, ** p<0.05, * p<0.1		

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