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WHERE HAVE CHINA'S STATE MONOPOLIES GONE?

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Abstract

If China's economy is an example of 'state-capitalism', then its large, state-owned enterprises (SOEs) could be expected to monopolise key sectors. But previous estimates of industrial concentration using the Herfindahl-Hirschman Index (HHI) have suggested that the level of industrial concentration – and therefore the potential for the abuse of monopoly power – is very low. These studies have significantly underestimated HHI, since they do not consolidate subsidiary enterprises in Chinese survey data into larger business groups, or according to ultimate ownership. After making these adjustments, a measure of potential HHI shows that large state monopolies remain in oil and gas, electricity, tobacco and, potentially, automobiles. In particular, SOEs supervised by the central government are heavily invested in potentially concentrated industries. But aggregate profits of the state sector are driven more by the portfolio distribution of assets between resources, manufacturing and utilities, rather than industrial concentration within sectors.

JEL Codes: L1 Market Structure, Firm Strategy, and Market Performance, L3 Nonprofit Organizations and Public Enterprise, L4 Antitrust Issues and Policies, L6 Industry Studies: Manufacturing

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China's industrial economy in the Mao era – like other socialist economies – was purposefully monopolised by the state, and operated according to the central plan. The logic of bureaucracy and politics prevailed over incentives from markets and prices, leading to gross inefficiency in the state economy (Kornai 1992). Deng Xiaoping's 'reform and opening up' marks the beginning of China's spectacular economic growth. Inefficient state-owned enterprises (SOEs) did not transform, like butterflies out of a chrysalis, into vanguards of the new market economy. Rather, China's economy in the 1980s and 1990s was characterised by a dynamic private sector 'growing out of the plan' (Naughton 1996).

The state sector has not completely withered away in the face of private sector growth. Today, China's largest companies are still SOEs (Hubbard & Williams 2015). Indeed, the promotion of 'national champions' (Nolan, 2001) and the ongoing role of the Communist Party of China in big business (Brødsgaard 2012) have encouraged many scholars to characterise China's economy as an example of 'state capitalism' (Naughton & Tsai 2015). But competing accounts, for example by Coase and Wang (2012), and Lardy (2014), play down the continued relevance of the state sector, and emphasise the transformation from a "a state-dominated to a predominantly market economy" (2014, p.2).

Lardy directly challenges one account of 'state capitalism' which argues that SOEs are 'fewer but more powerful' than before, evidenced by their 'substantial market power ... to dictate prices and earn above-normal profits' (2014, p.23). Lardy marshals two lines of evidence. Firstly, an OECD working paper (Conway et al. 2010) and related study estimate that on the standard measure of industry concentration, show that only 34 of China's 523 industrial subsectors is classified as 'highly concentrated' on the Hefindahl-Hirschman Index (HHI). Secondly, comparing the profit margins of state and non-state sectors from China's National Statistics Yearbook, there is "no evidence either that state firms as a group have long had market power that boosts their profitability" (2014, p.26).

Both arguments require further analysis to be persuasive.

With respect to the first line of argument, industrial subsectors vary in economic importance, and so whether 34 highly concentrated subsectors have any economic significance depends on which 34 subsectors they are. According to 2009 data, the 34 largest industrial subsectors collectively account for 49.7 per cent of total industrial revenue. The smallest 34 subsectors collectively account for 0.1 per cent. Moreover, the survey data used for these studies does not consolidate the thousands of SOE subsidiaries into controlling business groups, and therefore fails to detect industry concentration in sectors such as oil and gas, electricity, and tobacco. The potential for the state owner to coordinate pricing or business strategy between different SOEs in the same industry is also overlooked.

With respect to the second argument, the degree of data aggregation is crucial. The finding that the state sector overall is roughly as profitable as the non-state sector masks very different asset portfolios between the two ownership types. Most non-state enterprise assets are deployed in highly competitive manufacturing sectors, but SOEs have large portfolios in both resource sectors

and public utilities. Asset distribution varies further between SOEs administered at the central level (most of the so-called 'national champions') and local SOEs. Moreover, the extensive regulation of prices across oil, coal and electricity sectors (Zhu et al. 2015) means that rates of profit in these SOE-heavy sectors may be more driven by state pricing policy than market concentration. Some disaggregation is therefore required to address the underlying question.

This study illuminates both arguments using the latest available (2009) wave of the survey of more than 420,000 industrial enterprises in 521 industrial subsectors that underpins both the OECD study (2010) and the China Statistical Yearbooks. The industrial sectors include resources, manufacturing and public utilities, but not service industries like education, finance, media and telecommunications.

This study measures concentration for each subsector and relates it to state ownership at both central and local levels, both before and after considering the problem of enterprises as subsidiaries of larger business groups. The study then considers evidence that market concentration leads to higher profit measures, and the distribution of industrial assets between resources, manufacturing and utilities. It finds that most Chinese industrial assets are indeed in competitive subsectors, and that these subsectors are predominantly non-state owned. Oil and gas, electricity, and tobacco are large, potentially concentrated, sectors that are dominated by central SOEs. Local SOEs hold assets in more competitive sectors.

While concentrated subsectors tend to be more profitable than unconcentrated sectors, the main driver of the state sector's average profitability is the distribution of state assets across resources, manufacturing and utilities. Unlike the non-state enterprises which are overwhelmingly involved in manufacturing, SOEs control substantial assets in resources and in utilities. In both cases, these returns will be heavily influenced by pre-existing access rights to resources, and ongoing state price regulation.

These results suggest that China's industrial economy is largely competitive, and mostly, private as Lardy suggests. However, ongoing state dominance in key energy sectors – both through state ownership and direct regulation – suggest that some of China's largest state monopolies remain alive and well.

Industry concentration and monopoly profits

The standard measure for industry concentration, the Herfindahl-Hirschman Index (HHI), is for a particular industry the sum of the squares of each firm's share of output in that industry. Measuring firm output according to revenue, an industry that is literally monopolised (that is, a single firm garners 100 per cent of revenue), has an HHI of 1.¹ In an industry approaching perfect competition, all firms have an equally infinitesimal share of revenue and so HHI approaches 0. An industry in which two firms share revenue would have an HHI of 0.5.

¹ The guidelines used in the United States multiply the resulting number by 1000, but the economics literature conventionally measures HHI between 0 and 1.

The HHI is used in the United States to measure potential market concentration before and after corporate mergers in the context of applying anti-monopoly laws (U.S. Department of Justice & Federal Trade Commission 2010). The 1997 revision of the anti-trust guidelines (U.S. Department of Justice & Federal Trade Commission 1997) regard an HHI less than 0.1 to be unconcentrated, between 0.1 and 0.18 to be moderately concentrated, and more than 0.18 to be highly concentrated. The 2010 guidelines consider markets to be unconcentrated with an HHI less than 0.15, moderately concentrated between 0.15 and 0.25, and highly concentrated above 0.25 (U.S. Department of Justice & Federal Trade Commission 2010). These thresholds are somewhat arbitrary. A HHI of 0.1 is equivalent to ten equally sized firms, an HHI of 0.15 is equivalent to around seven equally sized firms, and an HHI of 0.25 is equivalent to four equally sized firms. Intuitively, it may be possible for four producers to conspire amongst themselves to maintain prices above their competitive level, but not for ten. Conway et al (2010) and Dougherty et al (2007) have applied the HHI to Chinese industrial subsectors, and both follow the earlier thresholds with 0.10 being the threshold for industry concentration. This study applies the same threshold.

There are many reasons why a particular subsector might be dominated by only a handful of firms. In some cases, the sheer scale of the investment (whether in fixed assets or in technology) required to enter an industry may deter competition, creating a natural monopoly (for example, China has 21 enterprises in the aircraft manufacturing industry). Licensing restrictions or safety regulations might make it legally difficult for competitors to enter, (for example, we observe six generators of nuclear power). Alternatively, the industry may be too small to support multiple players. For example, the Chinese 'fish oil distilling' industry is highly concentrated, but accounts for just 0.0002 per cent share of industrial revenue.

Finding that an industry is concentrated not sufficient to show that leading firms actually benefit from their position. Domestic production may be highly concentrated, but consumer demand might be readily met through unobserved imports. The threat of entry of other firms (perhaps in closely related industries) or regulation (for example, price regulation by government) might also restrain profit-maximising firms from converting industry concentration into monopoly profits.

Alternatively, the leader in the industry may be pursuing objectives other than profit maximization. This is particularly pertinent for SOEs. Lardy suggests that SOEs automatically reinvest their retained earnings (2014, p.23). This would tend to increase output beyond what would be most profitable (the textbook monopolist's first order condition of equating marginal revenue to marginal cost) and sometimes even beyond what is most socially efficient (the competitive firm's first order condition of equating price to marginal cost). Instead of the underinvestment and higher prices we expect from a profit-maximising monopolist, a size maximizing monopolist would tend to overinvest and drive prices below competitive levels until all their profits are dissipated. The overall economic question then does not hinge on whether a firm is a monopoly, but what kind of monopoly it is.²

² It is beyond the scope of the current paper to test potential firm-level objectives with empirical observations for SOEs and non-SOEs. However, there are good reasons to suppose that many of

Data

The China Statistical Yearbook published by the National Bureau of Statistics includes aggregate statistics for ‘industrial enterprises above a designated size’. For 2009, the designated size for 2009 was a revenue from principal business over 5 million yuan (US\$732,000). These are the authoritative source for countless studies, including Lardy (2014). These aggregates are “mainly based on the relevant data in the annual industrial statistics reporting forms” (National Bureau of Statistics of China 2010). These survey data are the basis of the current study, and are well described by Brandt, Van Biesebroeck, and Zhang (2014). The survey is used extensively by researchers studying all aspects of China’s industrial economy, including to calculate industry concentration (Conway et al. 2010; Bai et al. 2014; Dougherty et al. 2007).

The survey we use is for the year 2009 and includes 422,213 enterprises. We rely mainly on the reported ‘revenue from main business’ (主营业务收入) in order to exclude revenue outside the industry subsector of interest. In order to maximise the correspondence of the data with the reported aggregates, the only data cleaning involves removing 90 obvious duplicate observations.³ Our sample closely matches those reported in the 2010 China Statistical Yearbook, with 97% of enterprises and 98% of revenue covered in our survey (see Appendix).

The survey is designed only to include enterprises that are ‘above scale’ – that is, with an annual revenue from the main business greater than 5 million RMB.⁴ This exclusion tends to bias up the HHI, as a number of smaller competitors in an industry subsector may be excluded. Bai et al (2014) show how, in the presence of inflation, a nominal threshold will bias the measurement of HHI over time, essentially causing HHI to fall even if relative market proportions are fixed. However, because we are essentially comparing HHI between industries at a point in time, rather than observing trends in concentration over time, this study does not attempt to rectify the HHI results.

Classifying Industry Subsectors

The China Statistical Yearbook reports aggregate statistics for 39 two-digit industries. The survey

China’s largest and most important SOEs have mandates other than profit maximisation and are obliged to pay attention to broader social considerations given that their leaders are directly appointed by the Organization Department of the Chinese Communist Party (Brødsgaard 2012).

³ Obvious duplicates are ones in which the enterprise name and annual revenue figure is identical. These account for less than 0.01 per cent of total revenue.

⁴ Despite this, our sample includes 4,875 enterprises, including 564 SOEs, with revenue below this threshold (1% of all enterprises), which collectively account for 0.02 per cent of survey revenue. These may be enterprises that continue to participate in the survey, either because they were SOEs in earlier surveys when all SOEs were included regardless of scale, or because they were previously ‘above-scale’ but have since declined.

data allows us to categorise further into 521 four-digit industrial subsectors,⁵ in accordance with Conway et (2010) and Dougherty (2007).

Disaggregating industries to this extent is helpful for the purpose of measuring potential monopoly power, as it allows us to distinguish commodities that may be produced within the same broader industry but may not be close substitutes for the consumer (for example, the two-digit code for 'leather, fur, and coat products', contains four-digit subsectors for shoes and for luggage). However, the uneven distribution of output across subsectors makes a direct count of subsectors irrelevant. Half of China's revenue can be attributed to 35 subsectors, while there are 331 subsectors that each account for less than 0.1 per cent of revenue (12.8 collectively). For this reason, this study reports revenue shares for each subsector where relevant.

Ownership classification

The China Statistical Yearbook disaggregates results for 'State-owned and State-holding Industrial Enterprises'. These include wholly SOEs as well as subsidiaries with mixed ownership, in which the state is the largest, but not necessarily majority, shareholder (National Bureau of Statistics of China 2013) This corresponds to the controlling shareholder (控股情况) variable in our dataset. This variable includes six categories: state controlled, collectives (these are descendants of the 'township and village enterprises' that were formed in the 1980s and 1990s), private, Hong Kong Macau and Taiwan, Foreign, and Other. The sample contains 20,023 observations of firms identified as 'state-controlled' (compared to 20,510 in the yearbook), with revenue from such firms summing to 98 per cent of the figure cited in the 2010 China Statistical Yearbook (see appendix).

Lardy (2014), as well as other studies of SOEs, distinguish between the state and non-state sector, but not between SOEs administered by the central government (central SOEs) and those administered by governments at the provincial level and below. This is probably due to the way that data is presented in the China Statistical Yearbook. However, official statistics from the State-Owned Assets Supervision and Administration Commission (SASAC) do make the distinction between central SOEs (央企) and local SOEs (地方国企), and our dataset contains an observation for each enterprise's 'jurisdiction relationship' (隶属关系), which allows us to do the same. Possible values range from central, provincial, district, county, street, township, village, neighbourhood committee, village committee and 'other'. In the sample, we observe 3,166 'central SOEs' which collectively account for 45 per cent of all SOE revenue.

Table 1 shows that measured by the level of enterprise employment, central SOEs are by far the largest, with firm size declining further down the hierarchy.

⁵ English translations of four digit industry codes are taken from Financial Statistics of Industries in China available at http://www.hlsf.cn/English/industry_data/index_eco.htm

Table 1: SOEs Employment,⁶ by jurisdiction

	Mean	Median	Max	Total	Share	Obs.	Share
Central	1,771	404	116,272	5,606,429	31.8%	3,166	15.8%
Provincial	1,308	254	155,945	6,059,551	34.3%	4,632	23.1%
District	707	234	62,585	2,955,044	16.7%	4,182	20.9%
County	368	170	22,302	1,727,118	9.8%	4,687	23.4%
Street	214	87	1,887	20,589	0.1%	96	0.5%
Township	204	104	3,397	49,571	0.3%	243	1.2%
Village	403	111	6,500	15,301	0.1%	38	0.2%
Neighbourhood Committee	134	90	311	803	0.0%	6	0.0%
Village Committee	208	109	1,100	5,820	0.0%	28	0.1%
Other	413	143	37,912	1,213,949	6.9%	2,938	14.7%
<i>Local Subtotal</i>				<i>12,047,746</i>	<i>68.2%</i>	<i>16,850</i>	<i>84.2%</i>
All	882	214	155,945	17,654,175		20,016	

We can consider the validity of this approach by cross referencing employment figures against the SASAC Yearbook, which disaggregates SOE industrial employment down by SASAC and includes statistics for central SOEs (see Appendix). Overall the employment statistics between provinces are highly correlated (0.99), although central SOE employment in our sample (5.7 million) is 2.8 million fewer than the number reported by SASAC (8.4 million).

Table 2 allows us to cross-reference these aggregates with the yearbook. The SASAC yearbook reports SOE statistics according to those supervised by SASAC, and those supervised by other ministries (the state tobacco monopoly, for example, is not supervised by SASAC). Local SOEs are usually administered by provincial-level SASACs or one of their branches. This shows there are 56 industrial SOEs groups supervised by central SASAC in 2009, which have at least 10,442 members. The ‘enterprise’ in our survey corresponds to a member of a group rather than the group itself. Some subsidiaries may not appear in our survey since they may be outside the industrial sector (for example, many SOEs have real estate subsidiaries), or not meet the revenue threshold of the survey. Nevertheless, our sample appears to cover 96 per cent of industrial SOE employment.

Table 2: SOEs Employment, by jurisdiction according to SASAC Yearbook

	Number of SOEs		Members per Group	Employees		Employees per Group
	Groups	Members		Total	Share	
Central	590	11,222	19.0	8,464,000	46%	14,346
SASAC	56	10,442	186.5	7,734,000	42%	138,107
Ministry	534	780	1.5	730,000	4%	1,367
Local	9,535	25,396	2.7	9,981,000	54%	1,047
Total Industrial	10,125	36,618	3.6	18,445,000		1,822

⁶ Employment rather than revenue is considered here to allow comparison with SASAC data.

Source: (SASAC 2010) and author's calculations.

For conciseness, this study groups SOEs following the SASAC yearbook as 'Central' and 'Local' by reporting results for all SOEs at provincial level and below as 'Local SOEs'. 15 per cent of SOEs are already categorized as 'other' and so defy easy sorting into either group. Their average scale is comparable to county-level SOEs, but many could be small subsidiaries of central SOE groups. This study will designate them as local SOEs, aware that this will bias down subsequent results for potential industry concentration by central SOEs.

Table 3 reveals summary revenue statistics for enterprises according to the ownership types we have defined. Consistent with the idea that China's economy is predominantly private, we observe that 95 per cent of enterprises are classified in the non-state sector, yet their share of the revenue take is much less, at 72 per cent, suggesting that the state sector enterprises are larger on average.

Table 3: Revenue from main business by ownership type.

	Revenue (1000 RMB)						
	Mean	Median	Max	Sum.	Share	Obs.	Share
SOE-Centra	2,139,451	187,266	146,805,593	6,773,500,727	12.7%	3,166	0.8%
SOE-Local	486,747	56,047	209,937,149	8,201,693,245	15.4%	16,850	4.0%
<i>State Sector</i>				<i>14,975,193,972</i>	<i>28.1%</i>	<i>20,016</i>	<i>4.7%</i>
Collective	131,614	29,570	149,250,409	2,209,532,547	4.1%	16,788	4.0%
Private	74,110	25,300	111,049,560	22,358,580,447	42.0%	301,694	71.5%
Foreign	137,496	35,194	42,014,831	3,894,574,105	7.3%	28,325	6.7%
HMT	225,119	43,958	101,067,603	7,012,686,313	13.2%	31,151	7.4%
Other	116,241	29,430	33,553,930	2,807,102,367	5.3%	24,149	5.7%
<i>Nonstate Sector</i>				<i>38,282,475,779</i>	<i>71.9%</i>	<i>402,107</i>	
All	126,166	28,222	209,937,149	53,257,669,751		422,123	

Results

Table 4 lists the 20 subsectors out of 521 for which we calculate the HHI to be ‘highly concentrated’ according to the HHI threshold of 0.18. These sectors are all very small – the largest, “switching equipment” (a manufacturing sector related to the electricity industry) accounts for just 0.5 per cent of total industrial revenue.

Table 4: Highly Concentrated Industries

Industry Subsector		HHI	Revenue		
Code	Name		1000 RMB	Share	Cum.
3759	Navigation Mark and Other Floating Equipment	0.607	4,179,077	0.01%	0.0%
3313	Nickel Cobalt Smelting	0.539	86,343,145	0.16%	0.2%
1093	Gem Stone Mining	0.445	600,402	0.00%	0.2%
2824	Polyvinyl Alcohol Fiber	0.384	3,262,602	0.01%	0.2%
4012	Switching Equipment	0.358	267,623,181	0.50%	0.7%
4690	Other Sewage Treatment ,Utilizing and Distribution	0.356	6,480,314	0.01%	0.7%
3519	Other Motor Machine	0.336	9,261,692	0.02%	0.7%
1535	Solid Beverage	0.323	21,397,813	0.04%	0.7%
3679	Other Agriculture Machinery and Maintenance	0.310	40,208,489	0.08%	0.8%
922	Silver Ore Mining	0.280	3,247,388	0.01%	0.8%
3791	Diving and Underwater Succoring, Refloating Equipment	0.259	777,486	0.00%	0.8%
3491	Coin and Other Valued Metal Lab Products	0.257	3,523,434	0.01%	0.8%
4152	Slide Projector and Overhead Projector	0.248	2,173,051	0.00%	0.8%
1364	Fish Oil Distilling and Products	0.241	117,681	0.00%	0.8%
690	Other Coal Mining and Washing	0.213	2,374,134	0.00%	0.8%
4413	Nuclear Electric Power Generation	0.210	24,455,677	0.05%	0.9%
3314	Tin Smelting Industry	0.205	22,999,281	0.04%	0.9%
4151	Filming Machine	0.202	472,673	0.00%	0.9%
2823	Acrylic Fiber	0.199	7,689,740	0.01%	1.0%
3693	Postal Industrial Equipment	0.195	576,804	0.00%	1.0%

Table 5 lists the 31 ‘moderately concentrated’ subsectors (HHI between 0.10 and 0.18). These are also a small proportion of Chinese industry. The largest moderately concentrated (and second-largest concentrated) subsector that for manufacturing air conditioners Together, these 51 concentrated subsectors account for a paltry 2.5 per cent of survey revenue.

Table 5: Moderately Concentrated Industries

Industry Subsector		HHI	Revenue		
Code	Name		1000 RMB	Share	Cum.
3952	Air Conditioner	0.177	231,634,868	0.43%	1.4%
3352	Valued Metal Rolling Processing	0.157	63,847,478	0.12%	1.5%
3673	Forestry Mechanical Equipment	0.157	314,420	0.00%	1.5%
1091	Asbestos and Mica Ore Mining	0.156	1,716,690	0.00%	1.5%
3674	Husbandry Mechanical Equipment	0.155	2,604,319	0.00%	1.5%
3513	Steam Turbine and Fitting	0.153	46,590,473	0.09%	1.6%
3769	Other Aircraft	0.151	587,286	0.00%	1.6%
2413	Teaching Specimen and Mode	0.149	4,805,876	0.01%	1.6%
4124	Meter Apparatus For Farming ,Forestry ,and Fishing	0.146	604,873	0.00%	1.6%
933	Radioactive Metal Ore Mining	0.145	911,785	0.00%	1.6%
3514	Water Turbine and Fitting	0.142	4,446,066	0.01%	1.6%
4020	Radar Detectors and Auxiliary Apparatus	0.139	12,972,703	0.02%	1.7%
2623	Kalium Fertilizer	0.138	16,111,953	0.03%	1.7%
3799	All Other Transportation Equipment	0.138	16,180,315	0.03%	1.7%
2673	Oral Cavity Sanitary Products	0.138	9,895,591	0.02%	1.7%
3951	Household Refrigerator and Home Freezer	0.131	174,817,641	0.33%	2.1%
4159	Other Stationery and Office Machine	0.128	5,180,766	0.01%	2.1%
1100	Other Ore Mining	0.124	1,413,218	0.00%	2.1%
3752	Non-metal Ship Building	0.123	5,297,763	0.01%	2.1%
2671	Soap, Washing Powder and Synthetic Detergent	0.116	102,522,317	0.19%	2.3%
3671	Tractor	0.116	37,747,488	0.07%	2.3%
3162	Mica Product Industry	0.114	2,941,352	0.01%	2.3%
3762	Aircraft	0.113	6,904,448	0.01%	2.4%
1461	Monosodium Glutamate	0.112	38,958,037	0.07%	2.4%
3692	Geology Reconnaissance Special Equipment Manufacturing	0.110	2,674,712	0.01%	2.4%
2452	Entertaining Appliances and Indoor Amusement Equipment	0.108	5,864,438	0.01%	2.5%
2414	Ink	0.107	710,280	0.00%	2.5%
3471	Industrial Use Enamel Products	0.107	3,066,427	0.01%	2.5%
3683	Lab and Disinfectant Equipment and Utensils	0.106	4,042,345	0.01%	2.5%
932	Earth Metal Ores Mining	0.104	2,068,264	0.00%	2.5%
4125	Geologic Prospecting, Earthquakes use Instrument	0.102	5,909,152	0.01%	2.5%

Table 6 further suggests that China's industrial economy is largely competitive. All of China's 20 largest industry subsectors, collectively accounting for 40 per cent of survey revenue, appear comfortably below the threshold for market concentration.

Table 6: Market Concentration in 20 Largest Industries

Industry Subsector		HHI	Revenue		
Code	Name		1000 RMB	Share	Cum.
3230	Steel Rolling Processing	0.008	3,059,250,726	5.74%	5.7%
4420	Transmission And Distribution Of Electric Power	0.030	2,131,028,640	4.00%	9.7%
2511	Crude Oil Processing and Petroleum Product	0.016	1,750,413,633	3.29%	13.0%
610	Bituminous Coal and Anthracite Mining and Washing	0.008	1,616,151,873	3.03%	16.1%
3721	Automobile Complete	0.028	1,529,386,077	2.87%	18.9%
3725	Automobile Parts and Attachments	0.003	1,189,499,367	2.23%	21.2%
4411	Thermal Power Generation	0.004	998,594,413	1.88%	23.0%
1711	Cotton and Chemical Fiber Spinning and Weaving Processin	0.007	975,890,781	1.83%	24.9%
1810	Apparel	0.001	937,567,445	1.76%	26.6%
4041	Computer Body	0.051	869,298,348	1.63%	28.3%
3351	Commonly Used Non-Ferrous Rolling Processing	0.004	855,195,408	1.61%	29.9%
3220	Steel Smelting	0.053	754,485,885	1.42%	31.3%
3931	Wire and Cable Manufacturing	0.003	661,769,078	1.24%	32.5%
710	Crude Oil and Gas Mining	0.096	622,852,095	1.17%	33.7%
4043	Computer Peripheral Equipment	0.023	603,042,057	1.13%	34.8%
4061	Electronic Components	0.012	595,740,070	1.12%	36.0%
3111	Cement	0.002	560,551,127	1.05%	37.0%
2614	Organic Chemical Material	0.016	548,556,270	1.03%	38.0%
1331	Edible Vegetable Oil Processing	0.007	481,903,142	0.90%	38.9%
1620	Cigarettes	0.041	472,392,978	0.89%	39.8%

While the finding that most industry subsectors are unconcentrated is not surprising, some very low HHI figures for some particular industries warrants further investigation. For example, China's oil giants Sinopec and China National Petroleum, and the national electricity grid State Grid, were all ranked in the top 10 of Fortune 500 companies by revenue for 2009 (Xinhua 2010). But of the subsectors which these companies presumably dominate, only 'crude oil and gas mining' appears to be remotely concentrated (with an HHI just on the margin at 0.096).

Similarly, we observe that the 20th largest subsector, the manufacture of cigarettes, has an HHI of 0.041, making it only the 148th most concentrated industry, and yet the entire tobacco industry is unashamedly monopolised by the State Tobacco Monopoly Administration (Central People's Government of the People's Republic of China 2012).

The failure of the HHI calculated on an enterprise basis to identify these subsectors as even 'moderately' concentrated suggests that further refinement of this measure may be required.

Consolidation of enterprises with the same name

We already observed in Table 2 that a wholly-owned state-owned enterprises may form a group

of one, but more usually it is the head of a sometimes sprawling conglomerate involving joint ventures and mixed shareholdings with non-SOE capital. A central industrial SOE group has on average 185 subsidiaries and 138,000 employees. Local SOEs have a much more modest 1,046 employees and are not part of members of elaborate corporate structures. Many non-state companies will also be part of corporate groups.

These relationships are not reflected in the enterprise-level survey. As long as they are separate accounting entities, separate factories and plants will each be observed in the survey even though they might be part of the same (unobserved) corporate group. This is relevant for measuring market concentration, as decisions about pricing policy and investment are likely to be taken at the business level rather than at the plant level. What appears in the survey as an unconcentrated industry (at the factory level) may be controlled by a single monopolist.

While the survey does not provide details of group membership, we can sometimes infer the existence of group by observing that subsidiary companies in a group often share the first part of their name. For example, the names of 44 enterprises in our sample begin with “SINOPEC Group” (中国石化集团). By identifying a range of suffixes (see appendix) that typically end the names of companies (for example, equivalent to Ltd, Corp, Group), we construct a new ‘parent name’ based on the Chinese characters to the left of the first suffix. For example, we associated the “SINOPEC Group Nanjing Chemical Industry Ltd. Corp. (中国石化集团南京化学工业有限公司)” with the ‘parent name’ SINOPEC (中国石化). We now consolidate revenue between enterprises in the same subsector that share the same parent. For example, this leaves 22 consolidated revenue observations for ‘SINOPEC’ across 22 subsectors. Overall, this consolidates 9,803 enterprises.

When revenue from an enterprise identified as a central SOE is consolidated with another enterprise, the new consolidated revenue is attributed to a central SOE. Similarly, if a local SOE is consolidated with a non-SOE, then the consolidated figure is attributed to the local SOE. This is on the basis that non-SOEs may be subsidiaries of SOEs (say, if the SOE is not the majority shareholder), but that an SOE will not be a subsidiary of a non-SOE. Local subsidiaries of a central SOE may identify on the survey with their local jurisdiction, but in reality be controlled by a central SOE. This recognizes an additional 1.7 per cent of survey revenue to the state sector.

Table 7 shows the maximum revenue for a central SOE in a single sector is 505 billion RMB (approx. US\$74 billion) compared to 147 billion RMB (approx. US\$21 billion) previously (see Table 3). This can be compared to Sinopec Group 2009 revenue across all sectors of US\$187 billion (Xinhua 2010).

Table 7 - Consolidated Revenue, by ownership type

	Revenue (1000 RMB)				Share	Obs.	Share
	Mean	Median	Max	Sum.			
SOE-Central	2,399,937	177,398	505,336,166	6,993,416,182	13%	2,914	1%
SOE-Local	504,127	56,501	211,653,269	8,241,975,323	15%	16,349	4%
<i>State Sector</i>				15,235,391,505	29%	19,263	5%
Collective	131,830	29,673	149,250,409	2,158,720,178	4%	16,375	4%
Private	75,694	25,767	130,067,501	22,357,554,098	42%	295,369	72%
Foreign	138,198	35,568	56,854,349	3,816,619,346	7%	27,617	7%
HMT	229,224	43,982	101,067,603	6,910,190,933	13%	30,146	7%
Other	117,847	29,845	33,553,930	2,779,193,691	5%	23,583	6%
<i>Nonstate Sector</i>				38,022,278,246	71%	393,090	95%
All	129,156	28,629	505,336,166	53,257,669,751		412,353	

After recalculating HHI based on consolidated revenue,⁷ table 8 shows the five subsectors that were previously unconcentrated that now appear to be concentrated. Three of these, accounting for 4.8 per cent of total industrial revenue, relate to oil and gas. The consolidated measure for cigarette manufacturing only increases from 0.041 to 0.046, after consolidating the number of enterprises in this subsector from 67 to 53. Because the names of cigarette manufactures are named first according to a location, this method does not consolidate revenues from all tobacco subsidiaries (for example, “Guandong Central Tobacco” and “Guangxi Central Tobacco” remain as separate observations).

Table 8 - Concentrated industry subsectors after consolidating names

Industry Subsector		HHI		Revenue		
Code	Name	Raw	Consolidated	1000 RMB	Share	Cum.
710	Crude Oil and Gas Mining	0.096	0.149	622,852,095	1.17%	1.2%
2511	Crude Oil Processing and Petroleum Product	0.016	0.133	1,750,413,633	3.29%	4.5%
790	Support Activities for Oil and Gas Mining	0.069	0.125	163,297,772	0.31%	4.8%
916	Aluminum Ore Mining	0.095	0.112	8,953,661	0.02%	4.8%
4127	Nucleon and Nuclear Radiation Measuring Apparatus	0.090	0.106	712,754	0.00%	4.8%

⁷ the correlation coefficient between the 521 observations of HII before and after consolidation is 0.991

Measuring state ownership in industry subsectors

The survey contains observations for total assets (资产总计) which also corresponds with the 2010 China Statistical Yearbook (See appendix). While SOEs receive 28 per cent of state revenue, table 9 shows that they control 44 per cent of total industrial assets worth approximately US\$3.1 trillion. State ownership of assets is split roughly between central and local SOEs. This discrepancy between the share of assets and the smaller share of revenues is consistent with the claim that the state sector generally underperforms.⁸

Table 9 - Total Industrial Assets by Controller

	RMB (1000)	Share
SOE-Central	10,029,070,875	21%
SOE-Local	11,260,610,929	23%
<i>State Sector</i>	<i>21,289,681,804</i>	<i>44%</i>
Collective	1,734,594,422	4%
Private	14,507,160,221	30%
Foreign	3,334,392,691	7%
HMT	5,339,502,328	11%
Other	2,138,361,750	4%
<i>Nonstate Sector</i>	<i>27,054,011,412</i>	<i>56%</i>
All	48,343,693,216	

Table 10 shows that the distribution of SOE assets across major subsectors is uneven. Cumulatively, the 20 largest subsectors (by revenue) account for 42 per cent of industrial assets. Of these, nine are ‘state dominated’ in the sense that SOEs control the majority of assets in the sector, including the five largest subsectors. Of these nine state-dominated sectors, five – relating to oil, electricity and tobacco – are dominated by central SOEs (in the sense that central SOEs have a greater share of assets than local SOEs).

⁸ Note that is not all state equity – SOEs that have publicly-listed subsidiaries or are otherwise involved in joint ventures or mixed shareholding with private capital.

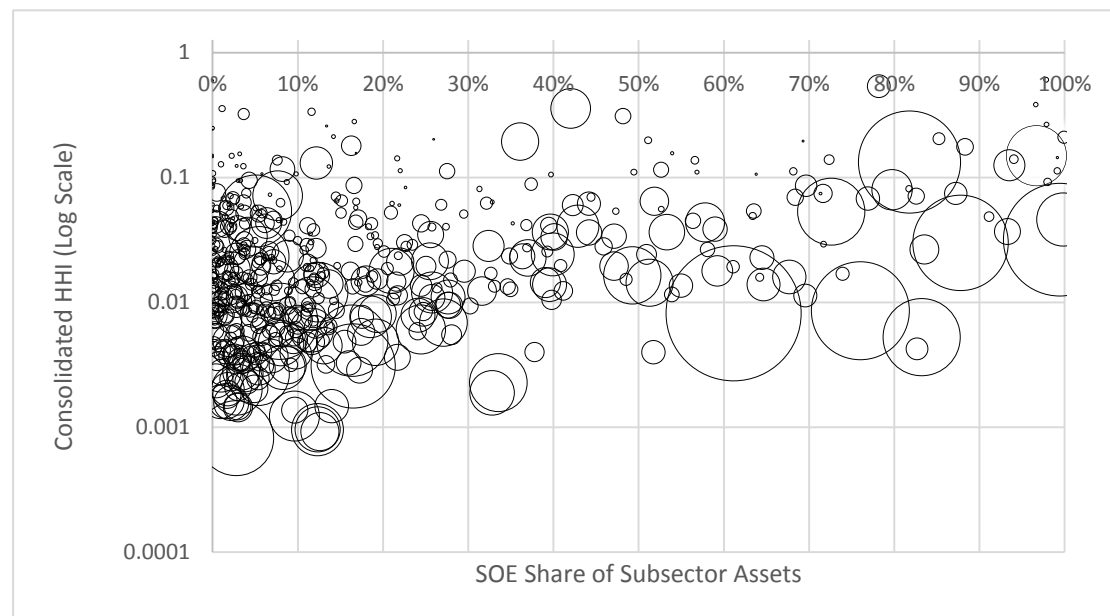
Table 10 - State ownership in 20 Largest subsectors

Industry Subsector		Assets			State Share		
Code	Name	1000 RMB	Share	Cum.	Central	Local	Total
3230	Steel Rolling Processing	2,852,592,912	5.9%	5.9%	17%	44%	61%
4420	Transmission And Distribution Of Electric Power	2,962,797,127	6.1%	12.0%	79%	20%	99%
2511	Crude Oil Processing and Petroleum Product	868,567,442	1.8%	13.8%	62%	20%	82%
610	Bituminous Coal and Anthracite Mining and Washing	2,210,070,221	4.6%	18.4%	12%	64%	76%
3721	Automobile Complete	1,228,060,564	2.5%	20.9%	29%	55%	84%
3725	Automobile Parts and Attachements	953,508,892	2.0%	22.9%	4%	12%	16%
4411	Thermal Power Generation	2,197,221,646	4.5%	27.5%	45%	37%	82%
1711	Cotton and Chemical Fiber Spinning and Weaving Processing	676,121,018	1.4%	28.9%	1%	7%	8%
1810	Apparel	553,349,213	1.1%	30.0%	1%	2%	3%
4041	Computer Body	295,222,614	0.6%	30.6%	0%	5%	5%
3351	Commonly Used Non-Ferrous Rolling Processing	483,509,840	1.0%	31.6%	7%	9%	16%
3220	Steel Smelting	795,237,636	1.6%	33.3%	22%	50%	73%
3931	Wire and Cable Manufaturing	404,606,614	0.8%	34.1%	1%	5%	5%
710	Crude Oil and Gas Mining	1,240,637,394	2.6%	36.7%	89%	8%	97%
4043	Computer Peripheral Equipment	302,259,577	0.6%	37.3%	2%	4%	5%
4061	Electronic Components	438,830,479	0.9%	38.2%	1%	11%	12%
3111	Cement	718,213,487	1.5%	39.7%	4%	29%	33%
2614	Organic Chemical Material	505,333,998	1.0%	40.7%	26%	23%	49%
1331	Edible Vegetable Oil Processing	253716105	0.5%	41.2%	2%	9%	10%
1620	Cigarettes	473789048	1.0%	42.2%	91%	8%	100%

State ownership and industry concentration

Table 11 plots the relationship between the SOE ownership share in a subsector and the HHI measure after consolidating enterprises. The horizontal axis represents the proportion of state ownership, and the vertical axis represents the HHI. The range between 0.1 and 1 is considered concentrated. In order to identify the potential economic significance of concentrated industries, the size of the bubble represents total subsector revenue.

Table 11 - Industry concentration and state ownership share.



		SOE Asset Share				Total	
		< 50%		> 50%			
		Sectors	Revenue	Sectors	Revenue	Sectors	Revenue
HHI	> .10	34	2%	22	5%	56	7%
	< .10	421	67%	44	26%	465	93%
Total		455	69%	66	31%		

This shows us that that 455 out of 521 subsectors are majority non-state owned, account for 69 per cent of survey revenue, and tend to be highly competitive. There are 66 much larger subsectors, which are majority SOE owned accounting for the remaining revenue.

Consolidation of State Owner Groups

The basic method of consolidating enterprises by name and subsector may understate market concentration because it does not account for business groups that have been formed by

mergers and acquisitions of differently named companies. For example, the merger of China North Rail and China South Rail would cause no change in the measure of market concentration unless the new parent company physically consolidates existing plants.

Because this study focuses on state monopolies, we can partly work around the owner by identifying the SASAC⁹, which is the ultimate owner of all SOE subsidiaries within each subsector. Since the dataset contains data about which province the enterprise is operating in we can assign different local SOEs to one of 31 provincial SASACs. For example, all local SOE coal mines in Hebei could be assigned to a 'Hebei Coal SASAC' category, while local SOE coal mines in Shaanxi would be assigned to 'Shaanxi Coal SASAC' category. Central SOEs can likewise be assigned to a central SASAC group. For example, the revenues from both SINOPEC and Petrochina would be assigned to a 'central oil SASAC' category.

This embeds a fairly strong assumption about each SASACs ability to coordinate all their SOEs and subsidiaries, as well as an objective to encourage collusion rather than competition between different subsidiaries. However, it still allows the possibility for SOEs to compete across provincial boundaries (local SASACs do not cooperate with each other) and vertically (central SASAC does not cooperate with local SASACs). This provides an upper limit to SOE consolidation – although recent trends in SOE reform do not suggest that it is entirely far-fetched.

Overall, this reduces the number of subsector-revenue observations by 14,168 to 5,095. Table 12 shows that central SOEs are active across 350 subsectors, the largest of which revenue of 1,486 billion RMB (US\$217 billion). For reference, the combined revenues of China's two largest oil companies – Sinopec and China National Petroleum – for 2009 was \$353 billion (Xinhua 2010).

Table 12 - Revenue consolidated by SOE owner

	Revenue (1000 RMB)				Share	Obs.	Share
	Mean	Median	Max	Sum.			
SOE-Central	19,981,189	623,651	1,486,694,640	6,993,416,182	13%	350	0%
SOE-Local	1,736,981	131,971	230,789,089	8,241,975,323	15%	4,745	1%
<i>State Sector</i>				15,235,391,505	29%	5,095	1%
Collective	131,830	29,673	149,250,409	2,158,720,178	4%	16,375	4%
Private	75,694	25,767	130,067,501	22,357,554,098	42%	295,369	74%
Foreign	138,198	35,568	56,854,349	3,816,619,346	7%	27,617	7%
HMT	229,224	43,982	101,067,603	6,910,190,933	13%	30,146	8%
Other	117,847	29,845	33,553,930	2,779,193,691	5%	23,583	6%
<i>Nonstate Sector</i>				38,022,278,246	71%	393,090	99%
All	133,751	28,140	1,486,694,640	53,257,669,751		398,185	

Table 13 now reveals the 'potential' HHI for each subsector – that is, the degree of concentration that could be achieved if the above assumptions were satisfied in practice. In total, 22 unconcentrated subsectors become potentially concentrated. Fourteen subsectors, including oil

⁹ Table 2 showed that some central SOEs actually sit outside the SASAC structure, but for the current purpose we can treat central SASAC as a single nominal owner.

and gas, tobacco, and electricity, are potentially highly concentrated (HHI over 0.18). A further eight subsectors that are potentially moderately concentrated (HHI between 0.1 and 0.18), including the manufacture of complete automobiles. These potentially concentrated subsectors account for 15.7 per cent of total industrial revenue, compared to the 2.5 per cent revenue for subsectors that are concentrated on a straight HHI measures.

Table 13 - Concentrated subsectors after consolidating SOE owners.

Industry Subsector		HHI		Revenue		
Code	Name	Raw	Potential	1000 RMB	Share	Cum.
1620	Cigarettes	0.041	0.842	472,392,978	0.89%	0.9%
710	Crude Oil and Gas Mining	0.096	0.829	622,852,095	1.17%	2.1%
3761	Airplane and Repairing	0.036	0.667	110,949,821	0.21%	2.3%
3719	Other Rail Transportation Equipment and Repairing	0.048	0.649	15,220,979	0.03%	2.3%
790	Support Activities for Oil and Gas Mining	0.069	0.604	163,297,772	0.31%	2.6%
2511	Crude Oil Processing and Petroleum Product	0.016	0.520	1,750,413,633	3.29%	5.9%
4420	Transmission And Distribution Of Electric Power	0.030	0.501	2,131,028,640	4.00%	9.9%
3711	Locomotives and Trains	0.065	0.477	82,815,316	0.16%	10.0%
3669	Aviation, Aerospace and Other Special Equipment	0.077	0.381	7,127,602	0.01%	10.1%
1610	Tobacco Leaf Processing	0.092	0.323	9,415,980	0.02%	10.1%
4412	Hydroelectric Power Generation	0.026	0.223	140,757,499	0.26%	10.3%
4411	Thermal Power Generation	0.004	0.222	998,594,413	1.88%	12.2%
916	Aluminum Ore Mining	0.095	0.219	8,953,661	0.02%	12.2%
3714	Rail Apparatus ,Equipment and Parts	0.026	0.204	35,216,258	0.07%	12.3%
3755	Ship Repairing and Dismantling	0.074	0.173	56,019,595	0.11%	12.4%
3615	Special Metallurgy Equipment	0.059	0.161	91,656,179	0.17%	12.6%
3721	Automobile Complete	0.028	0.131	1,529,386,077	2.87%	15.4%
4127	Nucleon and Nuclear Radiation Measuring Apparatus	0.090	0.124	712,754	0.00%	15.4%
2622	Phosphate Fertilizer	0.069	0.123	44,904,279	0.08%	15.5%
4419	Other Power Industry	0.016	0.114	29,410,401	0.06%	15.6%
915	Antimony Ore Mining	0.074	0.108	1,203,970	0.00%	15.6%
3321	Gold Smelting	0.085	0.107	77,368,040	0.15%	15.7%

The method of calculating potential industry concentration by consolidating SOEs according to SASAC owners indirectly links potential HHI to state dominance on the production side. For example, the nuclear electric power generation subsector contains six enterprises, five of which are central SOEs. The raw HHI of the industry is 0.210, but potential HHI is 0.997 on the basis of their ultimate owner. For this reason, industry subsectors presented in the previous table will be ones in which there is a significant share of state ownership. Indeed, once central SOEs have a revenue share of 31 per cent the potential HHI is concentrated mechanically (since the square of 31% rounds up to 0.1) and highly concentrated once the central SOE revenue share exceeds 42 per cent (since the square of 42% square is 0.18).

This becomes obvious in Figure 14, which plots the relationship between state ownership and the potential HHI measure. The accompanying tables show that the while the share of revenue between state-owned and non-state-owned subsectors remains the same (31 per cent), that revenue in majority state-owned subsectors is split between potentially concentrated and unconcentrated categories.

Figure 14 – Potential industry concentration and state ownership share

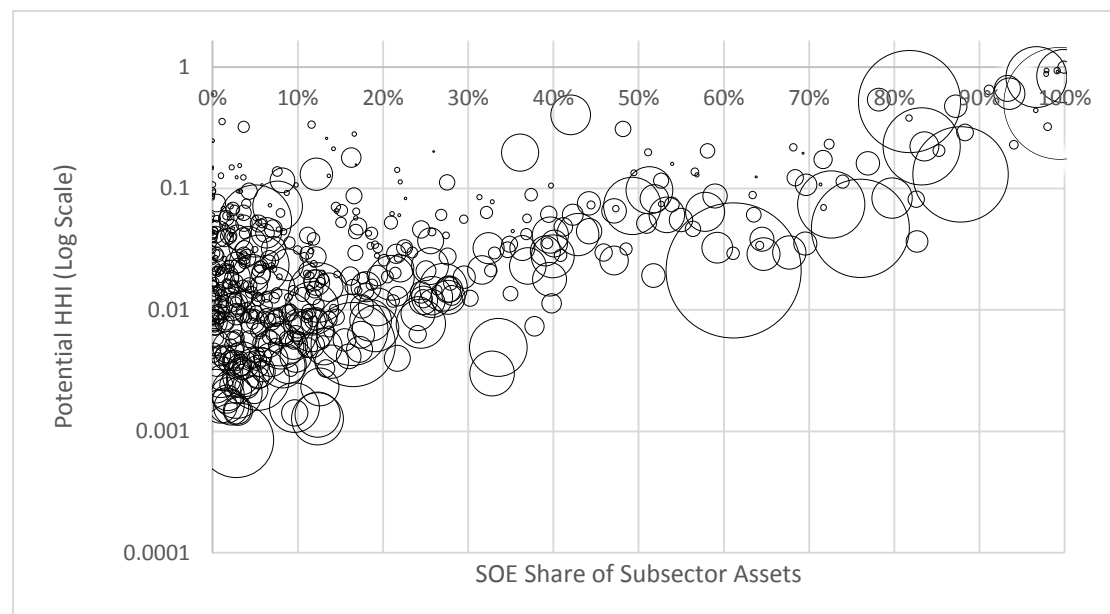


Table 14 A

		SOE Asset Share				Total	
		< 50%		> 50%			
		Sectors	Revenue	Sectors	Revenue	Sectors	Revenue
Potential	> .10	34	2%	39	16%	73	18%
HHI	< .10	421	67%	27	15%	448	82%
Total		455	69%	66	31%		

Table 14B shows the distinction between the 66 majority SOE-owned subsectors according to whether the largest SOE shares belong to central or local SOEs. As expected, the majority SOE owned subsectors that central SOEs dominate potentially concentrated subsectors and account for 13 per cent of total industrial revenue. The five largest subsectors, accounting for 11.2 per cent of total industrial revenue are transmission and distribution of electric power (4.0%, Potential HHI 0.5), crude oil processing and petroleum product (3.3% Potential HHI 0.52), thermal power generation (1.9% Potential HHI 0.22), crude oil and gas mining (1.2%, Potential 0.83), and cigarettes (0.9%, Potential HHI 0.84).

Majority local SOE-owned subsectors are predominantly unconcentrated (and account for 14 per cent of total industrial revenue). The three largest of these, accounting for 10.2 per cent of total industrial revenue are steel roll processing (5.7%, Potential HHI 0.21), coal mining (3% Potential HHI 0.05) and steel smelting (1.4% Potential HHI 0.07)

Table 14 B

		Majority SOE Assets				Total	
		Majority Central		Majority Local			
		Sectors	Revenue	Sectors	Revenue	Sectors	Revenue
Potential	> .10	25	13%	14	3%	39	16%
HHI	< .10	6	1%	21	14%	27	15%
Total		31	14%	35	17%	66	31%

Table 15 provides detail on asset portfolios of different owners. Panel A shows the total value in 1000 RMB. Panel B shows that if we were to randomly select 1 RMB worth of industrial assets, then there is a 74 per cent chance of it being in an unconcentrated industry. Panel C shows that within an unconcentrated industry, then there is a 71 per cent chance that the asset is not held by an SOE. Conversely, if the asset is in a potentially concentrated sector, then there is an 86 per cent chance that it is held by an SOE. Finally, Panel D shows there is a 75 per cent chance that an asset held by a central SOE will be in a potentially concentrated sector, but a 71 per cent chance that an asset held by a local SOE will be in an unconcentrated sector.

Table 15 - Assets by Ownership and Concentration

	A		B		C		D	
	Total Industry Assets (1000 RMB)		Share of Total		Share by HHI		Share by Owner	
Potential HHI	< 0.1	> 0.1	< 0.1	> 0.1	< 0.1	> 0.1	< 0.1	> 0.1
SOE-Central	2,526,858,705	7,502,212,170	5%	16%	7%	60%	25%	75%
SOE-Local	7,950,233,690	3,310,377,239	16%	7%	22%	26%	71%	29%
<i>State</i>	10,477,092,395	10,812,589,409	22%	22%	29%	86%	49%	51%
Collective	1,416,409,352	318,185,070	3%	1%	4%	3%	82%	18%
Private	13,796,638,477	710,521,744	29%	1%	39%	6%	95%	5%
Foreign	3,099,417,188	234,975,503	6%	0%	9%	2%	93%	7%
HMT	5,032,277,955	307,224,373	10%	1%	14%	2%	94%	6%
Other	1,939,879,820	198,481,930	4%	0%	5%	2%	91%	9%
<i>Nonstate</i>	25,284,622,792	1,769,388,620	52%	4%	71%	14%	93%	7%
All	35,761,715,187	12,581,978,029	74%	26%	100%	100%		

We can express these in terms of four stylized facts about state ownership and industry concentration.

1. Most Chinese industrial assets are in competitive sectors.
2. Competitive sectors of the Chinese economy are predominantly non-state owned.
3. Provincial and local SOEs tend to hold assets in competitive sectors.
4. Concentrated sectors of the Chinese economy are predominantly owned by central SOEs.

Before turning to the question of whether potential monopoly power is in fact exploited, table 16 shows the largest concentrated subsectors (potential HHI > 0.1). A complete list of all 521

industrial subsectors is included in the appendix.

Table 16 - Concentrated industries by revenue and ownership.

Industry Subsector		HHI		Revenue		State Ownership			Dominant
Code	Name	Raw	Pot	Share	Cum.	C	L	Total	Ownership
4420	Transmission And Distribution Of Electric Power	0.03	0.50	4.00%	4.0%	80%	20%	99%	SOE-Central
2511	Crude Oil Processing and Petroleum Product	0.02	0.52	3.29%	7.3%	62%	20%	82%	SOE-Central
3721	Automobile Complete	0.03	0.13	2.87%	10.2%	33%	55%	88%	SOE-Local
4411	Thermal Power Generation	0.00	0.22	1.88%	12.0%	46%	37%	83%	SOE-Central
710	Crude Oil and Gas Mining	0.10	0.83	1.17%	13.2%	89%	8%	97%	SOE-Central
1620	Cigarettes	0.04	0.84	0.89%	14.1%	92%	8%	100%	SOE-Central
4012	Switching Equipment	0.36	0.40	0.50%	14.6%	40%	2%	42%	Nonstate
3952	Air Conditioner	0.18	0.20	0.43%	15.0%	0%	36%	36%	Nonstate
3951	Household Refrigerator and Home Freezer	0.13	0.13	0.33%	15.4%	0%	12%	12%	Nonstate
790	Support Activities for Oil and Gas Mining	0.07	0.60	0.31%	15.7%	82%	11%	94%	SOE-Central
4412	Hydroelectric Power Generation	0.03	0.22	0.26%	15.9%	52%	31%	84%	SOE-Central
3761	Airplane and Repairing	0.04	0.67	0.21%	16.1%	91%	2%	93%	SOE-Central
2671	Soap, Washing Powder and Synthetic Detergent	0.12	0.12	0.19%	16.3%	0%	8%	8%	Nonstate
3615	Special Metallurgy Equipment	0.06	0.16	0.17%	16.5%	39%	38%	77%	SOE-Central
3313	Nickel Cobalt Smelting	0.54	0.54	0.16%	16.7%	0%	78%	78%	SOE-Local
3711	Locomotives and Trains	0.06	0.48	0.16%	16.8%	70%	17%	87%	SOE-Central
3321	Gold Smelting	0.08	0.11	0.15%	17.0%	5%	65%	70%	SOE-Local
3352	Valued Metal Rolling Processing	0.16	0.18	0.12%	17.1%	1%	15%	16%	Nonstate
3755	Ship Repairing and Dismantling	0.07	0.17	0.11%	17.2%	53%	18%	72%	SOE-Central
3513	Steam Turbine and Fitting	0.15	0.29	0.09%	17.3%	63%	25%	88%	SOE-Central
2622	Phosphate Fertilizer	0.07	0.12	0.08%	17.4%	0%	68%	68%	SOE-Local
3679	Other Agriculture Machinery and Maintenance	0.31	0.31	0.08%	17.4%	8%	40%	48%	Nonstate
1461	Monosodium Glutamate	0.11	0.11	0.07%	17.5%	0%	28%	28%	Nonstate
3671	Tractor	0.12	0.12	0.07%	17.6%	40%	13%	53%	SOE-Central
3714	Rail Apparatus ,Equipment and Parts	0.03	0.20	0.07%	17.6%	53%	5%	58%	SOE-Central
4419	Other Power Industry	0.02	0.11	0.06%	17.7%	27%	47%	74%	SOE-Local

From this list we can identify the four potential large state monopolies:

1. Electricity (generation and distribution) (subsectors 4420, 4411, 4012, 4412, 4419 and 4413, nuclear power generation) (37 per cent of revenue for concentrated sectors)
2. Oil (extraction and refining) (subsectors 2511, 710, 790) (26%)
3. Automobiles (concentrated amongst local SOEs) (subsector 3721) (16%)
4. Tobacco (subsectors 1620 and 1610, tobacco leaf processing) (5%)

Potential industry concentration and profit

Having identified potential state monopolies, we can finally turn to the question of whether potential monopoly power is in fact related to higher profit margins. Following Lardy's use of aggregates from the China Statistics Yearbook 2010 (2014), we first divide aggregate profits by aggregate revenues for state and non-state owners. This shows an average profit margin for the non-state sector of 6.5 per cent, compared to 6.2 per cent for the state sector. This accords with Lardy's observation that "the profit margins of the two types of firms are virtually indistinguishable in the past few years" (Lardy 2014, p.26).

Table 17 disaggregates profit margins according to different types of ownership and between concentrated and unconcentrated subsectors. This suggests that industry concentration is indeed related to higher profits. The average profit margin in concentrated sectors is 7.4 per cent, compared to 6.1 per cent in unconcentrated sectors. The profit margin of the state owned sectors in unconcentrated sectors is even lower at 5.2 per cent. Within the state sector, central SOEs in concentrated sectors have the highest aggregate profit margins, although they are somewhat lower than the average returns profit margins of collectives, foreign-owned and HMT sectors.

Table 17 - Aggregate Profit Margin by Ownership and Concentration¹⁰

	Total Revenue (1000 RMB)		Profit (1000 RMB)		Profit Margin	
	Unconcentrated	Concentrated	Unconcentrated	Concentrated	Unc.	Con.
SOE-Central	1,710,665,929	5,207,993,710	91,295,055	380,578,333	5.3%	7.3%
SOE-Local	5,573,376,545	2,676,226,258	284,195,621	182,955,091	5.1%	6.8%
<i>State Subtotal</i>	<i>7,284,042,474</i>	<i>7,884,219,968</i>	<i>375,490,676</i>	<i>563,533,424</i>	<i>5.2%</i>	<i>7.1%</i>
Collective	1,870,775,886	326,178,044	132,553,869	33,204,572	7.1%	10.2%
Private	21,495,584,153	800,419,859	1,371,067,905	53,271,467	6.4%	6.7%
Foreign	3,728,838,329	162,917,829	225,693,192	26,242,389	6.1%	16.1%
HMT	6,603,329,130	309,495,871	396,286,094	28,885,940	6.0%	9.3%
Other	2,574,294,429	217,573,779	176,297,791	13,780,960	6.8%	6.3%
<i>Non-state Subtotal</i>	<i>36,272,821,927</i>	<i>1,816,585,382</i>	<i>2,301,898,851</i>	<i>155,385,328</i>	<i>6.3%</i>	<i>8.6%</i>
All	43,556,864,401	9,700,805,350	2,677,389,527	718,918,752	6.1%	7.4%

This is consistent with the contention that, while SOEs on the whole may be less efficient than no-SOEs the comparatively poor performance by SOEs in competitive sectors can be made up for by monopoly profits in concentrated sectors.

However, a consideration of profit measures across industries reveals a more nuanced story. Table 18 shows relevant statistics for the 20 largest industries by revenue, which account for 40 per cent of total industrial revenue and 38 per cent of total industrial profits.

Considering the four potential state monopolies – electricity, oil, automobiles and tobacco – we note that profit measures related to the largest of these electricity are very low. Conversely, the profit measures for oil and cigarettes are amongst the highest. The profit margin and return on assets for the (locally) state-owned automobile complete sector are higher than average, but not higher than the non-state ‘automobile parts and attachments’ sector. Also notable is the relatively high profit margins in the locally SOE-owned, but unconcentrated, coal mining sector.

¹⁰ Similar results for the return on assets, calculated as the profit divided by total assets, are available on request from the author.

Table 18 –Profit Measures of 20 Largest Subsectors

Industry Subsector		Revenue	Profit	Profit /	Profit /	SOE Share of Assets		
4 Digit	Name	Share	Share	Revenue	Assets	Central	Local	Total
3230	Steel Rolling Processing	5.7%	3.0%	3.4%	3.6%	18%	43%	61%
4420	Transmission And Distribution Of Electric Power	4.0%	0.8%	1.3%	0.9%	80%	20%	99%
2511	Crude Oil Processing and Petroleum Product	3.3%	2.3%	4.5%	9.1%	62%	20%	82%
610	Bituminous Coal and Anthracite Mining and Washing	3.0%	5.8%	12.1%	8.9%	12%	64%	76%
3721	Automobile Complete	2.9%	3.6%	7.9%	9.9%	33%	55%	88%
3725	Automobile Parts and Attachments	2.2%	2.8%	8.0%	9.9%	4%	12%	16%
4411	Thermal Power Generation	1.9%	1.8%	6.0%	2.7%	46%	37%	83%
1711	Cotton and Chemical Fiber Spinning and Weaving Processing	1.8%	1.4%	4.8%	6.9%	1%	7%	8%
1810	Apparel	1.8%	1.7%	6.0%	10.2%	1%	2%	3%
4041	Computer Body	1.6%	0.4%	1.8%	5.2%	0%	5%	5%
3351	Commonly Used Non-Ferrous Rolling Processing	1.6%	1.3%	5.2%	9.2%	8%	9%	16%
3220	Steel Smelting	1.4%	0.6%	2.6%	2.5%	22%	50%	73%
3931	Wire and Cable Manufacturing	1.2%	1.0%	5.4%	8.8%	1%	5%	5%
710	Crude Oil and Gas Mining	1.2%	5.7%	30.9%	15.5%	89%	8%	97%
4043	Computer Peripheral Equipment	1.1%	0.7%	4.1%	8.3%	2%	4%	5%
4061	Electronic Components	1.1%	0.8%	4.3%	5.9%	1%	11%	12%
3111	Cement	1.1%	1.4%	8.5%	6.6%	5%	29%	34%
2614	Organic Chemical Material	1.0%	0.6%	3.9%	4.2%	26%	23%	49%
1331	Edible Vegetable Oil Processing	0.9%	0.7%	4.8%	9.1%	3%	9%	12%
1620	Cigarettes	0.9%	1.8%	13.2%	13.2%	92%	8%	100%

This suggests that further classification of subsectors is needed beyond whether they are concentrated or unconcentrated. Table 19 shows the same profit margin measure amongst subsectors divided into resources (two digit industry codes below 12), manufacturing (two digit industry codes between 13 and 42) and utilities (two digit industry codes above 43). Average profit margins are much higher in resources, and quite low in utilities. Within resources and manufacturing subsectors, concentrated sectors have higher profit margins than non-concentrated sectors. In all sectors, the average profit margins for the non-state sector is higher than the state sector.

Table 19 –Profit Margins of Sectors by Concentration

		Resources		Manufacturing		Utilities		Total	
		C	U	C	U	C	U	C	U
SOE	Central	24.4%	20.3%	6.4%	3.8%	2.8%	6.6%	7.3%	5.3%
	Local	19.0%	9.3%	7.6%	4.3%	4.7%	0.8%	6.8%	5.1%
	<i>Subtotal</i>	23.7%	10.8%	6.9%	4.2%	3.4%	1.4%	7.1%	5.2%
Non-state	Collective	10.7%	14.4%	10.4%	6.3%	8.8%	4.5%	10.2%	7.1%
	Private	13.4%	12.1%	6.2%	6.1%	9.0%	6.4%	6.7%	6.4%
	Foreign	50.9%	8.7%	11.4%	6.0%	14.6%	8.8%	16.1%	6.1%
	HMT	4.6%	29.2%	8.5%	5.9%	15.4%	9.7%	9.3%	6.0%
	Other	12.5%	15.6%	5.8%	6.4%	8.4%	7.5%	6.3%	6.8%
	<i>Subtotal</i>	23.8%	12.9%	7.6%	6.1%	11.3%	7.2%	8.6%	6.3%
All		23.7%	11.9%	7.1%	5.8%	4.0%	4.6%	7.4%	6.1%

Note: C designates potentially concentrated subsectors (HHI > 0.1), U designates unconcentrated.

The same broad trends hold for return on assets between sectors.¹¹ These suggest that it is inter-industry spreads between resources, manufacturing and utilities, rather than market concentration within subsectors that drive the performance results. On the resources side, this could be because high profits derive not from market power on the selling side, but rather access to cheap resources on the extraction side, and therefore profits derive from resource rents. On the utilities side, the public goods nature of network utilities mean that comparatively low private profits are the result of fulfilling broader social service obligations or non-profit objectives.

Table 20 shows that the distribution of asset holdings by different types of ownership then drives the returns to which they have access. Note that 4.1 per cent of non-state assets are invested in the high-yielding resources sector, compared to 16 per cent for SOEs. More than 92 per cent of non-state assets are invested in manufacturing, in which the vast majority is in unconcentrated manufacturing subsectors. Less than 4 per cent of non-state assets are in utilities, but this low-yielding sector makes up for almost a third of SOE assets. The majority of local SOE assets are in manufacturing sectors (61 per cent), followed by utilities (23 per cent) and resources (16 per cent). Central SOE assets are more skewed toward utilities (42 per cent).

Table 20 –Distribution of Assets by Owner

		Resources			Manufacturing			Utilities		
		C	U	Tot	C	U	Tot	C	U	Tot
SOE	Central	13.1%	2.9%	16.0%	20.3%	21.9%	42.2%	41.4%	0.3%	41.8%
	Local	1.1%	14.9%	16.0%	11.9%	49.1%	61.0%	16.4%	6.6%	23.0%
	<i>Subtotal</i>	6.7%	9.3%	16.0%	15.8%	36.3%	52.1%	28.2%	3.7%	31.9%
Non-state	Collective	0.6%	9.0%	9.5%	12.7%	70.5%	83.1%	5.1%	2.2%	7.4%
	Private	0.1%	5.0%	5.1%	3.1%	89.2%	92.3%	1.7%	0.9%	2.5%
	Foreign	0.8%	1.1%	1.9%	2.2%	90.1%	92.3%	4.0%	1.8%	5.8%
	HMT	0.0%	0.6%	0.6%	3.7%	92.4%	96.1%	2.0%	1.3%	3.3%
	Other	0.2%	4.7%	4.9%	4.9%	84.4%	89.2%	4.2%	1.7%	5.8%
	<i>Subtotal</i>	0.2%	3.9%	4.1%	3.9%	88.4%	92.2%	2.4%	1.2%	3.7%
	All	3.1%	6.2%	9.3%	9.1%	65.4%	74.6%	13.8%	2.3%	16.1%

Note: C designates potentially concentrated subsectors (HHI > 0.1), U designates unconcentrated.

From these observations we can draw two further generalisations.

1. Profit measures are highest in resources, followed by manufacturing and utilities. Industry subsector concentration within these major industries plays a lesser role in boosting returns.
2. Non-state ownership is highly concentrated in manufacturing industries, while the state sector is more significantly involved in the (high-profit) resource industry and (low-profit) utilities. On average, high SOE returns in resources cancels out low SOE returns in utilities.

¹¹ A table comparing return on assets is accorss sectors is available on request.

Only in the rump of manufacturing firms is it possible to make a direct comparison between firms on the basis of ownership alone, in which case the aggregate statistics suggest that the state sector indeed as less profitable than the non-state sector.

One significant manufacturing subsector in which there is both a high degree of state ownership and market concentration is the manufacture of complete automobiles. Indeed, profit measures in this subsector are higher than average, which would make it a candidate for further detailed investigation.

The manufacture of cigarettes is the starkest example of the state sector gaining an advantage from monopoly rents, but international experience suggests that the policy alternative is private enterprise coupled with heavy taxation rather than a completely private market. In any case, cigarettes are a consumer good and therefore the potentially damaging downstream effects of state monopoly are minimised.

Conclusion

This study has used the firm-level survey that underpins the China Statistical Yearbooks' industrial economy statistics to measure market concentration within industrial subsectors, to consider the relationship between industry concentration and state ownership, and finally to explore relationship between these factors and profitability. With relation to market concentration in Chinese industry, the data support four broad generalisations:

1. Most Chinese industrial assets are in competitive sectors.
2. Competitive sectors of the Chinese economy are predominantly non-state owned.
3. Provincial and local SOEs tend to hold assets in competitive sectors.
4. Concentrated sectors of the Chinese economy are predominantly owned by central SOEs.

The study has argued that previous measures of industry concentration in China have tended to underestimate the potential for the monopolization of Chinese industrial subsectors. When firm data is aggregated in order to reflect common underlying ownership, this study identifies potential, large monopoly industries relating to electricity, oil, automobiles and tobacco. All but automobiles are dominated by central SOEs. This coincides with the observations that China's three largest companies are central SOEs in oil and electricity.

While in aggregate, profit measures between state and non-state sectors are similar, this derives by chance given the large difference in asset distribution between industrial sectors. The state sector invests a much greater share of its assets in highly profitable resources industries (oil for central SOEs, coal for local SOEs). These highly profitable industry make up for the lower than average profitability of public utilities (particularly central SOE investment in electricity).

But the resources and utilities sector are best by considerations of market structure and public policy that make a direct comparison between public and private ownership difficult. Profits in

both are likely driven by access to resources and price regulations rather than market structure. In the resources sector, profits may arise because of resource rents, but the realistic alternative to public ownership would likely be private ownership and heavy taxation. Conversely in the utilities sector, the public goods characteristics of many network utilities means that the choice is between public monopoly and heavily regulated public monopoly. In both cases, the effects of state ownership are highly contingent on the policy regime, including the state's capacity to enforce its regulations on entities that it does not own. In these sectors, the only thing worse for welfare than a state monopoly could well be a private monopoly.

A direct comparison between state and non-state ownership possible is most meaningful in manufacturing sectors. In this case, as of 2009, SOEs in concentrated sectors have higher profit rates than SOEs in unconcentrated sectors, but in both cases the returns are inferior to the non-state sector. It is true that the bulk of Chinese industry is highly competitive, and mostly in non-state hands. But while competitive, private markets may have triumphed over state planning in the industrial economy at large, state ownership remains alive and well in some sectors of fundamental importance.

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Appendix

Comparison of this dataset with Statistical Yearbook 2010, Table 14-2 Main Indicators of Industrial Enterprises above Designated Size by Industrial Sector (2009)

	Revenue from Principal Business (100 million RMB)			Number of Enterprises		
	Statistical Yearbook 2010	This Paper	Diff.	Statistical Yearbook 2010	This Paper	Diff.
Extraction-Coal	17,379.94	17,090.97	-1.7%	8798	8599	-2.3%
Extraction-Petroleum_and_Natural_Gas	7,909.04	7,861.50	-0.6%	323	306	-5.3%
Extraction-Ferrous_Metal_Ores	3,608.39	3,554.94	-1.5%	4004	3889	-2.9%
Extraction-Non-Ferrous_Metal_Ores	2,859.03	2,713.36	-5.1%	2457	2242	-8.8%
Extraction-Nonmetal_Ores	2,237.54	2,212.09	-1.1%	4267	4102	-3.9%
Extraction-Other_Ores	14.21	14.13	-0.5%	27	26	-3.7%
Manufacture-Food_from_Agricultural_Products	27,624.67	27,299.96	-1.2%	24550	23820	-3.0%
Manufacture-Foods	8,865.02	8,786.93	-0.9%	8735	8456	-3.2%
Manufacture-Beverages	7,464.94	7,397.00	-0.9%	5904	5716	-3.2%
Manufacture-Tobacco	4,870.92	4,870.92	0.0%	158	158	0.0%
Manufacture-Textile	22,470.51	22,097.54	-1.7%	32412	31769	-2.0%
Manufacture-Clothing	10,140.52	9,923.49	-2.1%	18265	17856	-2.2%
Manufacture-Leather_Fur_Feather	6,241.35	6,176.38	-1.0%	8520	8391	-1.5%
Manufacture-Timber_Wood_Etc	5,618.95	5,507.53	-2.0%	10765	10368	-3.7%
Manufacture-Furniture	3,353.25	3,233.09	-3.6%	5576	5432	-2.6%
Manufacture-Paper	8,001.90	7,843.75	-2.0%	9937	9714	-2.2%
Manufacture-Printing	2,873.13	2,845.87	-0.9%	6618	6483	-2.0%
Manufacture-Culture_Education_Sport	2,570.31	2,528.30	-1.6%	4752	4645	-2.3%
Manufacture-Petroleum_Coking_Nuclear_Fuel	21,247.48	21,157.69	-0.4%	2337	2296	-1.8%
Manufacture-Chemical_Products	36,297.99	35,579.17	-2.0%	28793	27961	-2.9%
Manufacture-Medicines	9,087.00	8,997.53	-1.0%	6807	6640	-2.5%
Manufacture-Chemical_Fibers	3,799.18	3,788.90	-0.3%	1944	1913	-1.6%
Manufacture-Rubber	4,642.07	4,605.03	-0.8%	4720	4619	-2.1%
Manufacture-Plastics	10,602.18	10,440.03	-1.5%	19894	19368	-2.6%
Manufacture-Non-metallic_Mineral_Products	24,081.17	23,687.79	-1.6%	32544	31440	-3.4%
Manufacture-Smelting-Ferrous_Metals	43,905.73	42,641.55	-2.9%	7773	7586	-2.4%
Manufacture-Smelting-Non-ferrous_Metals	21,000.28	20,376.58	-3.0%	8041	7405	-7.9%
Manufacture-Metal_Products	15,499.20	15,270.98	-1.5%	24771	24081	-2.8%
Manufacture-General_Purpose_Machinery	26,636.42	26,109.50	-2.0%	37374	36406	-2.6%
Manufacture-Special_Purpose_Machinery	16,480.15	15,323.19	-7.0%	19147	18498	-3.4%
Manufacture-Transport_Equipment	41,090.49	40,176.27	-2.2%	19441	18849	-3.0%
Manufacture-Electrical_Machinery_and_Equipment	32,386.51	31,818.84	-1.8%	26443	25793	-2.5%
Manufacture-Communication_Equipment_Computers	44,215.94	43,007.09	-2.7%	14284	13940	-2.4%
Manufacture-Measuring_Instruments	4,939.51	4,907.84	-0.6%	5716	5564	-2.7%
Manufacture-Artwork_and_Other_Manufacturing	4,409.87	4,358.77	-1.2%	7797	7572	-2.9%
Utilities-Recycling_and_Disposal_of_Waste	1,453.06	1,406.17	-3.2%	1165	1123	-3.6%
Utilities-Electric_Power_and_Heat_Power	33,789.97	34,126.07	1.0%	6332	6177	-2.4%
Utilities-Gas	1,888.27	1,879.24	-0.5%	909	891	-2.0%
Utilities-Water	966.33	960.71	-0.6%	2064	2029	-1.7%
Total	542,522.43	532,576.70	-1.8%	434364	422123	-2.8%

Comparison of this dataset with Statistical Yearbook 2010 14-6 Main Indicators of State-owned and State-holding Industrial Enterprises by Industrial Sector (2009)

	Revenue from Principal Business (100 million RMB)			Number of SOE and State-holding		
	Statistical Yearbook 2010	This Paper	Diff.	Statistical Yearbook 2010	This Paper	Diff.
Extraction-Coal	10,765.83	10,333.68	-4.0%	827	784	-5.2%
Extraction-Petroleum_and_Natural_Gas	7,547.60	7,509.04	-0.5%	109	105	-3.7%
Extraction-Ferrous_Metal_Ores	526.81	534.67	1.5%	130	127	-2.3%
Extraction-Non-Ferrous_Metal_Ores	808.16	781.54	-3.3%	277	253	-8.7%
Extraction-Nonmetal_Ores	266.02	266.65	0.2%	231	226	-2.2%
Extraction-Other_Ores	0.06	0.06	-7.9%	1	1	0.0%
Manufacture-Food_from_Agricultural_Products	1,553.32	1,547.50	-0.4%	817	773	-5.4%
Manufacture-Foods	664.57	676.23	1.8%	368	376	2.2%
Manufacture-Beverages	1,447.64	1,459.02	0.8%	330	325	-1.5%
Manufacture-Tobacco	4,838.77	4,838.77	0.0%	123	123	0.0%
Manufacture-Textile	615.55	583.17	-5.3%	424	413	-2.6%
Manufacture-Clothing	143.75	142.72	-0.7%	185	187	1.1%
Manufacture-Leather_Fur_Feather	26.87	55.46	106.4%	31	29	-6.5%
Manufacture-Timber_Wood_Etc	142.97	138.06	-3.4%	168	161	-4.2%
Manufacture-Furniture	81.66	20.55	-74.8%	40	35	-12.5%
Manufacture-Paper	625.22	634.57	1.5%	179	186	3.9%
Manufacture-Printing	384.93	377.32	-2.0%	551	547	-0.7%
Manufacture-Culture_Education_Sport	31.74	37.40	17.8%	53	58	9.4%
Manufacture-Petroleum_Coking_Nuclear_Fuel	15,116.83	15,013.27	-0.7%	204	202	-1.0%
Manufacture-Chemical_Products	7,590.58	7,236.62	-4.7%	1333	1316	-1.3%
Manufacture-Medicines	1,300.75	1,466.09	12.7%	508	509	0.2%
Manufacture-Chemical_Fibers	424.71	417.81	-1.6%	56	51	-8.9%
Manufacture-Rubber	621.70	610.16	-1.9%	118	116	-1.7%
Manufacture-Plastics	348.32	342.50	-1.7%	293	294	0.3%
Manufacture-Non-metallic_Mineral_Products	2,321.34	2,339.46	0.8%	1325	1318	-0.5%
Manufacture-Smelting-Ferrous_Metals	18,271.84	17,567.90	-3.9%	338	323	-4.4%
Manufacture-Smelting-Non-ferrous_Metals	6,359.94	6,399.98	0.6%	460	424	-7.8%
Manufacture-Metal_Products	972.32	939.79	-3.3%	510	492	-3.5%
Manufacture-General_Purpose_Machinery	4,200.08	4,009.40	-4.5%	1074	1071	-0.3%
Manufacture-Special_Purpose_Machinery	4,117.26	3,450.90	-16.2%	955	860	-9.9%
Manufacture-Transport_Equipment	19,285.08	18,933.95	-1.8%	1379	1343	-2.6%
Manufacture-Electrical_Machinery_and_Equipment	2,777.80	2,722.90	-2.0%	688	678	-1.5%
Manufacture-Communication_Equipment_Computers	3,943.02	4,451.90	12.9%	727	705	-3.0%
Manufacture-Measuring_Instruments	516.52	511.69	-0.9%	369	364	-1.4%
Manufacture-Artwork_and_Other_Manufacturing	302.16	292.69	-3.1%	127	120	-5.5%
Utilities-Recycling_and_Disposal_of_Waste	239.57	240.39	0.3%	35	34	-2.9%
Utilities-Electric_Power_and_Heat_Power	31,014.83	31,348.01	1.1%	3621	3554	-1.9%
Utilities-Gas	862.16	884.60	2.6%	248	253	2.0%
Utilities-Water	642.24	635.52	-1.0%	1298	1280	-1.4%
Total	151,700.55	149,751.94	-1.3%	20510	20016	-2.4%

Comparison of this dataset with Statistical Yearbook 2010, Table 14-2 Main Indicators of Industrial Enterprises above Designated Size by Industrial Sector (2009)

	Toatal Assets		
	Statistical Yearbook 2010	This Paper	Diff.
Extraction-Coal	23,790.09	23,188.10	-2.5%
Extraction-Petroleum_and_Natural_Gas	14,890.13	14,845.37	-0.3%
Extraction-Ferrous_Metal_Ores	3,324.17	3,245.98	-2.4%
Extraction-Non-Ferrous_Metal_Ores	2,548.67	2,389.44	-6.2%
Extraction-Nonmetal_Ores	1,531.04	1,497.15	-2.2%
Extraction-Other_Ores	5.28	5.15	-2.4%
Manufacture-Food_from_Agricultural_Products	13,344.92	13,174.19	-1.3%
Manufacture-Foods	6,155.03	6,078.89	-1.2%
Manufacture-Beverages	6,589.65	6,521.03	-1.0%
Manufacture-Tobacco	4,940.08	4,940.08	0.0%
Manufacture-Textile	16,330.18	16,047.84	-1.7%
Manufacture-Clothing	5,946.06	5,763.00	-3.1%
Manufacture-Leather_Fur_Feather	3,295.87	3,263.81	-1.0%
Manufacture-Timber_Wood_Etc	2,979.74	2,901.38	-2.6%
Manufacture-Furniture	2,126.59	2,038.88	-4.1%
Manufacture-Paper	8,084.38	7,880.19	-2.5%
Manufacture-Printing	2,855.99	2,826.94	-1.0%
Manufacture-Culture_Education_Sport	1,651.30	1,616.91	-2.1%
Manufacture-Petroleum_Coking_Nuclear_Fuel	12,983.91	12,801.95	-1.4%
Manufacture-Chemical_Products	31,825.71	31,153.93	-2.1%
Manufacture-Medicines	9,341.33	9,229.24	-1.2%
Manufacture-Chemical_Fibers	3,389.56	3,378.12	-0.3%
Manufacture-Rubber	3,525.86	3,505.76	-0.6%
Manufacture-Plastics	7,624.39	7,487.40	-1.8%
Manufacture-Non-metallic_Mineral_Products	20,820.55	20,379.99	-2.1%
Manufacture-Smelting-Ferrous_Metals	41,009.76	39,663.19	-3.3%
Manufacture-Smelting-Non-ferrous_Metals	16,455.60	16,654.72	1.2%
Manufacture-Metal_Products	10,954.06	10,669.12	-2.6%
Manufacture-General_Purpose_Machinery	22,363.37	21,688.40	-3.0%
Manufacture-Special_Purpose_Machinery	15,448.08	13,840.35	-10.4%
Manufacture-Transport_Equipment	38,095.73	37,096.85	-2.6%
Manufacture-Electrical_Machinery_and_Equipment	24,224.63	23,637.12	-2.4%
Manufacture-Communication_Equipment_Computers	29,737.50	29,083.37	-2.2%
Manufacture-Measuring_Instruments	4,543.99	4,506.12	-0.8%
Manufacture-Artwork_and_Other_Manufacturing	2,785.04	2,738.67	-1.7%
Utilities-Recycling_and_Disposal_of_Waste	746.30	731.01	-2.0%
Utilities-Electric_Power_and_Heat_Power	69,086.99	68,668.19	-0.6%
Utilities-Gas	3,379.36	3,361.10	-0.5%
Utilities-Water	4,962.00	4,937.99	-0.5%
Total	493,692.89	483,436.93	-2.1%

Suffixes identifying company names

Suffix	Translation
(
(
集团	Group
有限	Limited
责任	
分公	Branch Company
司	
公司	Company
分厂	Branch Factory
厂	Factory
矿	Mine
局	
站	
中心	Centre
所	
场	
井	
业	
院	
社	Press
库	
处理	
处	
附	Associated
股份	Shareholding

Comparison of this dataset with SASAC Statistical Yearbook 2010, 2009 年

国有工业企业户数、从业人数、国有资产总量地区分析表(2009)

	SOE Employment		Number	
	Sample	SASAC	Sample	SASAC
Central-	5,695,540	8,464,000	3296	11222
Local-Anhui	640,446	548,000	577	635
Local-Beijing	278,525	383,000	683	1811
Local-Chongqing	276,883	242,000	424	730
Local-Fujian	198,039	206,000	479	725
Local-Gansu	293,374	233,000	378	467
Local-Guangdong	669,631	298,000	1235	1412
Local-Guangxi	255,540	216,000	553	870
Local-Guizhou	283,988	221,000	422	673
Local-Hainan	23,220	11,000	79	115
Local-Hebei	682,402	591,000	616	1046
Local-Heilongjiang	455,143	381,000	413	576
Local-Henan	983,195	815,000	688	1038
Local-Hubei	296,987	193,000	657	670
Local-Hunan	366,044	313,000	691	774
Local-InnerMongolia	223,928	137,000	423	222
Local-Jiangsu	434,992	275,000	689	721
Local-Jiangxi	343,536	231,000	502	649
Local-Jilin	239,747	185,000	338	341
Local-Liaoning	600,637	523,000	737	995
Local-Ningxia	52,518	23,000	91	148
Local-Qinghai	69,727	48,000	117	179
Local-Shaanxi	446,490	471,000	541	1181
Local-Shandong	1,218,755	1,110,000	1144	2080
Local-Shanghai	325,256	329,000	945	1696
Local-Shanxi	959,554	972,000	517	1413
Local-Sichuan	489,817	360,000	752	915
Local-Tianjin	305,954	240,000	948	1370
Local-Tibet	9,821	12,000	34	105
Local-Xinjiang	144,465	38,000	340	287
Local-Yunnan	246,552	218,000	448	613
Local-Zhejiang	257,738	159,000	641	939
All Local	12,072,904	9,982,000	17,102	25,396
All	17,768,444	18,446,000	20,398	36,618
	Correl	0.99	Correl	0.95

All industry subsectors concentration, revenue and state ownership

Industry Subsector		HHI		Revenue		State Ownership			Dominant
Code	Name	Raw	Pot	1000 RMB	Share	C	L	Total	Ownership
610	Bituminous Coal and Anthracite Mining and Washi	0.01	0.05	1,616,151,873	3.03%	12%	64%	76%	Local SOE
620	Lignite Mining and-Or Washing	0.06	0.08	90,571,011	0.17%	14%	30%	44%	Non-SOE
690	Other Coal Mining and Washing	0.21	0.21	2,374,134	0.00%	0%	14%	14%	Nonstate
710	Crude Oil and Gas Mining	0.10	0.83	622,852,095	1.17%	89%	8%	97%	SOE-Central
790	Support Activities for Oil and Gas Mining	0.07	0.60	163,297,772	0.31%	82%	11%	94%	SOE-Central
810	Iron Ore Mining	0.00	0.00	334,921,986	0.63%	5%	28%	33%	Non-SOE
890	Other Ferrous Metal Ore Mining	0.06	0.06	20,572,133	0.04%	5%	22%	27%	Non-SOE
911	Copper Ore Mining	0.01	0.03	24,963,628	0.05%	4%	45%	49%	Non-SOE
912	Lead, Zinc Ore Mining	0.06	0.06	73,509,447	0.14%	0%	42%	42%	Non-SOE
913	Nickel, Cobalt Ore Mining	0.07	0.09	3,339,750	0.01%	3%	0%	3%	Non-SOE
914	Tin Ore Mining	0.08	0.08	4,495,272	0.01%	0%	31%	31%	Non-SOE
915	Antimony Ore Mining	0.07	0.11	1,203,970	0.00%	0%	71%	71%	SOE-Local
916	Aluminum Ore Mining	0.10	0.22	8,953,661	0.02%	68%	0%	68%	SOE-Central
917	Magnesium Ore Mining	0.03	0.03	7,287,087	0.01%	0%	0%	0%	Non-SOE
919	Other Common Non-Ferrous Metal Ore Mining	0.04	0.04	7,327,783	0.01%	2%	6%	8%	Non-SOE
921	Gold Ore Mining	0.04	0.04	107,199,034	0.20%	4%	40%	44%	Non-SOE
922	Silver Ore Mining	0.28	0.28	3,247,388	0.01%	0%	17%	17%	Nonstate
931	Tungsten-molybdenum Mining	0.02	0.03	25,035,803	0.05%	0%	41%	41%	Non-SOE
932	Earth Metal Ores Mining	0.10	0.13	2,068,264	0.00%	0%	14%	14%	Nonstate
933	Radioactive Metal Ore Mining	0.14	0.92	911,785	0.00%	99%	0%	99%	SOE-Central
939	Other Rare Metal Ore Mining	0.04	0.04	1,793,297	0.00%	6%	29%	35%	Non-SOE
1011	Gypsum and Limestone Mining and Quarrying	0.00	0.00	30,285,079	0.06%	0%	9%	9%	Non-SOE
1012	Construction & Decoration Stone Mining and Quar	0.00	0.01	32,876,628	0.06%	0%	7%	7%	Non-SOE
1013	Fireclay and Dolomite Mining and Quarrying	0.01	0.01	13,357,080	0.03%	0%	8%	8%	Non-SOE
1019	Clay and Other Stone Mining and Quarrying	0.00	0.00	67,756,903	0.13%	2%	9%	11%	Non-SOE
1020	Chemical Mineral Mining	0.02	0.04	20,370,673	0.04%	1%	39%	39%	Non-SOE
1030	Salt Mining	0.02	0.03	26,237,673	0.05%	4%	57%	61%	Local SOE
1091	Asbestos and Mica Ore Mining	0.16	0.16	1,716,690	0.00%	5%	49%	54%	SOE-Local
1092	Graphite and Talc Mining	0.02	0.02	9,285,710	0.02%	0%	11%	11%	Non-SOE
1093	Gem Stone Mining	0.45	0.60	600,402	0.00%	0%	0%	0%	Nonstate
1099	Other Nonmetallic Mineral Mining	0.01	0.01	18,721,783	0.04%	1%	4%	6%	Non-SOE
1100	Other Ore Mining	0.12	0.12	1,413,218	0.00%	0%	3%	3%	Nonstate
1310	Corn Milling	0.00	0.00	454,636,124	0.85%	0%	12%	12%	Non-SOE
1320	Feed Processing	0.00	0.00	432,907,016	0.81%	1%	2%	3%	Non-SOE
1331	Edible Vegetable Oil Processing	0.01	0.01	481,903,142	0.90%	3%	9%	12%	Non-SOE
1332	Non-Edible Vegetable Oil Processing	0.02	0.02	7,412,734	0.01%	0%	15%	15%	Non-SOE
1340	Sugar	0.01	0.03	60,583,361	0.11%	1%	20%	22%	Non-SOE
1351	Livestock Slaughtering	0.00	0.00	332,723,819	0.62%	0%	8%	8%	Non-SOE
1352	Meat and the Side-Products Processing	0.03	0.03	249,763,475	0.47%	0%	4%	4%	Non-SOE
1361	Seafood Frozen Processing	0.00	0.00	213,239,865	0.40%	1%	3%	4%	Non-SOE
1362	Fish Meat Paste Products and Seafood Dried & Pre	0.01	0.01	30,726,703	0.06%	0%	1%	1%	Non-SOE
1363	Seafood Feed	0.02	0.02	13,143,187	0.02%	0%	0%	0%	Non-SOE
1364	Fish Oil Distilling and Products	0.24	0.24	117,681	0.00%	0%	0%	0%	Nonstate
1369	Other Seafood Processing	0.02	0.02	9,027,891	0.02%	0%	1%	1%	Non-SOE
1370	Vegetable Fruit & Nut Processing	0.00	0.00	202,996,062	0.38%	0%	2%	2%	Non-SOE
1391	Starch and Starch Products	0.04	0.04	156,927,001	0.29%	0%	6%	6%	Non-SOE
1392	Bean Products	0.02	0.02	23,614,535	0.04%	0%	5%	6%	Non-SOE
1393	Egg Products Processing	0.01	0.01	8,337,912	0.02%	0%	2%	2%	Non-SOE
1399	Other Not Listed Agricultural and Side-Product Pro	0.00	0.00	51,935,475	0.10%	1%	5%	5%	Non-SOE
1411	Bakeries & Bread	0.01	0.01	31,770,825	0.06%	1%	4%	5%	Non-SOE
1419	Biscuit & Other Baked Food	0.01	0.01	65,031,299	0.12%	0%	1%	1%	Non-SOE
1421	Confectioneries & Chocolate	0.04	0.04	48,786,990	0.09%	0%	1%	1%	Non-SOE
1422	Candied Fruits	0.01	0.01	20,394,999	0.04%	0%	0%	0%	Non-SOE
1431	Rice and Flour Products	0.01	0.01	40,060,160	0.08%	0%	6%	6%	Non-SOE
1432	Frozen Food	0.05	0.05	30,536,841	0.06%	0%	2%	2%	Non-SOE
1439	Instant Noodle and Other Instant Food	0.02	0.02	76,251,889	0.14%	1%	2%	3%	Non-SOE
1440	Liquid Dairy and Dairy Products	0.01	0.03	161,590,246	0.30%	1%	32%	32%	Non-SOE
1451	Canned Meat & Poultry	0.04	0.04	7,781,671	0.01%	0%	27%	27%	Non-SOE

1452	Canned Seafood	0.06	0.06	3,503,884	0.01%	0%	21%	21%	Non-SOE
1453	Canned Vegetable and Fruit	0.01	0.01	49,758,011	0.09%	10%	14%	24%	Non-SOE
1459	Other Canned Food	0.06	0.06	5,018,519	0.01%	0%	5%	5%	Non-SOE
1461	Monosodium Glutamate	0.11	0.11	38,958,037	0.07%	0%	28%	28%	Nonstate
1462	Soy Sauce, Edible Vinegar and Similarity Product	0.03	0.03	37,108,030	0.07%	0%	17%	17%	Non-SOE
1469	Other Spice and Seasoning & Fermented Products	0.01	0.01	48,561,317	0.09%	0%	9%	9%	Non-SOE
1491	Nutritious and Health Food	0.04	0.04	44,186,139	0.08%	0%	2%	2%	Non-SOE
1492	Frozen Beverage and Edible Ice	0.01	0.01	19,940,678	0.04%	0%	6%	6%	Non-SOE
1493	Salt Processing	0.03	0.07	5,656,153	0.01%	30%	42%	72%	Local SOE
1494	Food and Feed Additive	0.01	0.01	122,759,104	0.23%	0%	2%	2%	Non-SOE
1499	Other Not Listed Food	0.01	0.01	21,038,631	0.04%	8%	5%	12%	Non-SOE
1510	Alcohol	0.03	0.03	42,571,677	0.08%	0%	23%	23%	Non-SOE
1521	Distilled Spirit	0.04	0.06	211,479,848	0.40%	1%	53%	53%	Local SOE
1522	Beer	0.01	0.04	119,199,677	0.22%	9%	31%	40%	Non-SOE
1523	Cooking Wine	0.07	0.07	11,058,583	0.02%	0%	44%	44%	Non-SOE
1524	Wine	0.09	0.09	26,633,570	0.05%	8%	29%	37%	Non-SOE
1529	Other Drink	0.06	0.06	10,878,585	0.02%	0%	2%	2%	Non-SOE
1531	Carbonated Soft Drinks	0.03	0.04	58,283,353	0.11%	0%	6%	6%	Non-SOE
1532	Bottled and Canned Water	0.05	0.05	48,417,919	0.09%	0%	5%	5%	Non-SOE
1533	Fruit, Vegetable Juice and Syrup & Its Beverage	0.02	0.02	58,894,224	0.11%	3%	3%	6%	Non-SOE
1534	Beverage Including Dairy and Plant Protein Beverage	0.02	0.02	36,055,439	0.07%	0%	3%	3%	Non-SOE
1535	Solid Beverage	0.32	0.32	21,397,813	0.04%	0%	3%	4%	Nonstate
1539	Tea Beverage and Other Soft Beverage	0.03	0.04	47,648,286	0.09%	0%	0%	0%	Non-SOE
1540	Refined Tea Processing	0.00	0.00	47,180,812	0.09%	0%	3%	3%	Non-SOE
1610	Tobacco Leaf Processing	0.09	0.32	9,415,980	0.02%	50%	48%	98%	SOE-Central
1620	Cigarettes	0.04	0.84	472,392,978	0.89%	92%	8%	100%	SOE-Central
1690	Other Tobacco Products Processing	0.06	0.07	5,283,440	0.01%	7%	46%	53%	Local SOE
1711	Cotton and Chemical Fiber Spinning and Weaving	0.01	0.01	975,890,781	1.83%	1%	7%	8%	Non-SOE
1712	Cotton and Chemical Fiber Dyeing Refined Processing	0.00	0.00	234,868,473	0.44%	0%	3%	3%	Non-SOE
1721	Wool Piece Processing	0.01	0.01	17,829,816	0.03%	0%	3%	3%	Non-SOE
1722	Wool Spinning	0.04	0.04	105,078,199	0.20%	1%	2%	3%	Non-SOE
1723	Wool Spinning Dyeing Refined Processing	0.04	0.04	22,105,679	0.04%	0%	0%	0%	Non-SOE
1730	Ramie, Linen and Hemp	0.01	0.01	23,803,689	0.04%	0%	11%	11%	Non-SOE
1741	Silk Reeling Processing	0.01	0.01	40,428,830	0.08%	0%	5%	5%	Non-SOE
1742	Thin Silk Spinning and Silk Processing	0.01	0.01	76,539,063	0.14%	0%	3%	3%	Non-SOE
1743	Silk Dyeing Refined Processing	0.02	0.02	10,142,545	0.02%	0%	1%	1%	Non-SOE
1751	Cotton and Chemical Product	0.00	0.00	165,330,210	0.31%	0%	2%	2%	Non-SOE
1752	Wool Product	0.02	0.02	14,149,810	0.03%	0%	2%	2%	Non-SOE
1753	Ramie Product	0.06	0.06	4,621,398	0.01%	0%	3%	3%	Non-SOE
1754	Silk Product	0.02	0.02	12,678,639	0.02%	0%	2%	2%	Non-SOE
1755	Rope, Cable and Thin Rope	0.01	0.01	13,464,281	0.03%	0%	3%	3%	Non-SOE
1756	Spinning and Weaving Thread and Towels and Wadding	0.07	0.07	30,743,430	0.06%	0%	2%	2%	Non-SOE
1757	Nonwoven Fabric	0.01	0.01	45,579,441	0.09%	1%	4%	4%	Non-SOE
1759	Other Textile Product	0.00	0.00	40,259,747	0.08%	0%	5%	5%	Non-SOE
1761	Cotton, Chemical Fiber Knit Fabric, Knitting and Product	0.00	0.00	228,407,769	0.43%	0%	3%	3%	Non-SOE
1762	Wool Knit Fabric and Knitting Product	0.00	0.00	104,193,309	0.20%	0%	2%	2%	Non-SOE
1763	Silk Knit Fabric and Knitting Product	0.01	0.01	21,541,470	0.04%	0%	1%	1%	Non-SOE
1769	Other Knit Fabric and Knitting Product	0.01	0.01	22,097,561	0.04%	3%	2%	5%	Non-SOE
1810	Apparel	0.00	0.00	937,567,445	1.76%	1%	2%	3%	Non-SOE
1820	Textile Shoes	0.01	0.01	38,910,520	0.07%	2%	1%	2%	Non-SOE
1830	Hat, Cap, and Millinery	0.01	0.01	15,871,208	0.03%	0%	0%	0%	Non-SOE
1910	Leather Accessories and Trimmings	0.01	0.01	102,709,160	0.19%	0%	0%	0%	Non-SOE
1921	Leather Shoes	0.00	0.00	278,927,127	0.52%	1%	0%	1%	Non-SOE
1922	Leather Costume	0.01	0.01	36,907,206	0.07%	0%	0%	0%	Non-SOE
1923	Leather Luggage and Bags	0.00	0.00	82,591,650	0.16%	0%	3%	3%	Non-SOE
1924	Leather Glove and Ornament Products	0.01	0.01	15,060,123	0.03%	0%	0%	0%	Non-SOE
1929	Other Leather Product	0.03	0.03	22,087,637	0.04%	0%	20%	20%	Non-SOE
1931	Fur, Leather Accessories and Trimmings Processing	0.04	0.04	14,320,101	0.03%	0%	0%	0%	Non-SOE

1932	Fur Leather Apparel Processing	0.03	0.03	11,659,870	0.02%	8%	2%	10%	Non-SOE
1939	Other Fur Leather Product Processing	0.01	0.02	11,675,276	0.02%	0%	0%	0%	Non-SOE
1941	Feather, Down Processing	0.02	0.02	17,384,334	0.03%	0%	0%	0%	Non-SOE
1942	Feather, Down Products Processing	0.01	0.01	24,315,439	0.05%	0%	0%	0%	Non-SOE
2011	Sawmills	0.01	0.01	34,813,058	0.07%	1%	8%	9%	Non-SOE
2012	Wood Chips Processing	0.00	0.00	27,638,005	0.05%	0%	3%	3%	Non-SOE
2021	Plywood	0.00	0.00	183,429,054	0.34%	0%	2%	2%	Non-SOE
2022	Fiberboard	0.03	0.03	67,616,749	0.13%	0%	12%	12%	Non-SOE
2023	Shaving Board	0.03	0.03	18,914,848	0.04%	0%	23%	23%	Non-SOE
2029	Other Man-Made Woodboard	0.01	0.01	72,800,672	0.14%	0%	1%	1%	Non-SOE
2031	Construction Wood and Wood Sets Processing	0.00	0.00	64,791,386	0.12%	0%	5%	5%	Non-SOE
2032	Wood Containers	0.01	0.01	11,952,305	0.02%	0%	0%	0%	Non-SOE
2039	Soft Wood Products and Other Wood Products	0.00	0.00	29,582,162	0.06%	0%	3%	3%	Non-SOE
2040	Bamboo, Vine, Palm and Grass Products	0.00	0.00	39,214,613	0.07%	0%	3%	3%	Non-SOE
2110	Wood Furniture	0.00	0.00	189,006,961	0.35%	0%	1%	1%	Non-SOE
2120	Bamboo, Vine Furniture	0.03	0.03	4,070,794	0.01%	0%	1%	1%	Non-SOE
2130	Metal Furniture	0.00	0.00	73,763,601	0.14%	0%	3%	3%	Non-SOE
2140	Plastic Furniture	0.03	0.03	4,493,072	0.01%	0%	0%	0%	Non-SOE
2190	All Other Furniture	0.01	0.01	51,974,359	0.10%	0%	0%	0%	Non-SOE
2210	Pulp	0.06	0.06	24,977,446	0.05%	0%	32%	32%	Non-SOE
2221	Machine Made Paper and Paperboard	0.01	0.01	404,944,760	0.76%	2%	22%	24%	Non-SOE
2222	Handmade Paper	0.08	0.08	1,100,762	0.00%	0%	23%	23%	Non-SOE
2223	Processed Paper	0.01	0.01	35,355,333	0.07%	0%	4%	4%	Non-SOE
2231	Paper and Paper Board Container	0.00	0.00	209,063,927	0.39%	0%	2%	2%	Non-SOE
2239	Other Paper Products	0.00	0.00	108,932,366	0.20%	0%	1%	1%	Non-SOE
2311	Books, Magazines and Periodicals Printing	0.00	0.01	63,107,389	0.12%	7%	31%	38%	Non-SOE
2312	Notebook and Tablet	0.01	0.01	18,037,338	0.03%	1%	6%	7%	Non-SOE
2319	Lithographic Printing	0.00	0.00	187,317,475	0.35%	6%	8%	14%	Non-SOE
2320	Other Related Printing Activities	0.04	0.04	10,272,191	0.02%	20%	6%	26%	Non-SOE
2330	Recording Media Reproducing	0.04	0.04	5,852,289	0.01%	8%	11%	18%	Non-SOE
2411	Stationery	0.01	0.01	18,554,630	0.03%	0%	0%	0%	Non-SOE
2412	Pen and Pencil	0.02	0.02	13,441,465	0.03%	0%	4%	4%	Non-SOE
2413	Teaching Specimen and Mode	0.15	0.15	4,805,876	0.01%	0%	2%	2%	Nonstate
2414	Ink	0.11	0.11	710,280	0.00%	0%	6%	6%	Nonstate
2419	Other Stationery and Office Supplies	0.04	0.04	4,502,079	0.01%	0%	0%	0%	Non-SOE
2421	Ball	0.01	0.01	8,046,545	0.02%	0%	11%	11%	Non-SOE
2422	Athletic Equipment	0.03	0.03	21,256,969	0.04%	0%	4%	4%	Non-SOE
2423	Fitness Training Equipment	0.01	0.01	22,544,151	0.04%	0%	1%	1%	Non-SOE
2424	Sports Protection Appliances	0.02	0.02	5,916,899	0.01%	0%	0%	0%	Non-SOE
2429	Other Sporting and Athletic Goods	0.02	0.02	15,592,729	0.03%	0%	2%	2%	Non-SOE
2431	Chinese Musical Instrument	0.05	0.05	1,229,311	0.00%	0%	0%	0%	Non-SOE
2432	Western Musical Instrument	0.02	0.03	10,438,679	0.02%	0%	22%	22%	Non-SOE
2433	Electronic Musical Instrument	0.09	0.09	2,923,077	0.01%	0%	0%	0%	Non-SOE
2439	Other Musical Instrument and Recreational Goods	0.04	0.04	2,805,517	0.01%	0%	0%	0%	Non-SOE
2440	Toy	0.01	0.01	108,945,563	0.20%	0%	0%	0%	Non-SOE
2451	Outdoor Amusement Equipment	0.05	0.05	5,251,401	0.01%	1%	0%	1%	Non-SOE
2452	Entertaining Appliances and Indoor Amusement E	0.11	0.11	5,864,438	0.01%	0%	0%	0%	Nonstate
2511	Crude Oil Processing and Petroleum Product	0.02	0.52	1,750,413,633	3.29%	62%	20%	82%	SOE-Central
2512	Man-Made Crude Oil Production Industry	0.09	0.09	2,827,185	0.01%	0%	0%	0%	Non-SOE
2520	Coke Smelting	0.00	0.01	362,528,294	0.68%	4%	15%	19%	Non-SOE
2611	Inorganic Acid	0.01	0.01	44,472,549	0.08%	1%	8%	9%	Non-SOE
2612	Alkali	0.02	0.04	96,338,624	0.18%	3%	61%	64%	Local SOE
2613	Inorganic Salt	0.00	0.00	111,627,144	0.21%	2%	19%	22%	Non-SOE
2614	Organic Chemical Material	0.02	0.07	548,556,270	1.03%	26%	23%	49%	Non-SOE
2619	Other Basic Chemical Raw Material	0.01	0.01	136,373,675	0.26%	8%	16%	25%	Non-SOE
2621	Nitrogenous Fertilizer	0.01	0.03	180,131,296	0.34%	14%	50%	65%	Local SOE
2622	Phosphate Fertilizer	0.07	0.12	44,904,279	0.08%	0%	68%	68%	SOE-Local
2623	Kalium Fertilizer	0.14	0.23	16,111,953	0.03%	20%	53%	72%	SOE-Local

2624	Compound Fertilizer	0.01	0.02	191,095,930	0.36%	3%	37%	40%	Non-SOE
2625	Organic and Micro Biological Fertilizer	0.02	0.02	22,681,738	0.04%	0%	4%	4%	Non-SOE
2629	Other Chemical Fertilizer	0.03	0.03	4,790,562	0.01%	3%	16%	19%	Non-SOE
2631	Chemical Pesticide	0.01	0.01	112,431,000	0.21%	5%	22%	28%	Non-SOE
2632	Biochemical and Micro Biological Pesticide	0.02	0.02	13,327,837	0.03%	0%	2%	2%	Non-SOE
2641	Coating	0.00	0.00	178,924,314	0.34%	0%	5%	5%	Non-SOE
2642	Printing ink	0.01	0.01	21,812,895	0.04%	0%	4%	4%	Non-SOE
2643	Dye	0.01	0.01	35,308,453	0.07%	4%	7%	11%	Non-SOE
2644	Dyestuff	0.03	0.03	53,060,723	0.10%	0%	4%	4%	Non-SOE
2645	Sealing Fillers and Similarities	0.02	0.02	15,169,547	0.03%	1%	1%	2%	Non-SOE
2651	Basic Plastics and Synthetic Resin	0.01	0.02	380,302,393	0.71%	12%	15%	27%	Non-SOE
2652	Synthetic Rubber	0.09	0.09	43,447,032	0.08%	11%	6%	17%	Non-SOE
2653	Synthon Single(Polymerization)	0.06	0.08	134,668,947	0.25%	19%	33%	52%	Local SOE
2659	Other Synthesize Material	0.03	0.03	27,384,978	0.05%	4%	3%	7%	Non-SOE
2661	Chemical Reagent and Aid Dose	0.00	0.01	347,060,769	0.65%	2%	6%	8%	Non-SOE
2662	Special Chemical Product	0.01	0.01	321,032,688	0.60%	7%	4%	12%	Non-SOE
2663	Forestry Chemical Products	0.01	0.01	27,701,417	0.05%	0%	10%	10%	Non-SOE
2664	Explosives and Fire and Flame Products	0.00	0.02	92,660,834	0.17%	29%	22%	52%	Central SOE
2665	Information Chemistry Product	0.02	0.02	66,398,162	0.12%	13%	12%	25%	Non-SOE
2666	Special Medicament Material For Environment Po	0.02	0.02	6,129,690	0.01%	2%	9%	12%	Non-SOE
2667	Animal Glue	0.02	0.02	5,902,509	0.01%	0%	6%	6%	Non-SOE
2669	Other Special Chemical Products	0.01	0.01	53,368,448	0.10%	0%	5%	6%	Non-SOE
2671	Soap, Washing Powder and Synthetic Detergent	0.12	0.12	102,522,317	0.19%	0%	8%	8%	Nonstate
2672	Cosmetics	0.05	0.05	55,299,995	0.10%	0%	7%	7%	Non-SOE
2673	Oral Cavity Sanitary Products	0.14	0.14	9,895,591	0.02%	0%	57%	57%	SOE-Local
2674	Spice and Essence	0.01	0.01	32,009,803	0.06%	0%	3%	3%	Non-SOE
2679	Other Daily Use Chemical Product	0.02	0.02	25,012,742	0.05%	0%	5%	5%	Non-SOE
2710	Chemical Medicines and Reagents	0.01	0.01	193,409,550	0.36%	1%	27%	28%	Non-SOE
2720	Pharmaceutical Preparations	0.01	0.01	281,980,288	0.53%	1%	25%	26%	Non-SOE
2730	Chinese Traditional Medicine Pills	0.01	0.01	47,362,118	0.09%	1%	9%	10%	Non-SOE
2740	Chinese Patent Drug	0.01	0.01	192,249,092	0.36%	3%	21%	24%	Non-SOE
2750	Veterinary Medicines	0.01	0.01	43,611,090	0.08%	6%	4%	10%	Non-SOE
2760	Biology Product Industry	0.01	0.01	90,194,978	0.17%	10%	8%	18%	Non-SOE
2770	Medical Material and Supplies	0.03	0.03	50,945,749	0.10%	0%	4%	4%	Non-SOE
2811	Chemical Fiber Plasm	0.07	0.07	14,647,306	0.03%	0%	14%	14%	Non-SOE
2812	Manmade Fiber (Fibrin Fiber)	0.04	0.05	39,039,308	0.07%	2%	55%	56%	Local SOE
2821	Polyamide Fiber	0.03	0.03	33,034,806	0.06%	0%	3%	4%	Non-SOE
2822	Polyester Fiber	0.02	0.02	234,507,102	0.44%	2%	3%	5%	Non-SOE
2823	Acrylic Fiber	0.20	0.20	7,689,740	0.01%	51%	0%	51%	SOE-Central
2824	Polyvinyl Alcohol Fiber	0.38	0.44	3,262,602	0.01%	0%	97%	97%	SOE-Local
2829	Other Synthon	0.01	0.02	46,709,590	0.09%	1%	1%	2%	Non-SOE
2911	Automobile, Airplane and Engineering Machinery	0.02	0.02	225,451,521	0.42%	5%	20%	26%	Non-SOE
2912	Strength Tyre	0.03	0.03	8,651,846	0.02%	0%	19%	19%	Non-SOE
2913	Tires Retreading	0.03	0.03	3,705,907	0.01%	0%	0%	0%	Non-SOE
2920	Balata Board, Hose, Belt	0.00	0.00	57,656,816	0.11%	1%	5%	6%	Non-SOE
2930	Balata Parts Product Industry	0.01	0.01	43,196,103	0.08%	1%	5%	6%	Non-SOE
2940	Rebirth Parts Product Industry	0.03	0.03	14,596,046	0.03%	0%	0%	0%	Non-SOE
2950	Daily Balata Product Industry	0.02	0.02	21,179,165	0.04%	6%	7%	13%	Non-SOE
2960	Balata Shoe	0.01	0.01	46,781,631	0.09%	5%	4%	9%	Non-SOE
2990	Other Balata Product Industry	0.01	0.01	39,283,965	0.07%	2%	1%	3%	Non-SOE
3010	Plastic Pellide	0.01	0.01	138,581,179	0.26%	1%	9%	10%	Non-SOE
3020	Plastic Board Duct Mallet Material	0.00	0.00	231,097,862	0.43%	0%	8%	9%	Non-SOE
3030	Plastic Silk, Rope and Intertexture Product	0.00	0.00	118,039,210	0.22%	0%	3%	3%	Non-SOE
3040	Foam Plastics	0.00	0.00	49,858,482	0.09%	0%	4%	4%	Non-SOE
3050	Man-Made and Synthetic Leather	0.01	0.01	54,184,041	0.10%	0%	0%	0%	Non-SOE
3060	Plastic Packing Case and Container	0.00	0.00	96,633,935	0.18%	2%	2%	4%	Non-SOE
3070	Plastic Parts	0.00	0.00	91,954,850	0.17%	1%	2%	2%	Non-SOE
3081	Plastic Shoes	0.01	0.01	31,741,587	0.06%	0%	0%	0%	Non-SOE

3082	Daily Plastic Sundry Goods	0.00	0.00	89,314,531	0.17%	0%	1%	2%	Non-SOE
3090	Other Plastic Product Industry	0.00	0.00	142,597,792	0.27%	0%	3%	3%	Non-SOE
3111	Cement	0.00	0.00	560,551,127	1.05%	5%	29%	34%	Non-SOE
3112	Lime and Gypsum	0.01	0.01	29,073,867	0.05%	0%	5%	5%	Non-SOE
3121	Cement Product Industry	0.00	0.00	243,078,759	0.46%	3%	9%	13%	Non-SOE
3122	Rubstone Mechanism Component	0.01	0.01	48,254,482	0.09%	5%	8%	14%	Non-SOE
3123	Asbestine Cement Product Industry	0.07	0.07	14,104,000	0.03%	3%	0%	3%	Non-SOE
3124	Light Construction Material	0.01	0.01	35,228,540	0.07%	15%	20%	35%	Non-SOE
3129	Other Cement Product Industry	0.01	0.01	9,823,325	0.02%	3%	11%	14%	Non-SOE
3131	Tile	0.00	0.00	114,848,558	0.22%	1%	8%	10%	Non-SOE
3132	Construction and Hygienic Ceramics	0.00	0.00	193,207,410	0.36%	0%	0%	0%	Non-SOE
3133	Construction Stone	0.00	0.00	132,387,554	0.25%	0%	1%	2%	Non-SOE
3134	Waterproof Sealing Construction Materials	0.01	0.01	39,057,799	0.07%	2%	5%	7%	Non-SOE
3135	Heat Preservation and Sound-Proof Materials	0.01	0.01	19,907,643	0.04%	0%	14%	14%	Non-SOE
3139	Other Tile, Lime and Light Construction Material	0.01	0.01	36,603,774	0.07%	2%	5%	7%	Non-SOE
3141	Flat Glass Products	0.02	0.02	55,499,553	0.10%	1%	16%	16%	Non-SOE
3142	Industrial Technique Glass	0.01	0.01	77,352,441	0.15%	0%	3%	3%	Non-SOE
3143	Optical Glass	0.03	0.03	17,384,219	0.03%	18%	4%	23%	Non-SOE
3144	Glass Instruments	0.07	0.07	14,689,864	0.03%	0%	4%	4%	Non-SOE
3145	Daily Glass Product Industry	0.00	0.00	76,627,249	0.14%	0%	6%	6%	Non-SOE
3146	Glass Heat Preservation Vessel	0.07	0.07	4,581,098	0.01%	0%	2%	2%	Non-SOE
3147	Fiberglass and Allied Products	0.01	0.01	62,700,170	0.12%	1%	39%	40%	Non-SOE
3148	Glass Fiber Reinforced Plastic Product	0.01	0.02	39,756,982	0.07%	12%	4%	16%	Non-SOE
3149	Other Glass and Glass Product Industry	0.01	0.01	17,813,813	0.03%	0%	4%	4%	Non-SOE
3151	Construction and Hygienic Ceramics	0.01	0.01	25,613,470	0.05%	0%	3%	3%	Non-SOE
3152	Industrial Ceramics	0.01	0.01	46,886,756	0.09%	4%	4%	8%	Non-SOE
3153	Daily Ceramic	0.00	0.00	52,666,467	0.10%	0%	13%	13%	Non-SOE
3159	Other Ceramic Product Industry	0.01	0.01	12,925,991	0.02%	0%	1%	1%	Non-SOE
3161	Asbestine Product Industry	0.02	0.02	8,581,170	0.02%	2%	5%	7%	Non-SOE
3162	Mica Product Industry	0.11	0.11	2,941,352	0.01%	0%	22%	22%	Nonstate
3169	Other Fireproof Materials Products	0.00	0.00	188,771,794	0.35%	1%	6%	7%	Non-SOE
3191	Black Lead and Carbon Product	0.00	0.01	86,263,711	0.16%	7%	8%	15%	Non-SOE
3199	Other Nonmetal Mineral Product	0.01	0.01	101,596,171	0.19%	2%	10%	12%	Non-SOE
3210	Metal Smelting	0.02	0.02	224,774,941	0.42%	8%	29%	37%	Non-SOE
3220	Steel Smelting	0.05	0.07	754,485,885	1.42%	22%	50%	73%	Local SOE
3230	Steel Rolling Processing	0.01	0.02	3,059,250,726	5.74%	18%	43%	61%	Local SOE
3240	Iron Alloy Smelting Industry	0.00	0.01	225,643,133	0.42%	4%	9%	13%	Non-SOE
3311	Copper Smelting	0.08	0.08	275,118,186	0.52%	5%	75%	80%	Local SOE
3312	Lead Zinc Smelting Industry	0.02	0.03	137,639,017	0.26%	9%	38%	47%	Non-SOE
3313	Nickel Cobalt Smelting	0.54	0.54	86,343,145	0.16%	0%	78%	78%	SOE-Local
3314	Tin Smelting Industry	0.20	0.21	22,999,281	0.04%	0%	85%	85%	SOE-Local
3315	Stibium smelting Industry	0.05	0.07	6,698,041	0.01%	32%	15%	47%	Non-SOE
3316	Aluminum Smelting	0.04	0.06	253,698,446	0.48%	19%	39%	58%	Local SOE
3317	Magnesium Smelting	0.02	0.02	15,755,984	0.03%	0%	0%	0%	Non-SOE
3319	Other Commonly Used Non-Ferrous Metal Smeltir	0.02	0.02	23,970,307	0.05%	1%	19%	21%	Non-SOE
3321	Gold Smelting	0.08	0.11	77,368,040	0.15%	5%	65%	70%	SOE-Local
3322	Silver Smelting	0.03	0.04	21,119,679	0.04%	0%	4%	4%	Non-SOE
3329	Other Valued Metal Smelting	0.07	0.07	3,992,835	0.01%	0%	1%	1%	Non-SOE
3331	G78 Smelting	0.07	0.08	43,988,380	0.08%	0%	83%	83%	Local SOE
3332	Rare Earth Metal Smelting	0.02	0.02	25,986,627	0.05%	1%	32%	33%	Non-SOE
3339	Other Rare Metal Smelting	0.04	0.04	21,141,504	0.04%	3%	33%	37%	Non-SOE
3340	Non-Ferrous Metaling Alloy	0.01	0.01	77,566,940	0.15%	4%	21%	24%	Non-SOE
3351	Commonly Used Non-Ferrous Rolling Processing	0.00	0.01	855,195,408	1.61%	8%	9%	16%	Non-SOE
3352	Valued Metal Rolling Processing	0.16	0.18	63,847,478	0.12%	1%	15%	16%	Nonstate
3353	Rare Earth Metal Rolling Processing	0.04	0.04	25,229,150	0.05%	1%	17%	19%	Non-SOE
3411	Metal Fabric	0.00	0.00	416,419,301	0.78%	3%	7%	10%	Non-SOE
3412	Metal Door and Window	0.01	0.01	95,958,607	0.18%	2%	1%	2%	Non-SOE
3421	Cutting tool	0.04	0.04	35,438,926	0.07%	2%	14%	17%	Non-SOE

3422	Handwork Tool	0.01	0.01	26,005,892	0.05%	0%	2%	2%	Non-SOE
3423	Farming or Gardening Metal Tool	0.02	0.02	10,066,319	0.02%	0%	1%	1%	Non-SOE
3424	Scissors and Knives Daily Metal Tool	0.01	0.01	17,385,090	0.03%	0%	5%	5%	Non-SOE
3429	Other Metal Tool	0.01	0.01	31,198,616	0.06%	0%	1%	2%	Non-SOE
3431	Container	0.05	0.05	18,552,363	0.03%	5%	10%	15%	Non-SOE
3432	Metal Pressing Vessels	0.01	0.01	43,160,155	0.08%	3%	11%	15%	Non-SOE
3433	Metal Packaging Vessels	0.01	0.01	61,791,296	0.12%	0%	7%	7%	Non-SOE
3440	Metal Thread Products	0.01	0.02	149,638,266	0.28%	3%	15%	18%	Non-SOE
3451	Construction, Household Use Metal Parts	0.00	0.00	64,060,910	0.12%	0%	1%	1%	Non-SOE
3452	Construction, Decoration and Plumbing Parts	0.01	0.01	86,535,778	0.16%	1%	9%	10%	Non-SOE
3453	Safety, Fire Protection Metal Products	0.01	0.01	12,237,219	0.02%	0%	1%	1%	Non-SOE
3459	Other Construction, Safety Metal Products	0.04	0.04	14,260,346	0.03%	0%	2%	2%	Non-SOE
3460	Metal Surface Treating and Heating Processing	0.01	0.01	121,343,462	0.23%	1%	5%	7%	Non-SOE
3471	Industrial Use Enamel Products	0.11	0.11	3,066,427	0.01%	10%	0%	10%	Nonstate
3472	Enamel Sanitary Ware	0.10	0.10	6,245,565	0.01%	0%	0%	0%	Non-SOE
3479	Enamel Commodity and Other Enamel Products	0.06	0.06	7,828,265	0.01%	0%	1%	1%	Non-SOE
3481	Metal Kitchen and Sanitary Ware Products	0.06	0.06	38,592,138	0.07%	0%	1%	2%	Non-SOE
3482	Metal Kitchen Utensils and Tablewares	0.00	0.00	66,685,923	0.13%	0%	1%	1%	Non-SOE
3489	Other Daily Metal Products	0.00	0.00	60,386,060	0.11%	1%	2%	3%	Non-SOE
3491	Coin and Other Valued Metal Lab Products	0.26	0.94	3,523,434	0.01%	98%	0%	98%	SOE-Central
3499	Other not listed Metal Products	0.00	0.01	136,717,626	0.26%	1%	8%	9%	Non-SOE
3511	Boiler and Other Fitting Manufacturing	0.03	0.07	100,297,266	0.19%	33%	14%	47%	Non-SOE
3512	Internal Combustion and Fitting	0.01	0.06	91,667,047	0.17%	28%	27%	55%	Central SOE
3513	Steam Turbine and Fitting	0.15	0.29	46,590,473	0.09%	63%	25%	88%	SOE-Central
3514	Water Turbine and Fitting	0.14	0.14	4,446,066	0.01%	0%	22%	22%	Nonstate
3519	Other Motor Machine	0.34	0.34	9,261,692	0.02%	1%	11%	12%	Nonstate
3521	Metal Cutting Machine Tool	0.03	0.09	98,410,557	0.18%	1%	58%	59%	Local SOE
3522	Metal Forming Machine Tool	0.00	0.01	27,527,720	0.05%	0%	13%	13%	Non-SOE
3523	Foundry Machinery	0.01	0.01	31,920,817	0.06%	0%	3%	3%	Non-SOE
3524	Metal Cutting and Welding Equipment	0.01	0.01	19,038,486	0.04%	0%	3%	4%	Non-SOE
3525	Machine Tool Parts	0.01	0.01	18,442,744	0.03%	1%	10%	11%	Non-SOE
3529	Other Metal Processing Machinery	0.01	0.01	44,540,657	0.08%	2%	5%	7%	Non-SOE
3530	Crane Transportation Equipment	0.02	0.03	309,859,961	0.58%	3%	37%	40%	Non-SOE
3541	Pump and Vacuum Equipment	0.00	0.00	101,089,176	0.19%	5%	11%	16%	Non-SOE
3542	Gas Compressor Machinery	0.02	0.02	70,744,917	0.13%	1%	19%	19%	Non-SOE
3543	Valve and Plug	0.00	0.00	126,517,199	0.24%	3%	2%	5%	Non-SOE
3544	Hydraulic Pressure unit and Pneumatic Machine and	0.00	0.01	105,420,725	0.20%	1%	11%	12%	Non-SOE
3551	Bearing	0.01	0.01	122,437,576	0.23%	4%	13%	17%	Non-SOE
3552	Gears and Other Conveyor and Conveying Equipment	0.01	0.01	86,820,081	0.16%	6%	6%	12%	Non-SOE
3560	Oven and Smelting Furnace	0.02	0.02	14,461,097	0.03%	7%	5%	12%	Non-SOE
3571	Fan Equipment	0.03	0.03	50,393,937	0.09%	3%	43%	46%	Non-SOE
3572	Gas, Liquid Separation and Purifying Equipment	0.01	0.01	44,911,411	0.08%	0%	18%	18%	Non-SOE
3573	Ventilation, Heating, Air-Conditioning, and Commercial	0.01	0.02	137,201,385	0.26%	0%	13%	14%	Non-SOE
3574	Pneumatic and Power-Driven Tool	0.02	0.02	46,014,343	0.09%	0%	1%	1%	Non-SOE
3575	Gunjet Type Products	0.03	0.03	6,346,241	0.01%	4%	1%	5%	Non-SOE
3576	Packaging Equipment	0.02	0.02	15,816,048	0.03%	4%	9%	13%	Non-SOE
3577	Scale and Balance Equipment	0.02	0.05	12,424,506	0.02%	0%	5%	6%	Non-SOE
3579	Other General Equipment	0.01	0.01	62,484,415	0.12%	10%	12%	22%	Non-SOE
3581	Metal Airproof Parts	0.01	0.01	49,818,522	0.09%	2%	2%	4%	Non-SOE
3582	Fastening Units and Springs	0.00	0.00	85,722,944	0.16%	1%	4%	5%	Non-SOE
3583	Machine Parts Processing and Maintenance	0.00	0.00	112,503,459	0.21%	10%	7%	17%	Non-SOE
3589	Other General Parts	0.02	0.02	49,853,927	0.09%	0%	5%	5%	Non-SOE
3591	Steel and Iron Forging	0.00	0.00	342,223,208	0.64%	3%	10%	12%	Non-SOE
3592	Forging Unit and Powder Metallurgy Products	0.00	0.00	165,740,917	0.31%	5%	5%	10%	Non-SOE
3611	Mining Equipment	0.02	0.03	156,582,041	0.29%	18%	41%	59%	Local SOE
3612	Special Oil Mining Equipment	0.02	0.03	104,601,347	0.20%	16%	20%	36%	Non-SOE
3613	Building Construction Equipment	0.03	0.04	218,538,920	0.41%	3%	37%	40%	Non-SOE
3614	Building Material Producing Equipment	0.01	0.03	40,062,606	0.08%	23%	12%	35%	Non-SOE

3732	Motorcycle Parts and Attachments	0.01	0.01	98,519,329	0.18%	1%	7%	8%	Non-SOE
3741	Bicycle and Handicapped Vehicle	0.01	0.01	44,634,851	0.08%	0%	7%	7%	Non-SOE
3742	Moped	0.01	0.01	25,280,289	0.05%	0%	1%	1%	Non-SOE
3751	Metal Ship Building	0.01	0.10	371,292,843	0.70%	43%	8%	51%	Central SOE
3752	Non-metal Ship Building	0.12	0.12	5,297,763	0.01%	3%	1%	4%	Nonstate
3753	Pleasure Boats and Sport Boats and Repairing	0.06	0.06	2,626,345	0.00%	0%	2%	2%	Non-SOE
3754	Boat Auxiliary	0.01	0.05	57,563,620	0.11%	31%	11%	41%	Non-SOE
3755	Ship Repairing and Dismantling	0.07	0.17	56,019,595	0.11%	53%	18%	72%	SOE-Central
3759	Navigation Mark and Other Floating Equipment	0.61	0.88	4,179,077	0.01%	0%	98%	98%	SOE-Local
3761	Airplane and Repairing	0.04	0.67	110,949,821	0.21%	91%	2%	93%	SOE-Central
3762	Aircraft	0.11	0.94	6,904,448	0.01%	99%	1%	99%	SOE-Central
3769	Other Aircraft	0.15	0.15	587,286	0.00%	0%	0%	0%	Nonstate
3791	Diving and Underwater Succoring, Refloating Equi	0.26	0.26	777,486	0.00%	13%	0%	13%	Nonstate
3792	Metal Sign and Facilities for Traffic Control	0.03	0.03	6,526,651	0.01%	0%	4%	4%	Non-SOE
3799	All Other Transportation Equipment	0.14	0.14	16,180,315	0.03%	4%	4%	8%	Nonstate
3911	Collector Rings for Generators	0.01	0.03	151,929,948	0.29%	26%	13%	39%	Non-SOE
3912	Motor	0.01	0.01	111,899,286	0.21%	4%	22%	26%	Non-SOE
3919	Tiny Motor and Others Motor	0.01	0.01	93,951,082	0.18%	1%	1%	2%	Non-SOE
3921	Transformers Rectifier, Electric Capacity	0.01	0.01	239,875,326	0.45%	13%	6%	19%	Non-SOE
3922	Capacitor and Other Attachments	0.01	0.02	23,741,287	0.04%	0%	2%	3%	Non-SOE
3923	Switchgear and Switchboard Apparatus	0.01	0.01	290,500,223	0.55%	10%	8%	19%	Non-SOE
3924	Electric and Electronic Component	0.01	0.01	100,048,711	0.19%	1%	4%	5%	Non-SOE
3929	Other Relay and Industrial Control	0.02	0.02	83,091,019	0.16%	5%	24%	30%	Non-SOE
3931	Wire and Cable Manufacturing	0.00	0.00	661,769,078	1.24%	1%	5%	5%	Non-SOE
3932	Optical Fiber and Cable	0.04	0.05	50,237,387	0.09%	18%	6%	24%	Non-SOE
3933	Insulated Products	0.02	0.02	39,056,252	0.07%	2%	3%	4%	Non-SOE
3939	Other Electrical Appliance	0.01	0.01	25,332,582	0.05%	3%	3%	6%	Non-SOE
3940	Battery	0.01	0.02	284,993,617	0.54%	1%	6%	7%	Non-SOE
3951	Household Refrigerator and Home Freezer	0.13	0.13	174,817,641	0.33%	0%	12%	12%	Nonstate
3952	Air Conditioner	0.18	0.20	231,634,868	0.43%	0%	36%	36%	Nonstate
3953	Fans, household-type electric,	0.03	0.03	29,459,817	0.06%	0%	0%	0%	Non-SOE
3954	Fans, household-type kitchen,	0.04	0.04	115,157,625	0.22%	0%	1%	1%	Non-SOE
3955	Household Vacuum Cleaner and Laundry Equipme	0.03	0.03	57,331,852	0.11%	0%	7%	7%	Non-SOE
3956	Appliance for Beauty Parlor and Health Manufactu	0.04	0.04	15,980,232	0.03%	0%	0%	0%	Non-SOE
3957	Electrical Home Appliance and Device Parts	0.01	0.01	43,574,262	0.08%	0%	12%	12%	Non-SOE
3959	Other Electrical Appliance	0.01	0.01	43,498,034	0.08%	0%	0%	0%	Non-SOE
3961	Gas ,Solar and Similar Energy Appliance	0.01	0.01	60,206,381	0.11%	0%	1%	1%	Non-SOE
3969	Other Non-Electric Home Appliance Manufacturin	0.05	0.05	7,438,309	0.01%	0%	0%	0%	Non-SOE
3971	Lighting Fixture	0.01	0.01	61,331,125	0.12%	0%	1%	1%	Non-SOE
3972	Lighting Equipment	0.00	0.00	95,637,415	0.18%	0%	1%	1%	Non-SOE
3979	Lamp Appliance Accessories and Other Lighting Eq	0.01	0.01	33,783,552	0.06%	0%	11%	11%	Non-SOE
3991	Automotive Light Bulbs and Signal Equipment	0.04	0.04	26,129,645	0.05%	0%	12%	12%	Non-SOE
3999	All Other Electric Machinery	0.05	0.05	29,477,460	0.06%	18%	2%	21%	Non-SOE
4011	Transmission Equipment	0.02	0.05	65,812,504	0.12%	33%	18%	51%	Central SOE
4012	Switching Equipment	0.36	0.40	267,623,181	0.50%	40%	2%	42%	Nonstate
4013	Communications Terminal Equipment	0.05	0.05	49,443,295	0.09%	7%	10%	17%	Non-SOE
4014	Mobile Communications Equipment and Terminal	0.07	0.07	416,048,216	0.78%	1%	6%	8%	Non-SOE
4019	Other Communication Equipment	0.02	0.03	47,898,452	0.09%	21%	7%	28%	Non-SOE
4020	Radar Detectors and Auxiliary Apparatus	0.14	0.23	12,972,703	0.02%	25%	70%	94%	SOE-Local
4031	Television and Radio Transmission Equipment	0.06	0.08	2,868,385	0.01%	3%	29%	33%	Non-SOE
4032	Television and Radio Receiving equipment	0.02	0.02	24,934,205	0.05%	2%	4%	6%	Non-SOE
4039	Applied TV Equipment and Other Audio-Video Equ	0.06	0.06	12,677,048	0.02%	0%	8%	8%	Non-SOE
4041	Computer Body	0.05	0.05	869,298,348	1.63%	0%	5%	5%	Non-SOE
4042	Computer Network Equipment Manufacturing	0.06	0.06	38,732,430	0.07%	0%	4%	4%	Non-SOE
4043	Computer Peripheral Equipment	0.02	0.02	603,042,057	1.13%	2%	4%	5%	Non-SOE
4051	Vacuum Tubes	0.05	0.06	35,374,862	0.07%	4%	59%	64%	Local SOE
4052	Semi-conductor Devices	0.02	0.02	51,924,707	0.10%	0%	11%	11%	Non-SOE
4053	Integrated Circuit	0.02	0.02	168,782,987	0.32%	2%	7%	9%	Non-SOE

3615	Special Metallurgy Equipment	0.06	0.16	91,656,179	0.17%	39%	38%	77%	SOE-Central
3621	Petroleum Producing, Chemical Producing Special	0.01	0.01	43,015,980	0.08%	6%	24%	30%	Non-SOE
3622	Rubber Processing Special Equipment	0.03	0.06	12,091,279	0.02%	22%	15%	37%	Non-SOE
3623	Plastic Processing Special Equipment	0.03	0.03	25,669,994	0.05%	1%	0%	1%	Non-SOE
3624	Sawmill and Woodworking Machinery	0.01	0.01	9,790,961	0.02%	0%	9%	9%	Non-SOE
3625	Die	0.00	0.00	121,995,426	0.23%	0%	3%	3%	Non-SOE
3629	Other Non-Metal Process Special Equipment	0.03	0.03	7,984,295	0.01%	0%	19%	19%	Non-SOE
3631	Food, Beverage, Tobacco Industrial Special Use Eq	0.01	0.03	24,153,766	0.05%	21%	12%	33%	Non-SOE
3632	Agricultural and Sideline Products Processing Equi	0.02	0.02	27,201,936	0.05%	0%	3%	3%	Non-SOE
3633	Animal Feeds Equipment	0.06	0.06	3,106,812	0.01%	0%	17%	17%	Non-SOE
3641	Plasm Making and Paper Industry Machinery	0.01	0.01	19,073,176	0.04%	1%	6%	8%	Non-SOE
3642	Printing Industrial Equipment	0.01	0.01	17,187,172	0.03%	2%	24%	26%	Non-SOE
3643	Household Chemicals Producing Equipment	0.04	0.04	1,865,802	0.00%	0%	0%	0%	Non-SOE
3644	Pharm Producing Equipment	0.02	0.02	5,694,361	0.01%	0%	8%	8%	Non-SOE
3645	Lighting Apparatus and Fixture Special Equipment	0.02	0.02	3,333,249	0.01%	0%	1%	1%	Non-SOE
3646	Glass, Ceramics and Enamel Products Producing Ec	0.06	0.06	8,361,595	0.02%	0%	17%	17%	Non-SOE
3649	Other Household Product Producing Equipment	0.06	0.06	3,714,297	0.01%	2%	1%	2%	Non-SOE
3651	Weaving Equipment	0.01	0.01	64,938,765	0.12%	19%	9%	28%	Non-SOE
3652	Leather and Fur Processing Equipment	0.08	0.08	2,079,863	0.00%	0%	0%	0%	Non-SOE
3653	Sewing Machinery	0.02	0.02	22,033,037	0.04%	0%	19%	19%	Non-SOE
3659	Other Apparel Processing Equipment	0.09	0.09	4,050,193	0.01%	0%	9%	9%	Non-SOE
3661	Electrical Equipment	0.01	0.02	22,089,825	0.04%	12%	9%	21%	Non-SOE
3662	Electric Industrial Equipment	0.01	0.01	46,347,244	0.09%	1%	11%	12%	Non-SOE
3669	Aviation, Aerospace and Other Special Equipment	0.08	0.38	7,127,602	0.01%	69%	12%	82%	SOE-Central
3671	Tractor	0.12	0.12	37,747,488	0.07%	40%	13%	53%	SOE-Central
3672	Mechanical Farming Machinery and Equipment	0.04	0.04	44,813,970	0.08%	1%	10%	11%	Non-SOE
3673	Forestry Mechanical Equipment	0.16	0.16	314,420	0.00%	0%	17%	17%	Nonstate
3674	Husbandry Mechanical Equipment	0.15	0.15	2,604,319	0.00%	0%	3%	3%	Nonstate
3675	Fishing Mechanical Equipment	0.09	0.09	1,835,878	0.00%	0%	3%	3%	Non-SOE
3676	Agriculture Machinery Parts	0.01	0.01	33,104,081	0.06%	0%	0%	0%	Non-SOE
3679	Other Agriculture Machinery and Maintenance	0.31	0.31	40,208,489	0.08%	8%	40%	48%	Nonstate
3681	Diagnosis, Monitoring and Treatment Equipment	0.03	0.03	28,508,495	0.05%	0%	11%	11%	Non-SOE
3682	Dental Equipment and Other Utensils	0.05	0.05	1,418,197	0.00%	0%	2%	2%	Non-SOE
3683	Lab and Disinfectant Equipment and Utensils	0.11	0.11	4,042,345	0.01%	0%	40%	40%	Nonstate
3684	Medical, Surgery and Veterinarian Tools	0.02	0.02	33,539,922	0.06%	0%	2%	2%	Non-SOE
3685	Mechanical Treatment and Nursing Equipment	0.03	0.03	5,536,467	0.01%	3%	9%	12%	Non-SOE
3686	Artificial Limb, Organ and Implantation Equipmen	0.06	0.07	3,581,029	0.01%	1%	14%	15%	Non-SOE
3689	Other Medical Equipment and Supplies	0.01	0.01	13,860,640	0.03%	5%	0%	5%	Non-SOE
3691	Environmental Protection and Pollution Treatmen	0.02	0.02	75,373,134	0.14%	6%	6%	12%	Non-SOE
3692	Geology Reconnaissance Special Equipment Manu	0.11	0.13	2,674,712	0.01%	17%	40%	57%	SOE-Local
3693	Postal Industrial Equipment	0.20	0.20	576,804	0.00%	53%	16%	69%	SOE-Central
3694	Commercial, Food and Beverage, and Service Indu	0.06	0.06	1,970,089	0.00%	0%	0%	0%	Non-SOE
3695	Social Public Security Equipment and Supplies	0.02	0.02	19,845,191	0.04%	1%	3%	4%	Non-SOE
3696	Transportation Safety and Controlling Equipment	0.04	0.04	2,812,433	0.01%	0%	11%	11%	Non-SOE
3697	Water Resource Professional Equipment	0.02	0.02	7,697,643	0.01%	8%	4%	12%	Non-SOE
3699	Other Environmental Protection, Social Security S	0.01	0.01	55,905,066	0.10%	8%	16%	25%	Non-SOE
3711	Locomotives and Trains	0.06	0.48	82,815,316	0.16%	70%	17%	87%	SOE-Central
3712	Mining Vehicles	0.07	0.07	1,880,182	0.00%	0%	7%	7%	Non-SOE
3713	Locomotives Parts	0.02	0.03	43,045,264	0.08%	17%	18%	35%	Non-SOE
3714	Rail Apparatus ,Equipment and Parts	0.03	0.20	35,216,258	0.07%	53%	5%	58%	SOE-Central
3719	Other Rail Transportation Equipment and Repair	0.05	0.65	15,220,979	0.03%	89%	2%	91%	SOE-Central
3721	Automobile Complete	0.03	0.13	1,529,386,077	2.87%	33%	55%	88%	SOE-Local
3722	Modified Motor Vehicle	0.01	0.02	138,354,891	0.26%	13%	19%	32%	Non-SOE
3723	Trolley	0.06	0.06	1,310,551	0.00%	0%	22%	22%	Non-SOE
3724	Automobile Body and Trailer	0.01	0.02	32,419,079	0.06%	4%	24%	28%	Non-SOE
3725	Automobile Parts and Attachments	0.00	0.01	1,189,499,367	2.23%	4%	12%	16%	Non-SOE
3726	Automobile Repairing Service	0.01	0.01	27,100,131	0.05%	3%	18%	21%	Non-SOE
3731	Motorcycle Complete	0.03	0.04	114,039,186	0.21%	6%	19%	26%	Non-SOE

4059	Photovoltaic devices	0.02	0.02	341,039,905	0.64%	4%	17%	21%	Non-SOE
4061	Electronic Components	0.01	0.01	595,740,070	1.12%	1%	11%	12%	Non-SOE
4062	Bare Printed Circuit Board	0.02	0.02	194,844,732	0.37%	0%	2%	2%	Non-SOE
4071	Household Video Equipment Manufacturing	0.04	0.04	299,316,467	0.56%	4%	39%	43%	Non-SOE
4072	Household Audio Equipment Manufacturing	0.02	0.02	91,217,072	0.17%	0%	2%	2%	Non-SOE
4090	Other Electronic Devices	0.01	0.02	111,117,601	0.21%	1%	12%	12%	Non-SOE
4111	Instruments for Industrial Automation Control	0.01	0.01	117,956,893	0.22%	11%	17%	28%	Non-SOE
4112	Electrical Instruments And Meters	0.01	0.01	17,913,262	0.03%	7%	5%	12%	Non-SOE
4113	Drawing, Counting and Gauge Device	0.01	0.01	8,943,990	0.02%	0%	17%	17%	Non-SOE
4114	Lab Instrument and Apparatus	0.03	0.03	12,559,062	0.02%	2%	9%	11%	Non-SOE
4115	Experimental Machinery	0.05	0.05	4,627,070	0.01%	2%	6%	8%	Non-SOE
4119	General Instrument, Meter Component Parts for S	0.05	0.05	44,092,347	0.08%	1%	3%	4%	Non-SOE
4121	Environment Monitor Meter And Instrument	0.05	0.05	6,191,488	0.01%	0%	5%	5%	Non-SOE
4122	Auto Instrument, and Other Meter	0.03	0.04	21,200,316	0.04%	1%	8%	9%	Non-SOE
4123	Navigational ,Meteorological and Marine Apparatu	0.05	0.09	8,489,756	0.02%	41%	22%	63%	Central SOE
4124	Meter Apparatus For Farming ,Forestry ,and Fishin	0.15	0.15	604,873	0.00%	0%	0%	0%	Nonstate
4125	Geologic Prospecting, Earthquakes use Instrumen	0.10	0.13	5,909,152	0.01%	47%	3%	49%	Nonstate
4126	Teaching Apparatus	0.04	0.04	3,029,630	0.01%	1%	1%	2%	Non-SOE
4127	Nucleon and Nuclear Radiation Measuring Appara	0.09	0.12	712,754	0.00%	50%	13%	64%	SOE-Central
4128	Instrument for Measuring and Testing Electricity a	0.03	0.03	14,436,797	0.03%	14%	5%	19%	Non-SOE
4129	Other Special Used Apparatus	0.05	0.06	11,651,498	0.02%	22%	8%	29%	Non-SOE
4130	Watch, Clock, and Counting Device	0.01	0.01	18,717,474	0.04%	0%	9%	9%	Non-SOE
4141	Optical Instrument	0.04	0.06	43,682,344	0.08%	30%	10%	39%	Non-SOE
4142	Glasses	0.01	0.01	13,706,059	0.03%	0%	0%	0%	Non-SOE
4151	Filming Machine	0.20	0.20	472,673	0.00%	0%	26%	26%	Nonstate
4152	Slide Projector and Overhead Projector	0.25	0.25	2,173,051	0.00%	0%	0%	0%	Nonstate
4153	Camera Equipment	0.08	0.08	52,986,597	0.10%	0%	0%	0%	Non-SOE
4154	Copy and Offset Machine	0.07	0.10	45,100,781	0.08%	1%	3%	4%	Non-SOE
4155	Electronic Calculator	0.07	0.07	23,051,604	0.04%	0%	15%	15%	Non-SOE
4159	Other Stationery and Office Machine	0.13	0.13	5,180,766	0.01%	1%	0%	1%	Nonstate
4190	Instrument, Meter and Repairing	0.02	0.02	7,393,724	0.01%	1%	6%	7%	Non-SOE
4211	Carving	0.01	0.01	24,153,308	0.05%	0%	1%	1%	Non-SOE
4212	Metal Handicraft	0.02	0.02	22,356,864	0.04%	17%	1%	18%	Non-SOE
4213	Lacquerware	0.03	0.03	6,560,385	0.01%	0%	0%	0%	Non-SOE
4214	Artificial Flower and Painting	0.02	0.02	11,906,553	0.02%	0%	0%	0%	Non-SOE
4215	Natural Fiber	0.00	0.00	28,138,401	0.05%	0%	0%	0%	Non-SOE
4216	Drawwork and Embroid	0.00	0.00	36,700,966	0.07%	0%	0%	0%	Non-SOE
4217	Carpet and Arras	0.01	0.01	24,404,982	0.05%	0%	5%	5%	Non-SOE
4218	Jewelry and Silverware	0.02	0.03	99,681,207	0.19%	0%	7%	7%	Non-SOE
4219	Other Craft	0.00	0.00	58,120,088	0.11%	0%	2%	2%	Non-SOE
4221	Mirrors	0.03	0.03	4,071,332	0.01%	0%	0%	0%	Non-SOE
4222	Broom, Brush, and Mop	0.05	0.05	24,083,833	0.05%	0%	0%	0%	Non-SOE
4229	Other Various Household Supplies	0.01	0.01	54,357,038	0.10%	0%	0%	0%	Non-SOE
4230	Coal Product	0.02	0.02	5,679,386	0.01%	0%	13%	13%	Non-SOE
4290	All Other Non-listed Industry	0.01	0.07	35,662,910	0.07%	45%	9%	54%	Central SOE
4310	Metal Waste and fragment Treatment and Process	0.02	0.02	124,125,046	0.23%	17%	5%	22%	Non-SOE
4320	Non-Metal Waste and fragment Treatment and Pr	0.01	0.01	16,492,254	0.03%	2%	7%	9%	Non-SOE
4411	Thermal Power Generation	0.00	0.22	998,594,413	1.88%	46%	37%	83%	SOE-Central
4412	Hydroelectric Power Generation	0.03	0.22	140,757,499	0.26%	52%	31%	84%	SOE-Central
4413	Nuclear Electric Power Generation	0.21	1.00	24,455,677	0.05%	100%	0%	100%	SOE-Central
4419	Other Power Industry	0.02	0.11	29,410,401	0.06%	27%	47%	74%	SOE-Local
4420	Transmission And Distribution Of Electric Power	0.03	0.50	2,131,028,640	4.00%	80%	20%	99%	SOE-Central
4430	Heating Power Production and Supply	0.01	0.04	88,360,787	0.17%	7%	62%	70%	Local SOE
4500	Natural Gas Production and Distribution	0.02	0.03	187,924,319	0.35%	1%	67%	68%	Local SOE
4610	Tap Water Production and Supply	0.00	0.04	78,096,137	0.15%	0%	82%	83%	Local SOE
4620	Sewage Treatment and and Regeneration	0.02	0.03	11,494,160	0.02%	0%	64%	64%	Local SOE
4690	Other Sewage Treatment ,Utilizing and Distributio	0.36	0.36	6,480,314	0.01%	0%	1%	1%	Nonstate