

China's Industrial Economy in 2016 Q4 Highlights and Annual Report¹

Gan Jie

**Center on Finance and Economic Growth
Cheung Kong Graduate School of Business**

¹ This report is based on a nationwide quarterly survey of industrial firms, which is implemented by Beijing Allinfo Co., based on the questionnaire and sample provided by Professor Gan Jie, Director of the Center on Finance and Economic Growth. We thank Beijing Allinfo for its hard work and professionalism. We acknowledge the able research assistance of Harry Leung, Shi Tianshuo, Wang Shaokun and Jessy Yao who provided support to the data analysis and presentation. Mark Dreyer provided excellent copy editing.

Executive Summary

The most prominent change seen in the fourth quarter of 2016 was a significant rise in product prices, with about a quarter of firms reporting product price inflation above 10%. An important driving force behind this price inflation is the rise in production costs. The unit cost diffusion index jumped from 57 in Q3 to 73 in Q4, with raw material costs and labor costs, the two main components of unit costs, both increasing significantly.

Production in Q4 registered its first expansion in six quarters, mainly driven by consumer goods. The Business Sentiment Index (BSI) stood at 46, indicating a slight contraction. Investment remained sluggish and overcapacity stayed at its historical high.

The majority of firms remain optimistic (9%) or cautiously optimistic (53%) about their economic outlook for the next three to five years. The majority of Chinese industrial firms (80%) do not have any R&D spending. Moreover, compared to the past two years, R&D spending appears to be declining. Meanwhile, the legal institutions in China provide good protection for business operations: 91% of the firms gave the legal environment a ranking above 7, with an average score of 7.7.

The main theme of the industrial economy in 2017 will still be the reduction of overcapacity, while inflation and cost rises should be carefully watched. Against this background of overcapacity, it remains our view that a loosening of monetary policy would not revive the industrial economy.

I. 2016 Q4 Key Findings

I.1 Cost-Driven Price Inflation

Product prices increased substantially in the fourth quarter. One third of the firms surveyed reported increased product prices, with the diffusion index rising sharply to 66 (versus 50 in Q3). Moreover, as many as a quarter of the firms reported product price inflation above 10%.

Production cost rises are the driving force behind this price inflation. Close to half of the firms reported unit cost increases, with a diffusion index of 73. Both labor and raw material costs increased significantly, with diffusion indexes of 65 and 72, respectively.

Figure 1 further shows that, among firms with product price inflation above 10%, cost rises were the most prominent. The proportion of firms with unit cost increases above 10% and 5% was 36% and 93%, respectively, far above the whole sample (8% and 26%). Unit cost increases are mostly related to raw material costs. 62% of these firms reported raw material cost rises above 5% (versus 15% for the whole sample). These firms were also more likely to have substantial labor cost increases (above 5%), tallying 14% versus 3% in the whole sample. Meanwhile, these firms were similar to the whole sample in terms of production expansion and overcapacity. All these patterns in the data point towards price inflation driven by cost run-ups, rather than by increased demand.

I.2 Business Sentiment Index in Contraction & Overcapacity Not Improved

The Business Sentiment Index in the fourth quarter of 2016 stood at 46, the same as the last quarter, indicating a slight contraction. Our BSI is the simple average of three diffusion indices, including current operating conditions, expected change in operating conditions and investment timing.^{1, 2} Compared with other economic indices, our BSI is more forward-looking and is a reflection of the absolute level of economic activities.³

¹ Specifically, the three questions underlying our Business Sentiment Index are the following: 1. How are current operating conditions – “good”, “neutral” or “difficult”? 2. What is the expected change in operating conditions during the next quarter – “up”, “same” or “down”? 3. To what extent is it now a good time to invest – “good”, “medium” or “bad”?

² The diffusion index is based on answers to multiple-choice questions, with the choices in analog to “good,” “neutral” and “bad”, or “up,” “same” and “down.” The diffusion index is computed as a % of firms answering “good” + 0.5 * % of firms answering “neutral”. The diffusion index ranges between 0 and 100. A larger value indicates better operating conditions, with 50 marking the turning point between expansion and contraction.

³ Most existing indices, including the well-known PMI, are ex-post and relative (to last quarter). Even when the absolute level of business conditions is gloomy, one may still observe a high diffusion index, as long as it is an improvement over the previous quarter.

The low BSI in Q4 is, again, a result of weak investment. Only 1% of the firms considered it a “good” time to make fixed investments, with a diffusion index of 36, far below the turning point of 50 (Figure 2). In reality, 9% of firms made any fixed investments in Q4 and a mere 2% made expansionary investments. The sluggish investment is not likely to improve in the near future: only 17 firms (0.8 %) said they planned to make investments in the next quarter.

Overcapacity remains at a historical high, both in terms of its prevalence and severity. Not surprisingly, firms do not show strong confidence for the next quarter, with the index of expected operating conditions dropping 4 points to 47, a level below the turning point.

I.3 Production Expanded for the First Time in Six Quarters

Production registered its first expansion in six quarters, with the diffusion index rising to 54 (Table 1). Production expansion has mainly been driven by consumer goods. Their diffusion indexes stood at 57 (durable consumer goods) and 56 (non-durable consumer goods) in Q4. Expansion of production, however, may not last, as the index of expected production change was 47, below the turning point of 50.

II. 2016 Annual Review

II.1 Overall Conditions and Industrial & Regional Distribution

2016 was a difficult year for the industrial economy. The BSI stayed at 46 for four consecutive quarters, marking a continued, if slight, contraction (Figure 2).

Similar to the past few years, the low BSI is a result of sluggish investment. Each quarter, only 1% of the firms surveyed considered it a “good” time to make fixed investments, with the diffusion indices ranging between 34 and 36, far below the turning point of 50. 8-9% of firms made fixed investments; a mere 1-2% made expansionary investments, even lower than in 2015 (versus 2-3% in 2015). Recent media reports have noted that the country’s fixed investment has been dominated by government-led investment, while private investment has been contracting. Our survey shows that this trend has lasted for quite some time.

The persistent loosening of monetary policy has caused product prices to turn from deflation in the first half of 2016 to significant inflation in the fourth quarter (Figure 5).

Among different types of firms, SOEs performed better than private companies, while large firms fared better than small ones. Among different product types, consumer

goods outperformed intermediate goods and capital goods.

The most difficult industries included Processing of Petroleum, Non-metallic Mineral Products and Leather-Related Products. Those industries were among the bottom five worst-performing industries for all four quarters of 2016. Processing of Petroleum and Non-metallic Mineral Products were also among the industries with the most severe overcapacity. Coal Mining and Iron & Steel moved off from the bottom-five list due to run-ups in commodity prices.

Table 3 displays regional business conditions. In Q4, the BSI ranged from 40 to 54. The bottom five provinces are Shanxi (40), Heilongjiang (42), Hebei (42), Henan (43) and Liaoning (43). Shanxi has been on the list six times since 2015 Q2, only moving the list due to an improvement in the province's Coal Mining industry. Hebei is back on the list this quarter and has been on the list six times in the past seven quarters.

II.2 Challenges and Priorities

Excess capacity remains the largest challenge confronting the industrial economy. The next two largest challenges are cost rises and government policies.

II.2.1 Overcapacity Still at a Historical High

Despite a stronger effort to reduce excess capacity, overcapacity remained at its historical high in 2016. Each quarter, about 2/3 of firms reported oversupply in the domestic market, with the diffusion index at 83 for four consecutive quarters, the historical high (Figure 7A). Neither was there any significant improvement in the severity of overcapacity, measured by the proportion of firms reporting supply over demand by 10% and 20% (Figure 7B). When asked, firms said they did not think overcapacity would improve significantly in the next quarter.

There have been recent media reports about a contraction in exports. Our data shows that overcapacity in the international market is actually substantially better than in the domestic market, with the diffusion index more than 10 points lower (Figure 7A).

Weak demand has not caused inventory problems: thanks to the “order-based” production model adopted by many Chinese firms, the finished-goods inventory stayed largely flat. In Q4, for example, as many as 46% of firms said they did not have significant levels of inventory because they start production only after receiving orders. For those carrying inventories, 85% said they expected their inventory to be digested within three months, with a further 12% saying it would take between three to six months. This leaves only 3% of the whole sample who said they expected to carry inventory for more than six months.

II.2.2 Curtailment of Overcapacity

Each quarter, we call back all the firms that had been surveyed in the previous quarter. In each quarter of 2016, about 2-3% of firms had suspended production or were suspected to have suspended production. The latter included cases where, after between five to nine attempts to reach them, the phone number was either wrong, suspended or did not exist, and the line could not be connected or was busy (Figure 8A).

In 2016, the reduction in employment was greater than in 2015, although this slowed in the fourth quarter (Figure 8B). The quarterly average of the proportion of firms reducing workers by more than 10% was 3%, while the average proportion of firms with employment reduction of more than 20% was 2%. Based on the size distribution of firms with employment reduction and the number of industrial workers in 2014 being 230 million, we estimate that a total of 5.5 million jobs were lost in 2016.

Consistent with an improved industrial structure, firms with severe overcapacity are more likely to reduce employment and production. Among those with severe overcapacity (above 20%), the proportion of firms reducing production and employment by more than 5% and 10% was significantly more than in the sample as a whole.

Capacity utilization remained stable in 2016. Each quarter, about 70% of firms reported a capacity utilization rate above 80%, while 15% were at levels of below 70% (Figure 8C). There is no consensus as to what level of capacity utilization should be considered healthy. Nevertheless, if we take the examples of the two largest western industrial nations, the US and Germany, their monthly average capacity utilizations were 79% (1994-2015) and 83% (1992-2015), respectively. Their lowest points after the financial crisis in 2008 were 67% and 70%, respectively, both measured in June 2009. Given the low profit margin of Chinese industrial firms, their sustainable utilization rate may be higher than that of their western counterparts.

Consistent with overcapacity and the resulting tight cash position, we found that for each quarter of 2016, there were about 1/4 to 1/3 of firms reporting difficulties in collecting trade receivables from their customers. This problem was more prominent among collective firms, as well as firms producing capital goods and intermediate goods. SOEs, which represent less than 4% of the sample, were disproportionately more likely to delay payment, accounting for about 20% of all firms that have delayed payment.

II.2.3 Rising Costs and Low Margins

Cost rises, the second biggest challenge facing the industry economy, were not a main

concern during the first three quarters. However, unit costs increased substantially in the fourth quarter, mainly due to increases in raw materials and labor costs.

Overcapacity means a lack of pricing power, which, combined with rising costs, results in low profit margins. As shown in Figure 10, as many as 1/4 of the firms surveyed had gross margins below 10%, 70% of the firms had gross margins below 15%, whereas only 5% of the firms had gross margins above 20%. Low margins may make it difficult for the firms to invest in R&D and industrial upgrading.

II.2.4 Financing is Not a Bottleneck

In contrast to conventional wisdom, our survey has consistently found, since its inception in the second quarter of 2014, that financing is not a bottleneck for the industrial economy. In each quarter of 2016, only 3-4% of firms cited financing as a constraining factor. In Q4, 24% of the firms said they had sufficient funds, 72% answered “neutral”, while only 5% reported insufficient funds. Of those, the vast majority (95%) reported insufficient funds for production, not for expansion, while 3% reported insufficient funds due to operating losses (Figure 11A).

As shown in Table 6.1 and Figure 11B, only a small fraction of firms have obtained new loans in the past few quarters. During each quarter of 2016, the vast majority (more than 90%) of firms without new loans reported that they did not have the need for capital. Moreover, the diffusion index reflecting an “accommodating” bank lending attitude ranged from 61 to 67 (Figure 11C). In Q4, the number of firms reporting a “difficult” lending attitude dropped to 6%, down from 16% in Q3. It was not common for firms to borrow from financial institutions other than banks in Q4, with only four firms (0.2%) doing so at interest rates of below 15%.

Table 6.2 provides an overview of how Chinese firms have been financed. Internally-generated funds were, by far, the most important source of financing, with 99% of surveyed firms reporting this as their primary funding source. In Q4, 2% of firms reported the founder’s own capital as the primary source of funds, while 56% reported this as the second most important source of funds. 43% of firms indicated bank loans as their second most important source of funds. Sources of financing were highly concentrated in Chinese firms: in the case of internal funds, 91% of firms reported that this largest financing source accounted for more than 50% of their total funds. These patterns have been highly consistent over time.

Our finding that financing is not a bottleneck has also been consistent with the central bank’s “Financial Institutions Lending Statistics” reports over the past few years. During 2014, new loans to industrial firms declined by, on average, 30% each quarter. In 2015 and 2016, the numbers of new industrial loans issued were only 5% and 3%, respectively, of loan balances at the previous year end. The central bank’s industrial

loan demand index remained at historically low levels throughout 2016. On the other hand, many of the new loans entered the real estate industry. New real estate loans accounted for 47% of total new loans on average, of which personal real estate loans averaged close to 90%.

Taken together, against the background of overcapacity, investment opportunity is scarce, resulting in low loan demand. Thus, financing is not a bottleneck for the industrial economy at the moment.

III. Going Forward: Outlook, Institutions and Innovation

III.1 Economic Outlook

The vast majority of firms remain “optimistic” (9%) or “cautiously optimistic” (53%) about their economic outlook over the next three to five years (Figure 12A). Overall, expectations are stronger than they were last year, when 6% were “optimistic” and 51% were “cautiously optimistic”. Among those who are “not optimistic”, their main concerns cited include the macro government policy & political economy (40%), competition & overcapacity (36%), macroeconomic environment (11%), cost rises (9%) and environmental protection (4%) (Figure 12B).

III.2 Innovation

Figure 13A reports the innovative activities of Chinese industrial firms. The majority of the firms (80%) do not have any R&D spending, 15% spend 0-5% of sales on R&D, and a mere 5% of firms have R&D spending of more than 5%. Moreover, compared to the past two years, R&D spending is on a downwards trend.

In our sample, 176 firms (9%) have obtained a high-tech status from their local government so that their corporate taxes are significantly lower. Our data shows that high-tech firms are faring better than the whole sample in two areas: operating conditions (53 versus 46) and overcapacity (73 versus 83). Their investments are also slightly better than the whole sample. Firms with R&D input exceeding 5% of their sales, though rare in number, also fare better in terms of operating conditions, with a diffusion index of 48 versus 46 in the whole sample) and overcapacity (74 versus 83 in the whole sample) (Figure 13B).

III.3 Institutions

Contrary to the skeptical opinions of some in the west, the legal institutions in China provide reasonably good protections for business operations. Figure 14A displays firms’ responses to the question “On a scale of 0-10, what is the likelihood that the legal system will uphold your contract and property rights in business disputes (0

being the worst)?” 91% of firms gave the legal environment a rating above 7, and the average was 7.7 (versus 7.3 in 2015). There was not much variation in this rating across regions.

Compared with their western counterparts, Chinese firms rely more on informal procedures and on social networks than on formal legal action to handle business disputes (Figure 14B). 79% and 10% said they would use legal advisers to negotiate or settle by themselves outside court, respectively, while 1% said they would rely on mutual friends or business partners to mediate and 8% would go to court.

The Chinese government plays an active role in promoting growth. However, as the government has shifted its strategic priorities away from the manufacturing sector, firms were less likely to receive support from the government in 2016 (13%) than in the past two years (16% in 2015 and 28% in 2014) (Figure 14C). The most common support was tax reduction, which was cited by 9% of firms in 2016 (versus 13% in 2015). Other forms of support include project-based funding (2%), funding for innovation and various subsidies (1% each). Not surprisingly, high-tech firms were substantially more likely to receive government support (30% in 2016 versus 35% in 2015).

IV. Conclusion

The most noteworthy aspect in the fourth quarter was significant cost-driven product price inflation. Moreover, production registered its first expansion in six quarters.

2016 was a difficult year for the industrial economy. Our Business Sentiment Index did not show any improvement, with the diffusion index remaining at 46 for four consecutive quarters. This is mainly due to sluggish investment, with only 2-3% of firms making expansionary investment each quarter.

The biggest challenge facing the industrial economy is still overcapacity. Both its prevalence and severity are at historical highs, and firms say they do not expect significant improvement in the next quarter. While cost rises, the second biggest challenge, were not a main concern in the first three quarters of 2016, they became more serious in the fourth quarter, with both raw material and labor costs increasing substantially.

Despite current difficulties, the majority of firms remain optimistic (9%) or causally optimistic (53%) about the economic outlook of the next 3 to 5 years. Compared to the past two years, R&D spending seems to be declining, with 80% of firms not having any R&D in 2016. Meanwhile, legal institutions in China provide reasonably good protections for business operations: 91% of firms surveyed gave the legal environment a rating above 7, with an average score of 7.7.

The main theme of the industrial economy in 2017 will still be the reduction of overcapacity. Meanwhile, cost and price rises should be carefully watched. Given that firms' R&D ability is not sufficient for industrial upgrading, supply-side reform should facilitate industrial consolidation to improve overall competitiveness, while simultaneously helping to curtail overcapacity. Moreover, against this background of overcapacity, the loosening of monetary policy would not revive the industrial economy. Finally, given the government's strong commitment to economic development, we remain optimistic about the long-term outlook of the Chinese economy.

**Figure 1. New Phenomenon in the 4th quarter:
Cost Driven Price Increases**

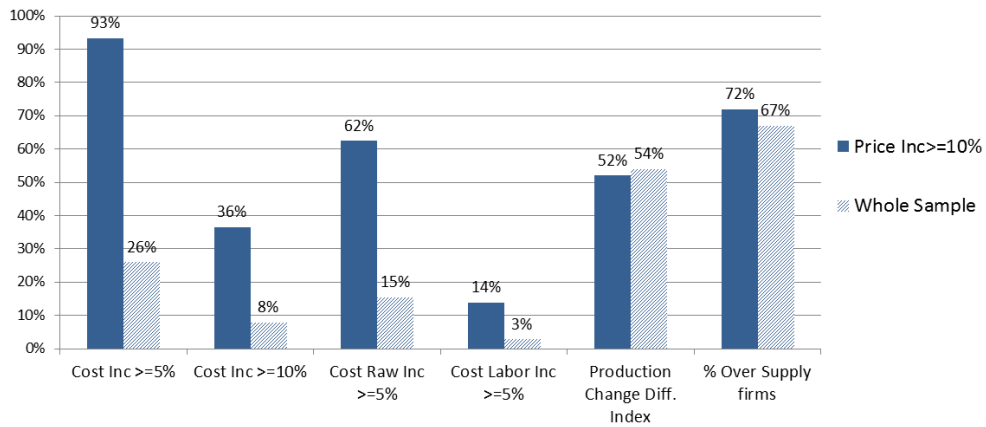


Figure 2. Business Sentiment Index

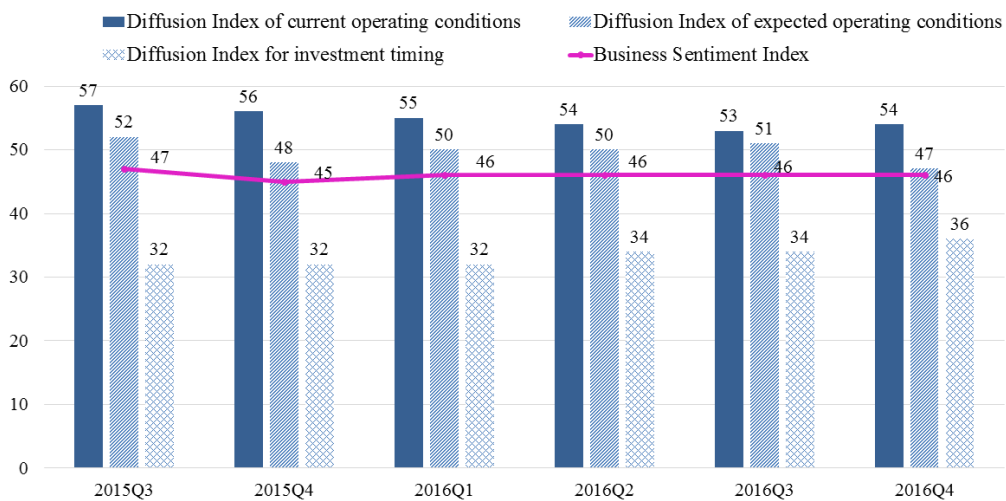


Figure 3. Current Operating Conditions

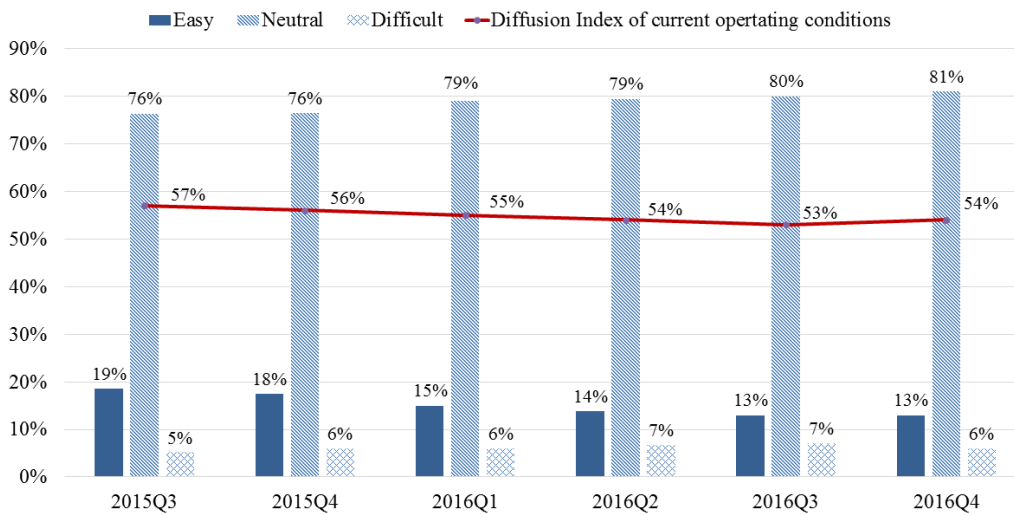


Figure 4. Investment

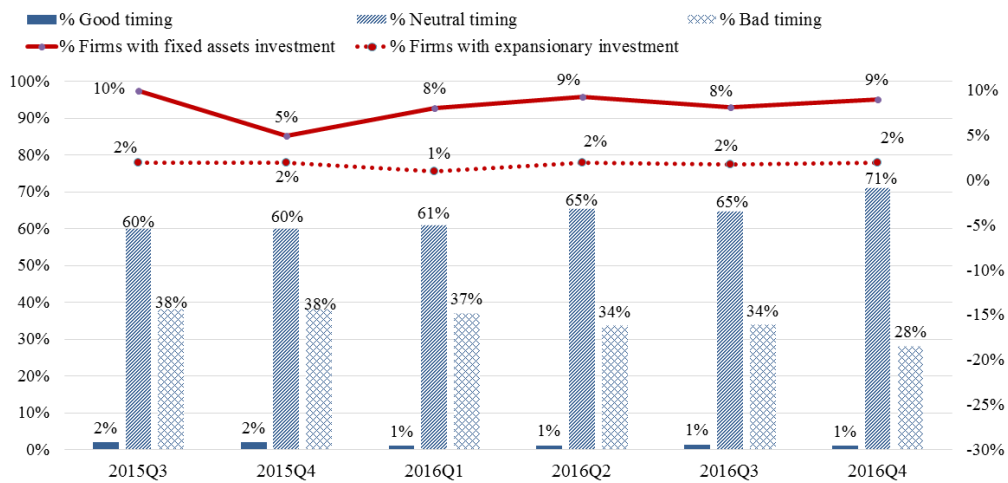


Figure 5. Other Main Economic Indices

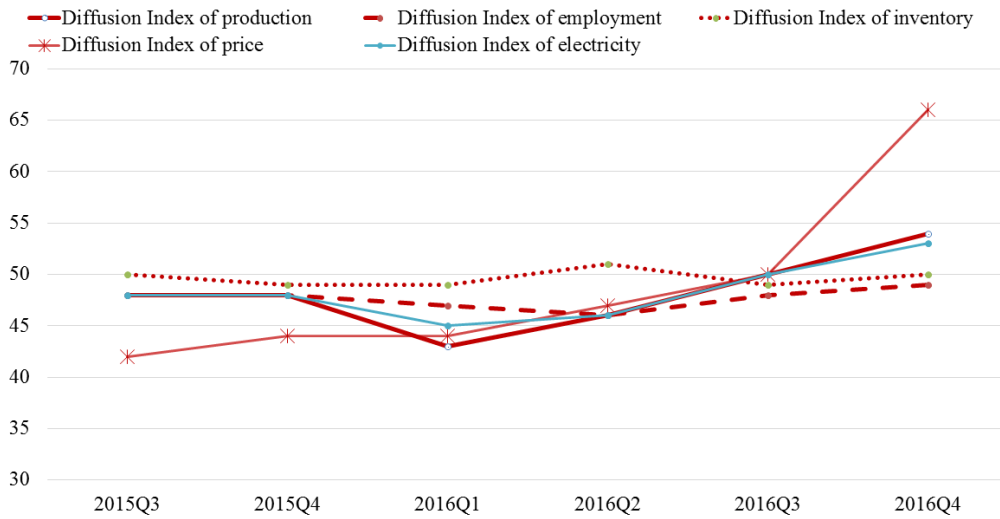


Figure 6. Factors Constraining Production of Next Quarter

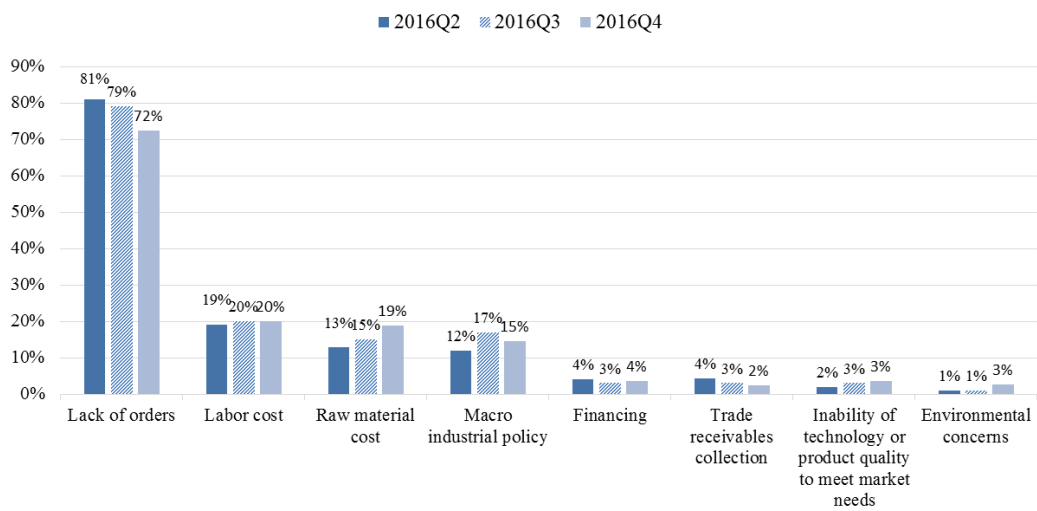


Figure 7A. Excess Capacity

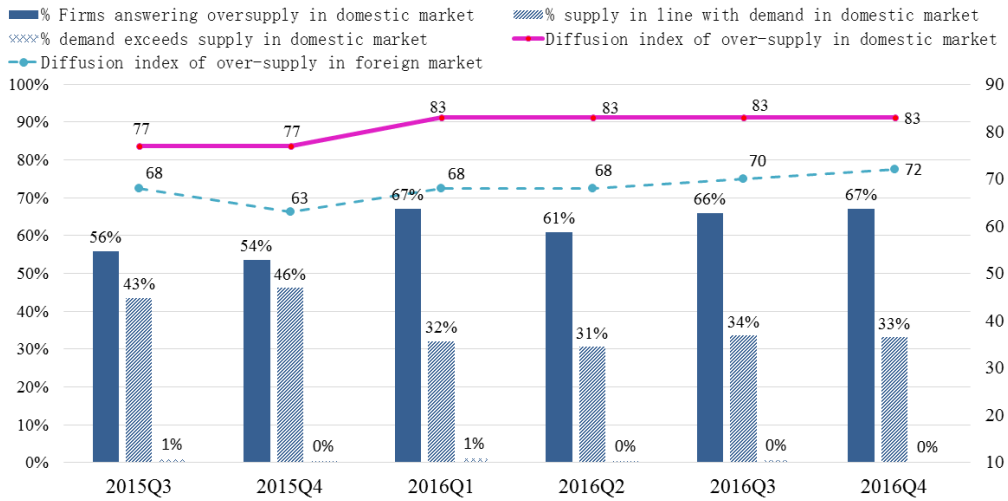


Figure 7B. Firms with Severe Excess Capacity

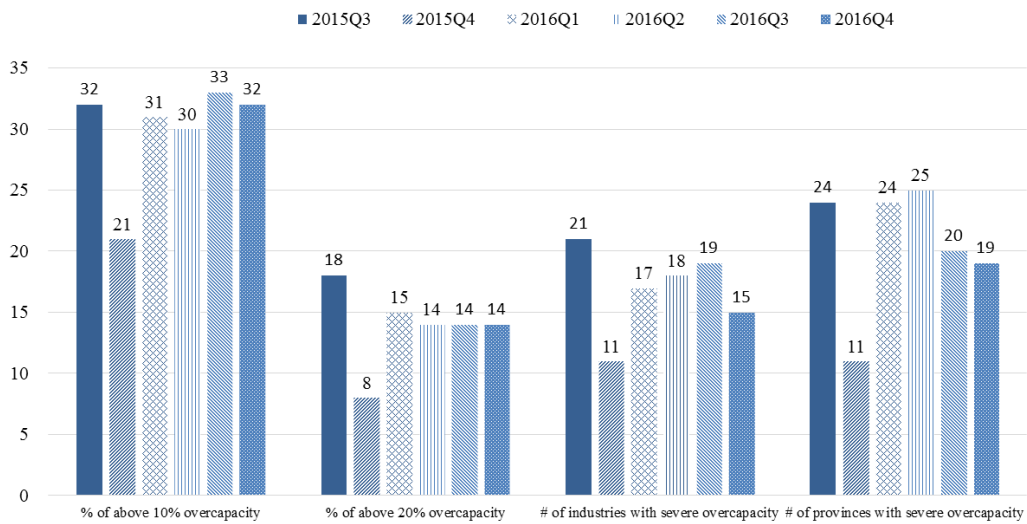


Figure 8A. Suspended Production

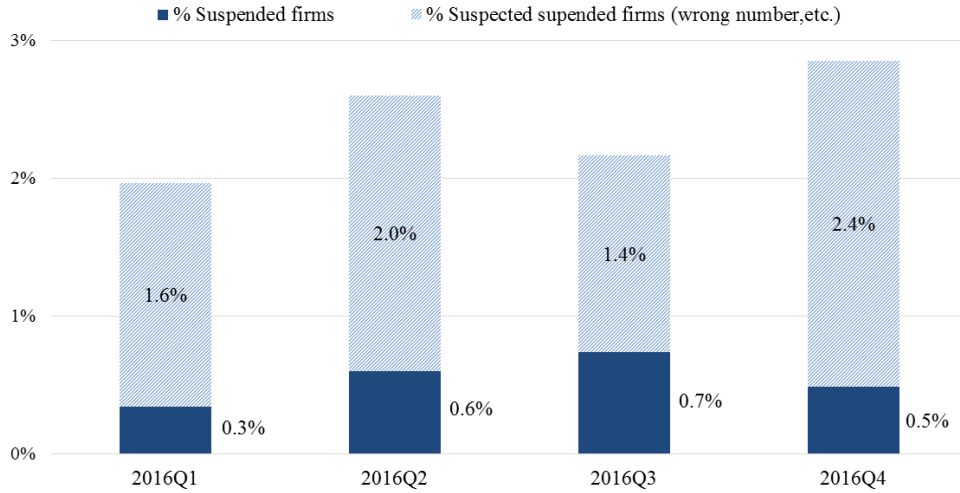


Figure 8B. Firms with Employment Reduction

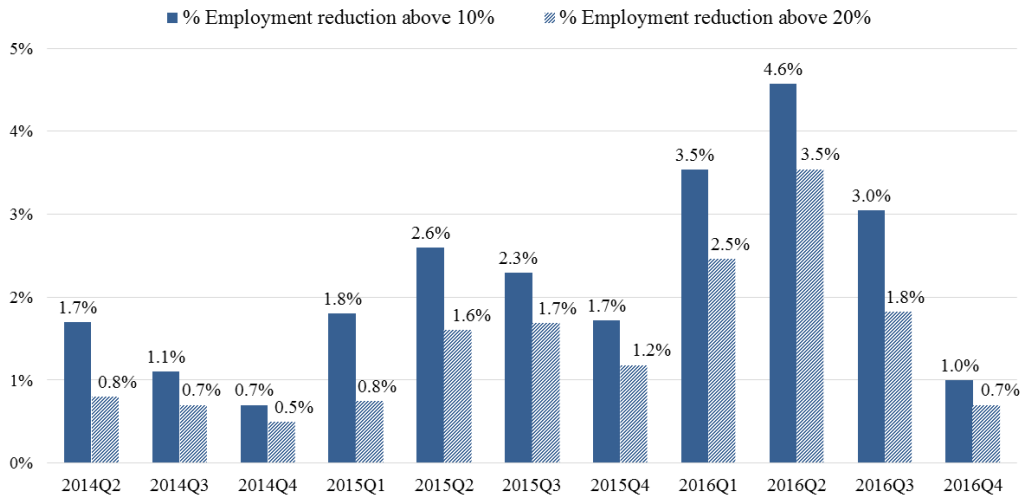


Figure 8C. Capacity Utilization

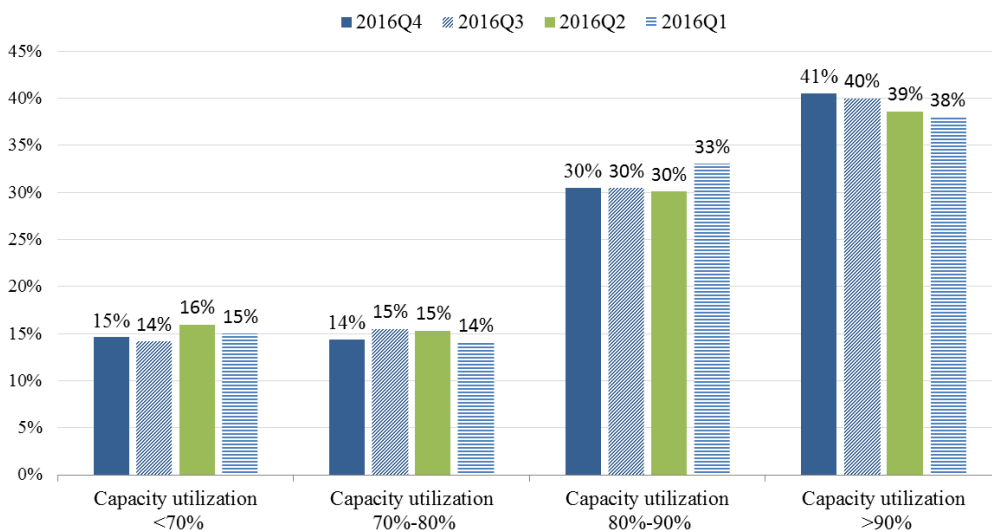


Figure 9. Costs

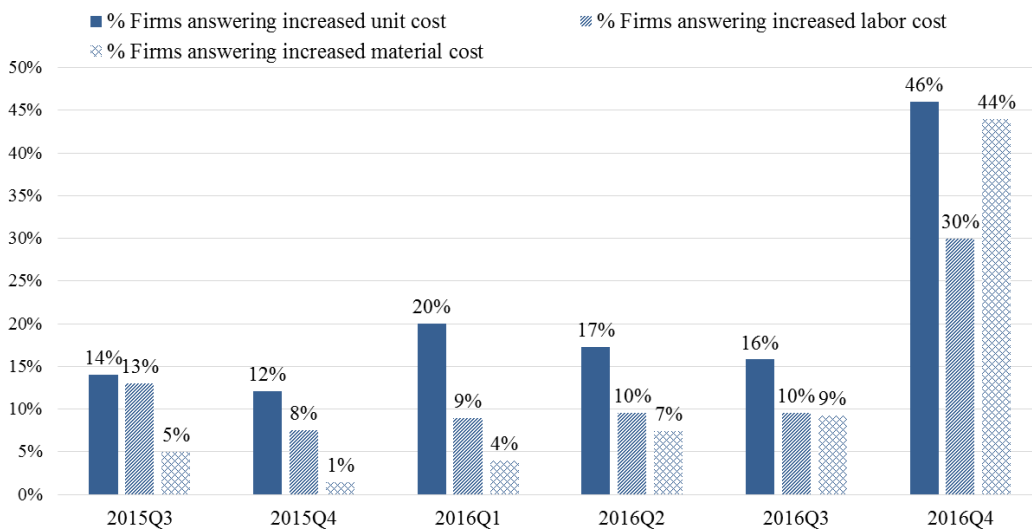


Figure 10. Gross Margins

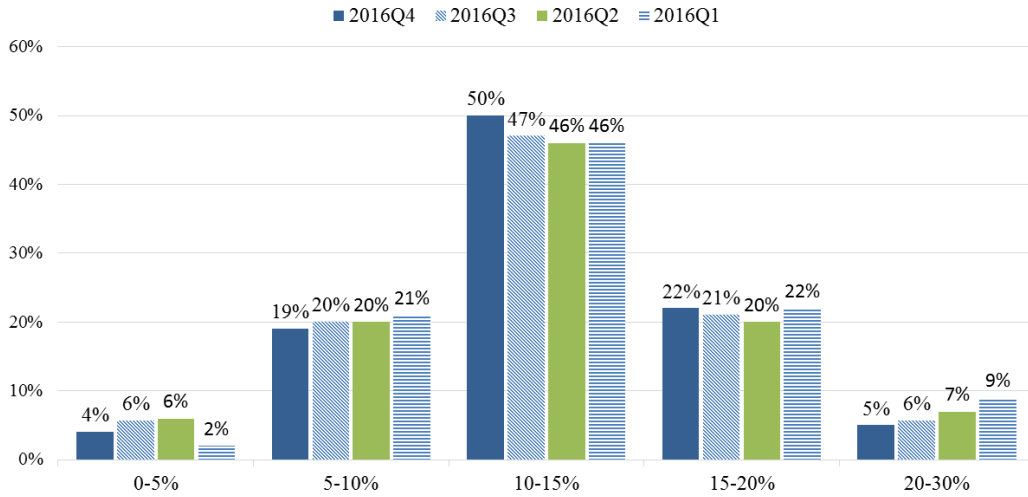


Figure 11. Financing
Figure 11A. Sufficient Capital

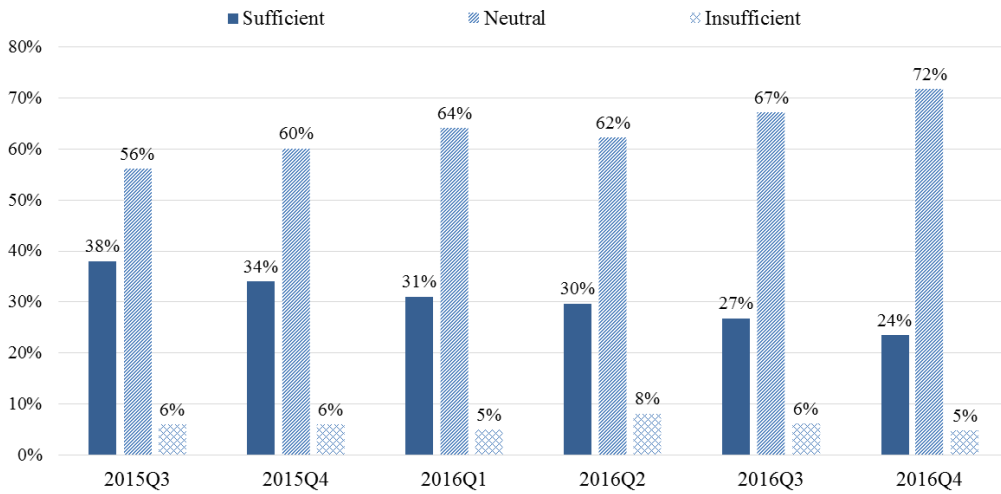


Figure 11B. New Loans

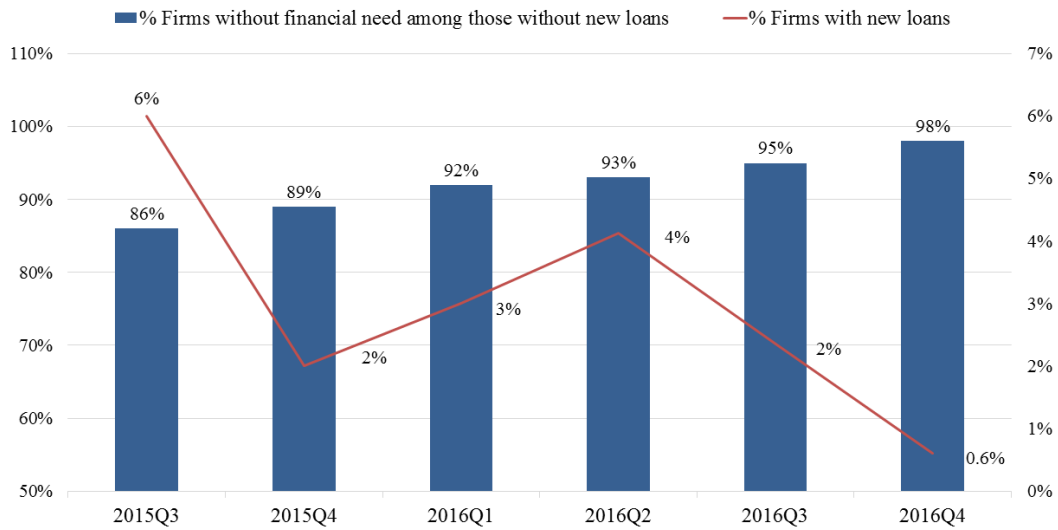


Figure 11C. Lending Attitude

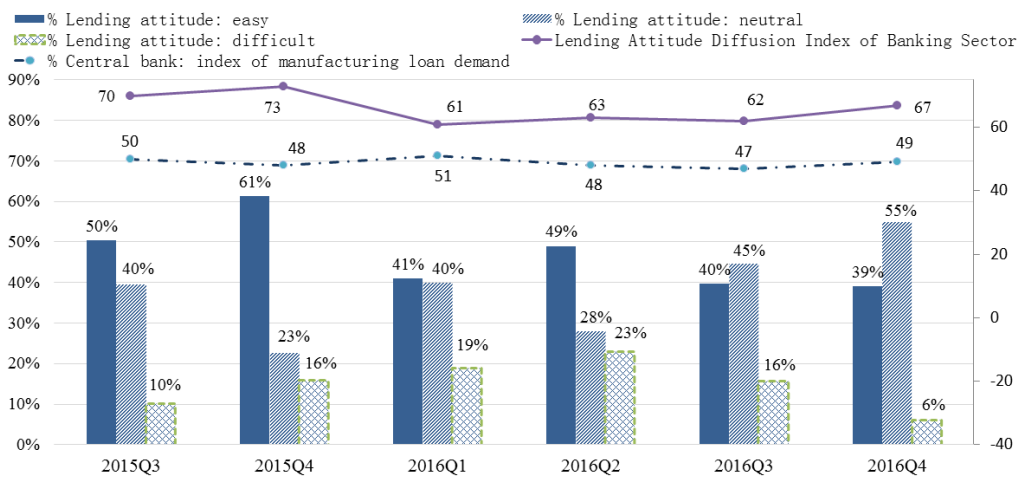


Figure 12. Business Outlook in 3-5 Years
Figure 12A. Business Outlook in 3-5 Years

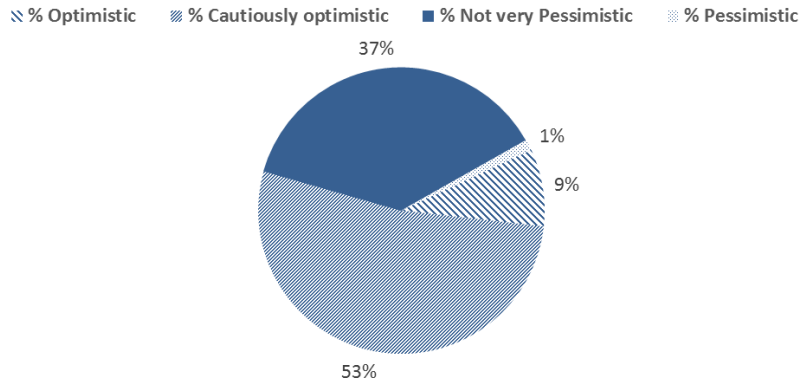


Figure 12B. Reasons for Pessimism

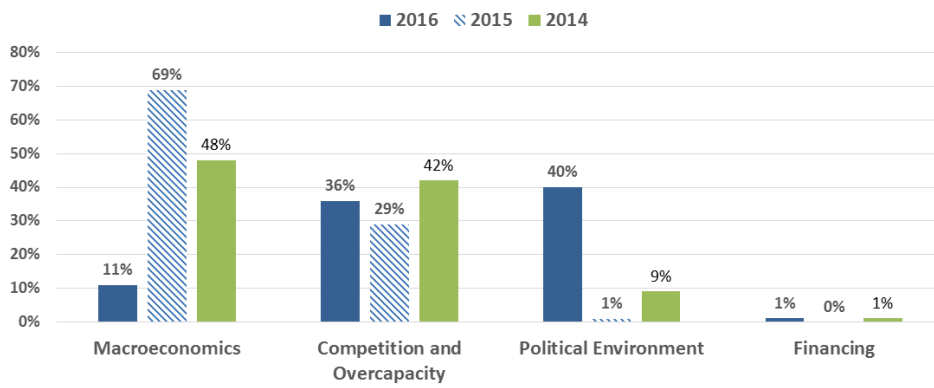


Figure 13. Innovation
Figure 13A. R&D Expenses of Chinese Firms

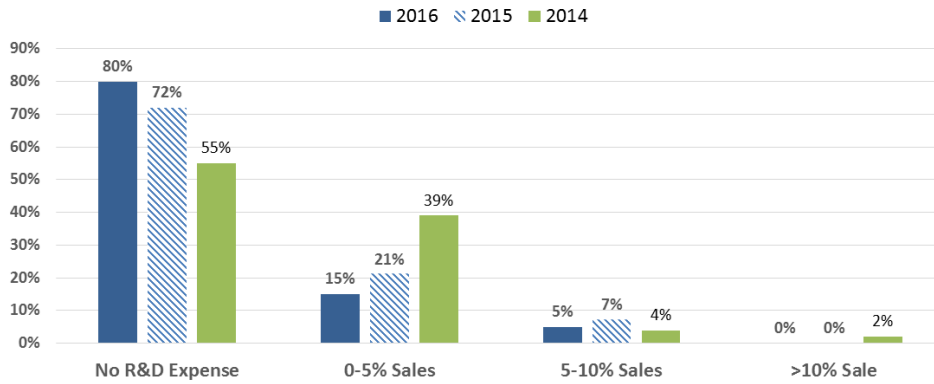


Figure 13B. Performance of Firms with significant R&D Expense

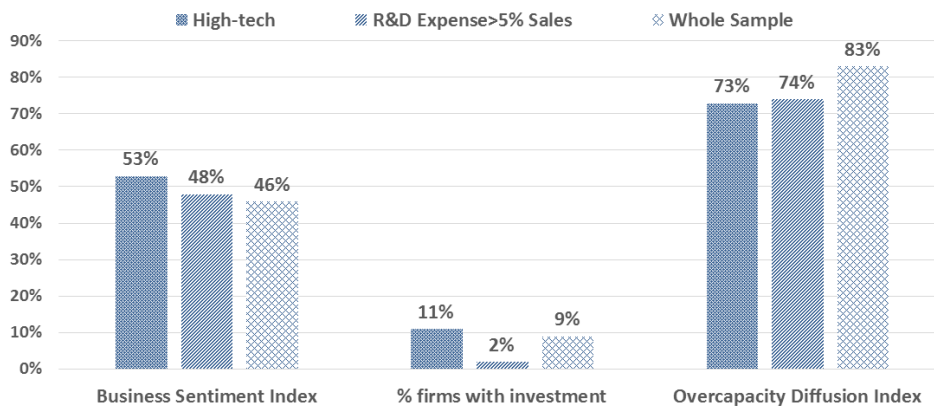


Figure 14. Legal Environment
Figure 14A. Rating of Legal Environment

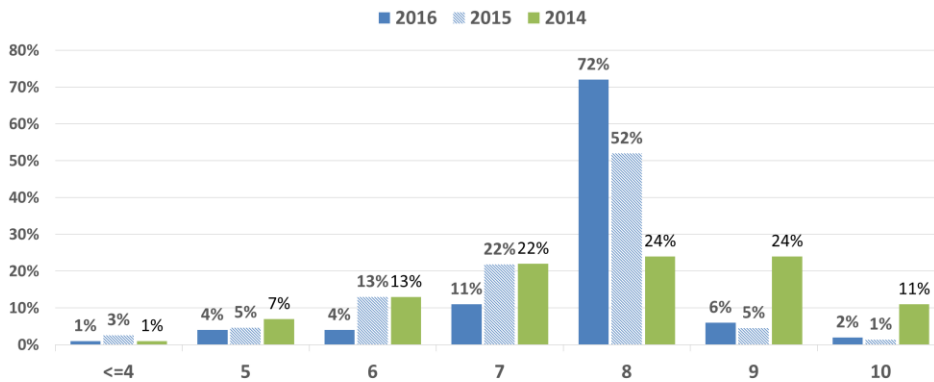


Figure 14B. Ways to Handle Business Disputes

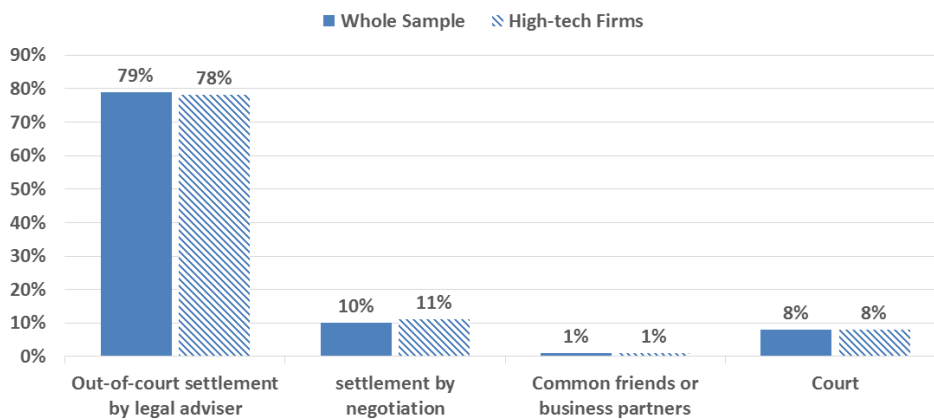


Figure 14C. Support from the Government

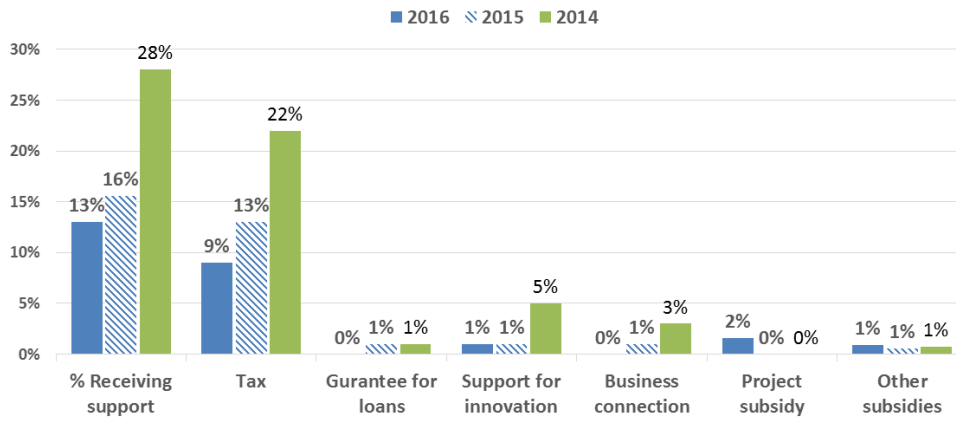


Table 1. Operating Conditions of Industrial Firms**Table 1.1**

	Number of Firms		Business Sentiment Index		Diffusion Index - Operating Conditions		Diffusion Index - Expected Change in Operating Conditions		Diffusion Index - Good Timing for Investment	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation	2,030	2,037	46	46	54	53	47	51	36	34
<i>By Size</i>										
Large	742	742	47	48	55	55	47	52	38	36
Medium	684	708	46	46	54	53	48	52	35	33
Small	604	587	45	45	51	52	47	50	36	32
<i>By Ownership</i>										
State-owned	87	85	51	51	64	64	47	47	42	43
Collectively-owned	34	35	47	46	54	51	54	56	32	30
Private	1,662	1,670	45	46	52	52	47	51	36	33
Foreign-owned	247	286	48	49	58	57	46	52	38	37
<i>By Product Type</i>										
Consumer Goods - Durable	328	368	45	45	53	53	48	51	33	31
Consumer Goods - Nondurable	693	624	48	49	56	56	47	54	40	37
Capital Goods	136	145	45	45	51	50	50	50	36	34
Intermediate Goods	874	901	45	45	53	52	47	50	35	33

Table 1.2

	% of Firms with Fixed Investment		Diffusion Index - Production		Diffusion Index - Employment		Diffusion Index - Price	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation	9	8	54	50	49	48	66	50
<i>By Size</i>								
Large	9	9	55	52	49	48	66	50
Medium	8	7	55	50	49	49	67	50
Small	9	7	51	49	49	48	65	49
<i>By Ownership</i>								
State-owned	23	12	46	57	51	48	61	49
Collectively-owned	6	3	54	51	49	49	71	51
Private	8	8	54	50	49	48	65	50
Foreign-owned	9	8	58	53	50	49	72	49
<i>By Product Type</i>								
Consumer Goods - Durable	5	5	57	54	50	49	63	49
Consumer Goods - Nondurable	10	8	56	53	49	49	70	50
Capital Goods	10	10	54	49	50	50	56	48
Intermediate Goods	9	9	51	48	49	47	65	50

Notes:

1. Diffusion Index (DI) is computed using the percentage of firms that answer "increase" (% increase) and "same" (% same) according to the formula: (% increase + 0.5 * % same). The index ranges between 0 and 100. A larger value indicates a better operating condition.
2. Business Sentiment Index is the average of DIs for Operating Conditions, Expected Operating Conditions and Good Timing for Investment.

Table 2. Operating Conditions by Industry
Table 2.1 Operating Conditions of All Industries

	Number of Firms		Business Sentiment Index		Diffusion Index - Operating Conditions		Diffusion Index - Expected Change in Operating Conditions		% of Firms with Fixed Investment		Diffusion Index - Good Timing for Investment	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation	2,030	2,037	46	46	54	53	47	51	9	8	36	34
<i>Mining</i>												
Coal Mining and Washing	6	10	47	42	42	40	50	45	0	10	50	40
Mining and Processing of Ferrous Metal Ores	3	4	39	42	33	38	33	50	0	0	50	38
Mining and Processing of Non-ferrous Metal	8	7	44	38	50	43	50	50	0	0	31	21
Mining and Processing of Nonmetal Ores	13	9	37	39	38	33	38	56	0	0	35	28
<i>Production and Supply of Electricity, Heat, Gas and Water</i>												
Power Production and Supply	35	33	52	51	60	55	47	48	60	21	50	50
Gas Production and Supply	1	1	50	67	50	50	50	100	100	100	50	50
Production and Supply of Water	18	16	57	52	83	81	50	38	11	13	39	38
<i>Light Manufacturing</i>												
Processing of Agricultural and Related Products	106	103	42	48	52	51	39	66	8	6	34	27
Manufacture of Foods	56	50	46	50	54	54	48	61	0	4	38	35
Manufacture of Beverage	41	38	49	51	55	55	46	51	12	13	46	46
Manufacture of Textiles	130	133	44	41	49	48	44	47	5	6	38	29
Manufacture of Textile Wearing and Apparel	67	74	48	50	53	54	49	57	3	7	41	38
Manufacture of Leather, Fur, Feather, Related Products and Footwear	33	35	41	38	48	50	48	46	9	6	27	19
Processing of Wood Products	34	33	39	40	54	55	43	55	0	0	21	12
Manufacture of Furniture	26	25	48	48	60	60	50	54	4	4	35	30
Manufacture of Paper and Paper Products	52	56	45	44	50	51	49	50	10	7	36	32
Printing, Reproduction of Recording Media	54	55	48	48	59	56	44	47	7	7	42	42
Manufacture of Cultural and Sports Products	23	20	51	47	57	60	52	40	0	0	43	40
Manufacture of Medicines	59	62	58	61	71	73	50	59	24	16	52	52
Manufacture of Handicrafts and Others	44	43	50	50	59	59	50	51	5	9	41	41
Recycling and Disposal of Waste	3	2	44	50	50	50	50	75	0	0	33	25
<i>Chemical Industry</i>												
Processing of Petroleum and Nuclear Fuel	7	7	40	38	50	43	43	43	0	0	29	29
Manufacture of Chemical Products	127	126	47	47	52	52	50	51	13	13	38	38
Manufacture of Chemical Fibers	8	9	52	50	56	56	50	56	25	22	50	39
Manufacture of Rubber Products	31	27	46	45	60	61	48	50	3	0	31	24
Manufacture of Plastics	86	95	46	47	53	53	48	55	1	3	36	32
<i>Equipment Manufacturing</i>												
Manufacture of General-purpose Machinery	165	156	45	43	49	46	50	50	7	7	36	32
Manufacture of Special-purpose Machinery	100	113	47	48	51	52	50	55	7	10	39	37
Manufacture of Transport Equipment	93	91	47	47	52	53	48	50	9	8	40	40
Manufacture of Electric Machinery and Apparatus	138	144	45	46	57	57	49	53	17	13	30	28
Computers, Communication and Electric Equipment	83	83	51	52	58	58	50	50	10	13	46	47
Manufacture of Measuring Instruments	38	37	46	42	54	53	51	46	0	0	34	28
<i>Other Heavy Manufacturing</i>												
Manufacture of Non-metallic Mineral Products	135	130	38	38	46	45	42	41	1	1	27	29
Smelting and Pressing of Ferrous Metals	25	26	44	45	46	46	50	56	0	0	36	33
Smelting and Pressing of Non-ferrous Metals	34	32	43	41	46	44	47	45	3	3	37	34
Manufacture of Metal Products	148	152	44	45	57	58	47	50	11	14	29	29

Table 2.2 Industry Ranking of Operating Conditions

	Number of Firms		Business Sentiment Index		Diffusion Index - Operating Conditions		% of Firms with Fixed Investment		Diffusion Index - Good Timing for Investment		
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	
Nation	2,030	2,037	46	46	54	53	9	8	36	34	
<i>Top Five</i>											
Manufacture of Medicines	59	62	58	61	71	73	24	16	52	52	
Production and Supply of Water	18	16	57	52	83	81	11	13	39	38	
Manufacture of Chemical Fibers	8	9	52	50	56	56	25	22	50	39	
Power Production and Supply	35	33	52	51	60	55	60	21	50	50	
Computers, Communication and Electric Equipment	83	83	51	52	58	58	10	13	46	47	
<i>Bottom Five</i>											
Mining and Processing of Nonmetal Ores	13	9	37	39	38	33	0	0	35	28	
Manufacture of Non-metallic Mineral Products	135	130	38	38	46	45	1	1	27	29	
Processing of Wood Products	34	33	39	40	54	55	0	0	21	12	
Processing of Petroleum and Nuclear Fuel	7	7	40	38	50	43	0	0	29	29	
Manufacture of Leather, Fur, Feather, Related Products and Footwear	33	35	41	38	48	50	9	6	27	19	

Notes:

1. Ranking includes industries with more than three firms.

Table 3. Operating Conditions by Region
Table 3.1 Operating Conditions of All Regions

	Number of Firms		Business Sentiment Index		Diffusion Index - Operating Conditions		Diffusion Index - Expected Operating Conditions		% of Firms with Fixed Investment		Diffusion Index - Good Timing for Investment	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation	2,030	2,037	46	46	54	53	47	51	9	8	36	34
<i>North China</i>												
Beijing	44	46	45	47	49	50	47	51	9	4	40	39
Tianjin	47	51	45	45	52	50	48	51	9	6	35	34
Hebei	84	75	42	44	54	53	45	51	7	8	29	27
<i>Northeast</i>												
Liaoning	92	97	43	42	51	48	46	46	9	5	32	30
Jilin	18	20	45	47	56	58	44	50	6	0	36	33
Heilongjiang	26	27	42	40	52	50	48	46	8	4	25	24
<i>Northwest</i>												
Inner Mongolia	14	14	54	57	61	61	46	61	7	14	54	50
Shaanxi	20	22	40	45	40	50	48	55	10	5	33	30
Gansu	6	7	44	45	50	43	42	57	50	29	42	36
Qinghai	1	0	50	NA	50	NA	50	NA	0	NA	50	NA
Ningxia	3	4	39	29	50	38	50	25	0	0	17	25
Xinjiang	3	5	33	33	33	40	33	30	0	0	33	30
<i>Central North</i>												
Shanxi	26	24	44	42	56	50	42	46	15	4	35	29
Shandong	196	193	46	48	55	56	47	53	7	9	36	37
Henan	80	66	43	43	53	53	44	48	6	9	33	29
<i>Southwest</i>												
Chongqing	27	29	48	47	57	57	48	48	11	3	39	34
Sichuan	54	50	44	44	48	46	49	54	15	12	35	33
Guizhou	9	7	48	52	50	50	50	71	0	0	44	36
Yunnan	22	23	45	43	50	52	50	48	27	22	34	28
<i>East China</i>												
Shanghai	89	97	48	49	59	57	48	52	6	3	37	37
Jiangsu	298	306	46	47	54	54	47	51	8	9	38	35
Zhejiang	292	292	46	47	53	54	49	54	9	9	37	34
<i>South China</i>												
Fujian	94	84	47	45	54	51	50	53	4	2	37	31
Guangdong	248	266	48	47	55	55	49	52	6	9	39	35
Guangxi	36	33	47	45	54	52	47	50	19	18	40	35
Hainan	1	1	50	67	100	100	50	100	0	0	0	0
<i>Central South</i>												
Anhui	75	74	44	45	53	52	44	53	7	3	35	32
Jiangxi	37	38	46	48	54	55	45	53	14	16	39	37
Hubei	50	48	45	43	54	52	45	48	14	8	35	30
Hunan	38	38	48	46	55	53	47	47	11	16	42	38

Table 3.2 Regional Ranking of Operating Conditions

	Number of Firms		Business Sentiment Index		Diffusion Index - Operating Conditions		% of Firms with Fixed Investment		Diffusion Index - Good Timing for Investment	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation	2,030	2,037	46	46	54	53	9	8	36	34
<i>Top Five</i>										
Inner Mongolia	14	14	54	57	61	61	7	14	54	50
Chongqing	27	29	48	47	57	57	11	3	39	34
Guizhou	9	7	48	52	50	50	0	0	44	36
Guangdong	248	266	48	47	55	55	6	9	39	35
Shanghai	89	97	48	49	59	57	6	3	37	37
<i>Bottom Five</i>										
Shaanxi	20	22	40	45	40	50	10	5	33	30
Heilongjiang	26	27	42	40	52	50	8	4	25	24
Hebei	84	75	42	44	54	53	7	8	29	27
Liaoning	92	97	43	42	51	48	9	5	32	30
Henan	80	66	43	43	53	53	6	9	33	29

Notes:

1. Ranking includes regions with more than three firms.

Table 4. Oversupply
Table 4.1 Overall

	Number of Firms		Diffusion Index for Oversupply in Domestic Markets		Diffusion Index for Oversupply in Overseas Markets		Diffusion Index for Finished Goods		
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	
Nation	2,030	2,037	83	83	72	70	50	49	
<i>By Size</i>									
Large	742	742	82	82	71	69	50	50	
Medium	684	708	82	83	71	70	50	49	
Small	604	587	85	84	76	71	49	48	
<i>By Ownership</i>									
State-owned	87	85	68	71	65	63	44	45	
Collectively-owned	34	35	79	78	75	78	47	44	
Private	1,662	1,670	84	83	73	70	50	49	
Foreign -owned	247	286	84	84	71	68	49	50	
<i>By Product Type</i>									
Consumer Goods - Durable	328	368	76	78	66	66	47	49	
Consumer Goods - Nondurable	693	624	82	81	73	68	49	50	
Capital Goods	136	145	86	86	72	71	54	49	
Intermediate Goods	874	901	85	85	75	73	50	49	

Table 4.2 Industries with Severe Excess Capacity

Industry	Number of Firms	% of Firms with 20% excess capacity and above	% of Firms with 10% excess capacity and above
Processing of Petroleum and Nuclear Fuel	7	57	71
Coal Mining and Washing	6	50	50
Mining and Processing of Non-ferrous Metal	8	38	63
Manufacture of Non-metallic Mineral Products	135	37	45
Mining and Processing of Nonmetal Ores	13	31	46
Manufacture of Metal Products	148	28	47
Smelting and Pressing of Ferrous Metals	25	28	40
Smelting and Pressing of Non-ferrous Metals	34	24	44
Processing of Wood Products	34	24	32
Manufacture of Electric Machinery and Apparatus	138	21	40
Manufacture of Special-purpose Machinery	100	16	36
Manufacture of Furniture	26	15	19
?Manufacture of Measuring Instruments	38	13	18
Manufacture of Foods	56	11	18
Manufacture of Medicines	59	10	22

Notes:

1. This table reports industries that have at least 10% of firms with 20% or above excess capacity.
2. This table includes industries with more than three firms.

Table 4.3 Regions with Severe Excess Capacity

Province	Number of Firms	% of Firms with 20% excess capacity and above	% of Firms with 10% excess capacity and above
Shaanxi	20	35	45
Yunnan	22	27	45
Heilongjiang	26	27	42
Liaoning	92	22	43
Sichuan	54	20	35
Hunan	38	18	26
Beijing	44	18	41
Hebei	84	18	40
Henan	80	18	43
Tianjin	47	17	43
Jilin	18	17	33
Shanxi	26	15	42
Chongqing	27	15	33
Inner Mongolia	14	14	21
Guangxi	36	14	31
Jiangxi	37	14	27
Anhui	75	13	31
Shandong	196	12	26
Jiangsu	298	11	28

Notes:

1. This table reports regions that have at least 10% of firms with 20% or above excess capacity.
2. This table includes regions with more than three firms.

Table 5. Cost and Price
Table 5.1 Overall

		Diffusion Indices									
		Number of Firms		Unit Cost Index		Labor Cost Index		Raw Material Cost Index		Price Index	
		Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation		2,030	2,037	73	57	65	55	72	53	66	50
<i>By Size</i>											
	Large	742	742	72	58	65	55	71	53	66	50
	Medium	684	708	74	58	66	55	73	54	67	50
	Small	604	587	73	56	65	53	72	52	65	49
<i>By Ownership</i>											
	State-owned	87	85	64	51	63	51	64	52	61	50
	Collectively-owned	34	35	78	61	68	59	76	54	71	51
	Private	1662	1670	73	58	65	55	72	53	65	50
	Foreign -owned	247	286	77	56	70	54	76	53	72	49
<i>By Product Type</i>											
	Consumer Goods - Durable	328	368	71	55	64	53	70	53	63	49
	Consumer Goods - Nondurable	693	624	78	62	69	56	77	55	70	50
	Capital Goods	136	145	60	51	57	52	59	49	56	48
	Intermediate Goods	874	901	72	56	63	54	71	53	65	50

Table 5.2 Industries with Unit Cost Increase More Significant than National Average

	Diffusion Indices				Price Index
	Number of Firms	Unit Cost Index	Labor Cost Index	Raw Material Cost Index	
Nation	2,030	73	65	72	66
Mining and Processing of Non-ferrous Metal	8	100	100	56	100
Manufacture of Transport Equipment	93	100	100	100	100
Manufacture of Leather, Fur, Feather, Related Products and Footwear	33	100	100	100	100
Manufacture of Paper and Paper Products	52	100	100	100	100
Manufacture of Handicrafts and Others	44	100	100	100	100
Printing, Reproduction of Recording Media	54	100	100	100	100
Manufacture of Beverage	41	100	100	91	100
Computers, Communication and Electric Equipment	83	99	99	99	99
Manufacture of Textiles	130	95	83	93	86
Manufacture of Plastics	86	89	53	87	59
Smelting and Pressing of Ferrous Metals	25	80	62	78	70
Processing of Petroleum and Nuclear Fuel	7	79	50	79	43
Manufacture of Rubber Products	31	77	60	76	53
Manufacture of Non-metallic Mineral Products	135	76	66	76	61

Notes:

1. Industries are sorted by Diffusion Index for Unit Cost in descending order. The table includes industries with more than three firms.

Table 5.3 Regions with Unit Cost Increase More Significant than National Average

	Diffusion Indices				Price Index
	Number of Firms	Unit Cost Index	Labor Cost Index	Raw Material Cost Index	
Nation	2,030	73	65	72	66
Yunnan	22	82	75	80	75
Shaanxi	20	78	70	70	65
Jiangxi	37	77	69	72	69
Guangdong	248	77	68	77	69
Fujian	94	76	68	77	68
Chongqing	27	76	69	75	65
Anhui	75	75	65	73	67
Zhejiang	292	75	66	74	67
Jiangsu	298	75	65	73	67
Henan	80	74	63	73	66
Beijing	44	73	66	72	66

Notes:

1. Provinces are sorted by Diffusion Index for Unit Cost in descending order.
The table includes provinces with more than three firms.

Table 6. Financing Environment
Table 6.1 Overall

	% Firms with Loans		% Firms with New Loans		Collateralization Rate %		Diffusion Index - Lending Attitude		Diffusion Index - Interest Rate	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation	2,030	2,037	22	23	1	2	67	62	50	49
<i>With or Without Investment</i>										
Firms with Investment	173	165	23	27	2	6	61	59	50	50
Firms without Investment	1,857	1,872	22	23	0	2	69	63	50	48
<i>By Size</i>										
Large	742	742	25	27	1	2	65	68	50	50
Medium	684	708	21	24	1	3	72	67	50	47
Small	604	587	18	19	1	2	64	45	50	50
<i>By Ownership</i>										
State-owned	87	85	20	20	0	2	NA	50	NA	50
Collectively-owned	34	35	24	23	0	6	100	67	50	17
Private	1,662	1,670	23	24	1	2	65	62	50	50
Foreign -owned	247	286	16	19	0	1	100	75	50	50
<i>By Product Type</i>										
Consumer Goods - Durable	328	368	25	25	0	3	83	63	50	50
Consumer Goods - Nondurable	693	624	21	24	1	4	63	56	50	47
Capital Goods	136	145	27	29	0	0	50	75	50	50
Intermediate Goods	874	901	20	21	0	1	69	67	50	50

Notes:

1. A higher Diffusion Index for lending attitude reflects easier lending.
2. A higher Diffusion Index for interest rate reflects higher interest rate.

Table 6.2 Sources of Financing

The most important source of financing

Sources	Number of Firms	% of Firms
Internal Funds	2013	99
Founder	32	2
Relatives and friends	0	0
Bank	9	0
Stock market	3	0
Non-official finance institution	1	0
Others	1	0

The second most important source of financing

Sources	Number of Firms	% of Firms
Founder	567	56
Bank	431	43
Internal Funds	9	1
Others	3	0
Relatives and friends	2	0
Stock market	1	0
Non-official finance institution	1	0

Appendix 1. Industry and Regional Ranking of Excess Capacity

Table A1. Industry and Regional Ranking of Excess Capacity

Table A1.1 Industry Ranking of Excess Capacity

Industry	Number of Firms		% of Firms with 20% excess capacity and above		% of Firms with 10% excess capacity and above	
	Q4	Q3	Q4	Q3	Q4	Q3
Processing of Petroleum and Nuclear Fuel	7	7	57	57	71	71
Coal Mining and Washing	6	10	50	40	50	40
Mining and Processing of Non-ferrous Metal	8	7	38	43	63	71
Manufacture of Non-metallic Mineral Products	135	130	37	30	45	40
Mining and Processing of Nonmetal Ores	13	9	31	44	46	78
Smelting and Pressing of Ferrous Metals	25	26	28	31	40	50
Manufacture of Metal Products	148	152	28	30	47	48
Processing of Wood Products	34	33	24	21	32	30
Smelting and Pressing of Non-ferrous Metals	34	32	24	19	44	31
Manufacture of Electric Machinery and Apparatus	138	144	21	22	40	40
Manufacture of Special-purpose Machinery	100	113	16	18	36	35
Manufacture of Furniture	26	25	15	12	19	24
Manufacture of Measuring Instruments	38	37	13	14	18	14
Manufacture of Foods	56	50	11	12	18	24
Manufacture of Medicines	59	62	10	10	22	23
Manufacture of Plastics	86	95	9	5	30	37
Processing of Agricultural and Related Products	106	103	8	13	31	39
Manufacture of Paper and Paper Products	52	56	8	7	38	41
Manufacture of Leather, Fur, Feather and Footwear	33	35	6	11	24	43
Manufacture of Rubber Products	31	27	6	11	23	30
Manufacture of Chemical Products	127	126	6	8	24	28
Printing, Reproduction of Recording Media	54	55	6	7	41	45
Manufacture of General-purpose Machinery	165	156	5	4	18	13
Manufacture of Cultural and Sports Products	23	20	4	10	9	10
Computers, Communication and Electric Equipment	83	83	4	4	28	30
Manufacture of Textile Wearing and Apparel	67	74	3	3	7	7
Manufacture of Transport Equipment	93	91	2	5	34	35
Manufacture of Beverage	41	38	2	3	44	50
Manufacture of Textiles	130	133	2	2	2	2
Manufacture of Handicrafts and Others	44	43	2	2	30	30
Power Production and Supply	35	33	0	0	11	15
Manufacture of Chemical Fibers	8	9	0	0	25	22
Production and Supply of Water	18	16	0	0	0	0

Notes:

Industries are sorted based on the percentage of firms with over 20% excess capacity in descending order. The ranking includes industries with more than three firms.

Table A1.2 Regional Ranking of Excess Capacity

Province	Number of Firms		% of Firms with 20% excess capacity and above		% of Firms with 10% excess capacity and above	
	Q4	Q3	Q4	Q3	Q4	Q3
Shaanxi	20	22	35	32	45	41
Yunnan	22	23	27	26	45	43
Heilongjiang	26	27	27	22	42	33
Liaoning	92	97	22	25	43	49
Sichuan	54	50	20	18	35	34
Hunan	38	38	18	24	26	32
Henan	80	66	18	17	43	41
Hebei	84	75	18	15	40	36
Beijing	44	46	18	15	41	30
Tianjin	47	51	17	24	43	49
Jilin	18	20	17	20	33	35
Shanxi	26	24	15	25	42	50
Chongqing	27	29	15	17	33	34
Inner Mongolia	14	14	14	21	21	29
Guangxi	36	33	14	12	31	33
Jiangxi	37	38	14	8	27	24
Anhui	75	74	13	15	31	34
Shandong	196	193	12	9	26	26
Jiangsu	298	306	11	10	28	28
Shanghai	89	97	9	7	29	27
Guangdong	248	266	8	9	22	26
Zhejiang	292	292	7	9	20	24
Fujian	94	84	6	12	29	37
Hubei	50	48	4	8	20	25
Guizhou	9	7	0	14	33	29

Notes:

Provinces are sorted based on the percentage of firms with over 20% excess capacity in descending order.

Appendix 2. Industry and Regional Ranking of Excess Capacity

Table A2. Industry and Regional Diffusion Index for Cost and Price

Table A2.1 Industry Diffusion Index for Cost and Price

		Diffusion Indices									
		Number of Firms		Unit Cost Index		Labor Cost Index		Raw Material Cost Index		Price Index	
		Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Nation		2030	2,037	73	57	65	55	72	53	66	50
<i>Mining</i>											
	Coal Mining and Washing	6	10	50	65	50	60	50	56	50	65
	Mining and Processing of Ferrous Metal Ores	3	4	67	63	50	63	67	63	50	50
	Mining and Processing of Non-ferrous Metal	8	7	100	57	100	57	56	50	100	57
	Mining and Processing of Nonmetal Ores	13	9	50	61	50	61	50	56	50	44
<i>Production and Supply of Electricity, Heat, Gas and Water</i>											
	Power Production and Supply	35	33	50	50	50	50	50	52	50	50
	Production and Supply of Water	1	16	50	50	50	50	-	-	50	50
	Production and Supply of Gas	18	1	50	50	50	50	-	-	50	50
<i>Light Manufacturing</i>											
	Processing of Agricultural and Related Products	106	103	63	72	51	62	62	61	56	54
	Manufacture of Foods	56	50	67	68	56	67	63	62	54	57
	Manufacture of Beverage	41	38	100	50	100	51	91	50	100	50
	Manufacture of Textiles	130	133	95	81	83	54	93	57	86	44
	Manufacture of Textile Wearing and Apparel	67	74	62	62	55	57	57	56	53	49
<i>Manufacture of Leather, Fur, Feather, Related Products and Footwear</i>		33	35	100	59	100	56	100	51	100	53
	Processing of Wood Products	34	33	69	61	57	61	65	59	62	52
	Manufacture of Furniture	26	25	65	64	58	62	65	62	58	50
	Manufacture of Paper and Paper Products	52	56	100	54	100	54	100	51	100	51

Appendix

Table A2.1 Industry Diffusion Index for Cost and Price (Continued)

	Number of Firms		Diffusion Indices							
			Unit Cost Index		Labor Cost Index		Raw Material Cost Index		Price Index	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3
Printing, Reproduction of Recording Media	54	55	100	51	100	51	100	51	100	49
Manufacture of Cultural and Sports Products	23	20	72	58	63	58	72	50	52	53
Manufacture of Medicines	59	62	54	50	50	50	54	50	53	50
Manufacture of Handicrafts and Others	44	43	100	52	100	52	100	49	100	45
Recycling and Disposal of Waste	3	2	67	75	50	75	67	50	67	75
<i>Chemical Industry</i>										
Processing of Petroleum and Nuclear Fuel	7	7	79	57	50	57	79	57	43	36
Manufacture of Chemical Products	127	126	58	52	52	52	57	52	53	52
Manufacture of Chemical Fibers	8	9	56	56	63	56	56	61	56	50
Manufacture of Rubber Products	31	27	77	57	60	59	76	48	53	46
Manufacture of Plastics	86	95	89	65	53	53	87	54	59	45
<i>Equipment Manufacturing</i>										
Manufacture of General-purpose Machinery	165	156	54	50	52	52	54	49	51	47
Manufacture of Special-purpose Machinery	100	113	57	50	53	53	57	49	49	47
Manufacture of Transport Equipment	93	91	100	52	100	52	100	49	100	49
Manufacture of Electric Machinery and Apparatus	138	144	56	50	50	50	56	52	54	51
Computers, Communication and Electric Equipment	83	83	99	52	99	52	99	51	99	49
Manufacture of Measuring Instruments	38	37	61	58	57	58	59	51	50	47
<i>Other Heavy Manufacturing</i>										
Manufacture of Non-metallic Mineral Products	135	130	76	60	66	60	76	56	61	51
Smelting and Pressing of Ferrous Metals	25	26	80	65	62	65	78	64	70	54
Smelting and Pressing of Non-ferrous Metals	34	32	69	67	57	66	68	61	47	48
Manufacture of Metal Products	148	152	68	51	50	50	68	53	63	52

Notes: The table includes industries with more than three firms.

Table A2.2 Regional Diffusion Index for Cost and Price

	Diffusion Indices									
	Number of Firms		Unit Cost Index		Labor Cost Index		Raw Material Cost Index		Price Index	
	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q4
Nation	2030	2,037	73	57	65	55	72	53	66	50
<i>North China</i>										
Beijing	44	46	73	57	66	55	72	51	66	49
Tianjin	47	51	66	55	63	54	67	50	62	48
Hebei	84	75	71	54	64	51	71	54	66	51
<i>Northeast</i>										
Liaoning	92	97	67	56	63	54	66	50	63	48
Jilin	18	20	67	50	61	53	67	50	64	50
Heilongjiang	26	27	67	59	62	56	67	56	58	46
<i>Northwest</i>										
Inner Mongolia	14	14	57	68	57	64	54	61	54	46
Shaanxi	20	22	78	57	70	55	70	55	65	52
Gansu	6	7	67	57	67	64	67	50	67	50
Ningxia	1	-	50	-	50	-	50	-	50	-
Xinjiang	3	4	50	63	50	63	50	50	50	50
<i>Central North</i>										
Shanxi	26	24	67	54	58	56	68	52	54	50
Shandong	196	193	72	61	65	55	71	54	66	51
Henan	80	66	74	53	63	53	73	51	66	50
<i>Southwest</i>										
Chongqing	27	29	76	57	69	55	75	55	65	53
Sichuan	54	50	67	56	63	55	66	59	61	51
Guizhou	9	7	67	57	61	64	61	50	67	71
Yunnan	22	23	82	61	75	59	80	61	75	57
<i>East China</i>										
Shanghai	89	97	69	56	64	55	68	54	66	51
Jiangsu	298	306	75	58	65	55	73	53	67	50
Zhejiang	292	292	75	58	66	53	74	53	67	48
<i>South China</i>										
Fujian	94	84	76	59	68	54	77	53	68	51
Guangdong	248	266	77	58	68	55	77	53	69	49
Guangxi	36	33	72	58	64	56	71	55	64	47
Hainan	1	1	50	50	50	50	50	50	50	50
<i>Central South</i>										
Anhui	75	74	75	57	65	54	73	55	67	49
Jiangxi	37	38	77	58	69	58	72	54	69	50
Hubei	50	48	71	60	62	57	71	54	63	48
Hunan	38	38	70	51	62	50	68	51	64	49

Notes:

The table includes provinces with more than three firms.

Appendix 3. Sampling Procedure

3.1 The Population

The initial sample of our panel is taken from the 2008 Economic Census. This is the most complete and reliable economic census data available. A new round of Economic Census is currently ongoing.

Although the 2008 Economic Census is our best choice, it is done seven years ago. Firm characteristics, such as industry, might have changed significantly. Thus we ask firms about their main products and product types. But we cannot cover companies established after 2008 this problem can only be resolved when the latest Economic Census data (2013 are made available to the public).

2008 Economic Census database is made of provincial databases each containing two sets of data: one uses industrial units and the other uses legal person units.¹We start with the legal person units in 2008 Economic Census database. We then drop non-industrial firms and firms with sales below five million RMB to obtain the population of what NBS terms as “sizable” industrial firms.

3.2 Sampling Procedure

Below is a step-by-step description of the procedure to obtain our initial survey sample in our first survey, that is, the 2014 Q2 survey.

1. Simplify industrial classification code. Using Industrial classification for national economic activities (GBT4754-2002)² as the standard, we only define firms’ industry up to major groups (two digit code from 01 to 98)³.
2. Simplify area code. We use the first two digits to place firms in 31 provinces and municipalities.
3. Remove nonindustrial firms: using industry code specified in step 1, we remove those with code smaller than 6 or larger than 46, retaining 39 industry categories. Those left are mining (06-11), manufacturing (13-43) and electricity, gas and water production and processing (44-46).
4. Remove below-scale firms: we remove those with less than 5,000,000RMB in annual main business income, this step removed about $\frac{3}{4}$ of total firms. As of this step, we obtain the population of sizable industrial firms, which consists of 488,052 firms.
5. Classify firms by size into 3 categories using 33% and 66% percentiles in main business income.
6. Take a stratified random sample using size, region and industry as strata, taking 2.1% of the population. The final sample consists of 10,139 firms.

¹ Legal person units are composed of industrial activity units, industrial activity units are all under management and control of legal person units.

² Since the original database is based on census conducted in 2008, we use GBT4754-2002 industry classification rather than the newer GBT4754-2011 classification.

³ Industrial classification for national economic activities (GBT4754-2002) classifies firms into division, major group, minor group, subgroup, in order of increasing detail. For example, the subgroup 1361 seafood frozen processing belongs in division A (manufacturing), major group 13 (agriculture and by-product processing), and minor group 136 (seafood processing).

In our Q4 survey, we started from the 2,037 firms in our last response sample, and obtain responses from 1,696 firms. These firms match the population in terms of industry, region, and sizes reasonably well. Nevertheless, we draw an additional survey samples with an industry-region-size distribution such that the final response sample would match the population, assuming (1) random responses and (2) a 20% response rate. We obtained 334 responses from this new sample, resulting in a total of 2,030 firms in our final response sample.

3.3 Survey Process

The survey is through phone interviews. Figure A1 reports the distribution of the number of phone calls, duration of the calls, and the interviewees' positions in the companies.

3.4. Sample Representativeness

Tables A3.1-A3.3 show that the distribution of the population and the Q4 response sample, as well as the 1,696 firms that were also in the Q3 sample, in terms of industry, region, and sizes. Note that as we are sampling 2.1% of the population, some small strata may not be sampled. Specifically, Tibet is the region not sampled; and Mining of other Ores, Extraction of Petroleum and Natural Gas and Manufacture of Tobacco are three industries not sampled. Overall, our response sample represents the population quite well.

3.5 Seasonality

Theoretically, there are no obvious ways to adjust for seasonality, especially given the relatively small number of surveys we have conducted. We deal with this issue by asking directly the firms about seasonality and its impact. As shown in Figure A1.4, the majority (84%) of firms report no seasonality; for 7% of the firms, seasonality impact is below 5%. Most importantly, the impact of seasonality is roughly symmetrical distributed. Thus, in aggregate, seasonality is not likely to bias our results and we do not adjust for seasonality.

Figure A1. Phone Interviews – number of calls, duration and interviewees
Figure A1.1 Number of Calls

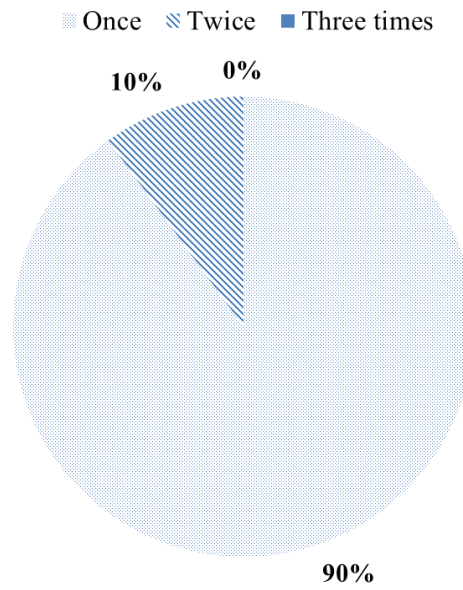


Figure A1.2 Duration of Calls

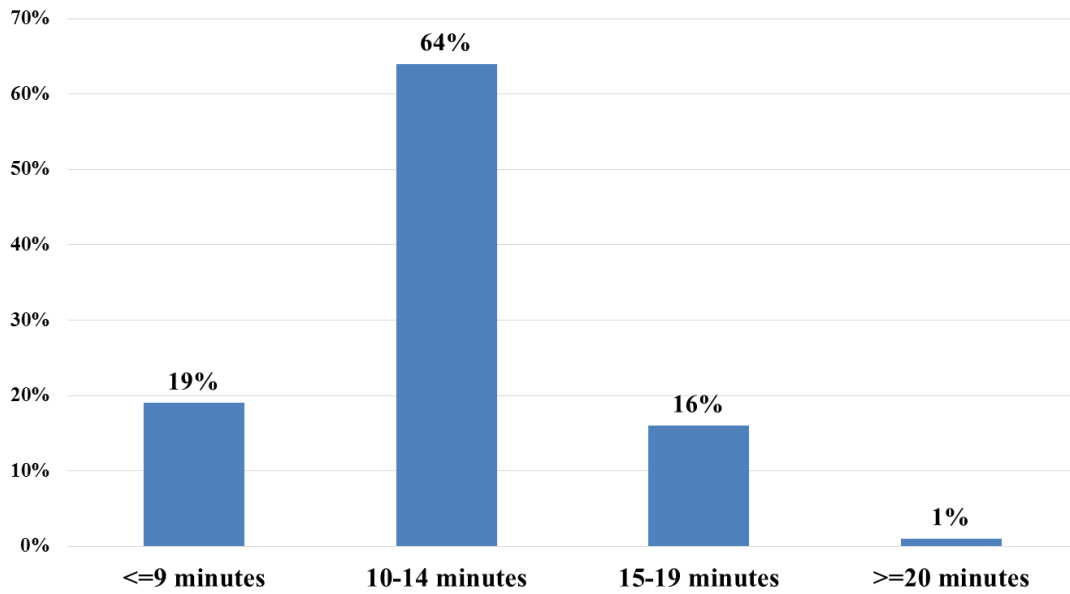


Figure A1.3 Interviewees' Positions

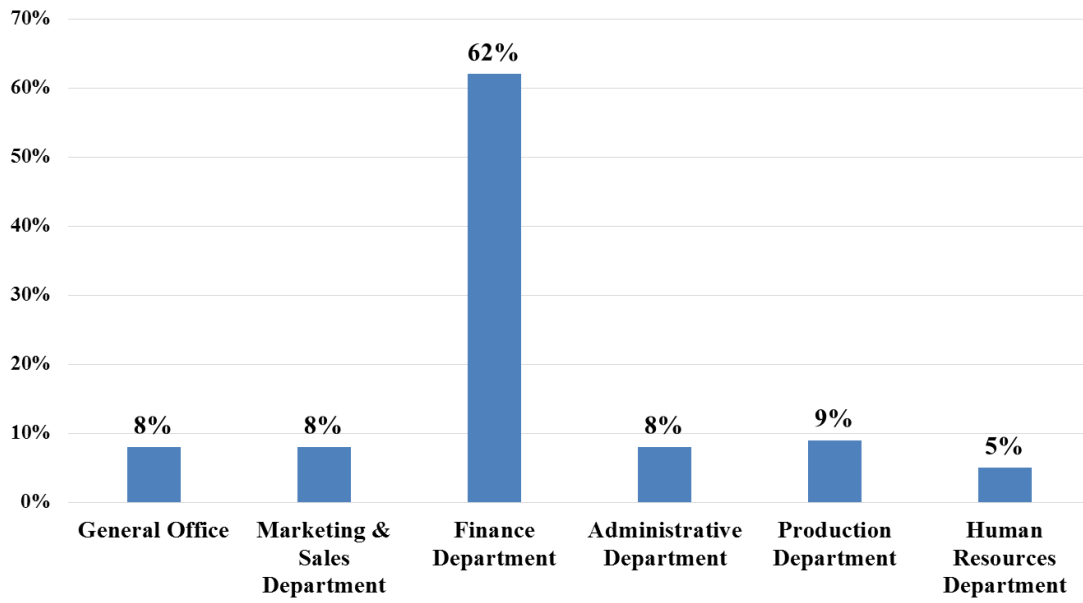


Figure A1.4 Seasonality

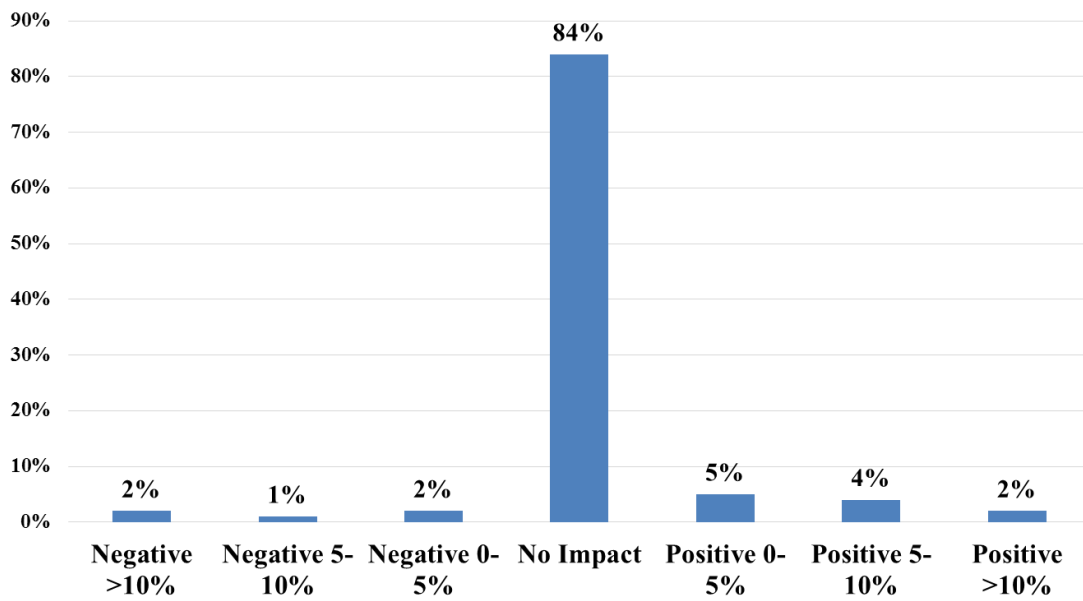


Table A3. Comparisons between Survey Sample and the Population**Table A3.1 Industry Distribution**

	Population		1,696 Firms From Q3 Survey		Final Q4 Response Sample	
	Number of Firms	Percent	Number of Firms	Percent	Number of Firms	Percent
Power Production and Supply	6,719	1.38	28	1.65	35	1.72
Manufacture of Electric Machinery and Apparatus	28,972	5.94	129	7.61	138	6.80
Manufacture of Textile Wearing and Apparel	21,271	4.36	56	3.30	67	3.30
Manufacture of Textiles	38,945	7.98	93	5.48	130	6.40
Mining and Processing of Nonmetal Ores	4,900	1.00	9	0.53	13	0.64
Manufacture of Non-metallic Mineral Products	34,710	7.11	114	6.72	135	6.65
Recycling and Disposal of Waste	1,363	0.28	2	0.12	3	0.15
Manufacture of Handicrafts and Others	8,588	1.76	40	2.36	44	2.17
Mining and Processing of Ferrous Metal Ores	5,390	1.10	3	0.18	3	0.15
Smelting and Pressing of Ferrous Metals	8,893	1.82	23	1.36	25	1.23
Manufacture of Chemical Fibers	2,374	0.49	8	0.47	8	0.39
Manufacture of Chemical Products	30,568	6.26	99	5.84	127	6.26
Computers, Communication and Electric Equipment	16,338	3.35	75	4.42	83	4.09
Manufacture of Furniture	6,114	1.25	24	1.42	26	1.28
Manufacture of Transport Equipment	20,878	4.28	81	4.78	93	4.58
Manufacture of Metal Products	29,039	5.95	139	8.20	148	7.29
Manufacture of Beverage	5,824	1.19	37	2.18	41	2.02
Coal Mining and Washing	12,266	2.51	5	0.29	6	0.30
Processing of Wood Products	11,469	2.35	27	1.59	34	1.67
Processing of Agricultural and Related Products	25,501	5.23	76	4.48	106	5.22
Manufacture of Leather, Fur, Feather, and Footwear	9,932	2.04	26	1.53	33	1.63
Mining of other Ores	46	0.01	0	0.00	0	0.00
Production and Supply of Gas	1,024	0.21	1	0.06	1	0.05
Extraction of Petroleum and Natural Gas	322	0.07	0	0.00	0	0.00
Processing of Petroleum and Nuclear Fuel	2,667	0.55	6	0.35	7	0.34
Manufacture of Foods	8,723	1.79	46	2.71	56	2.76
Production and Supply of Water	2,326	0.48	16	0.94	18	0.89
Manufacture of Plastics	22,984	4.71	63	3.71	86	4.24
Manufacture of General-purpose Machinery	42,879	8.79	128	7.55	165	8.13
Manufacture of Cultural and Sports Products	5,310	1.09	15	0.88	23	1.13
Manufacture of Rubber Products	5,277	1.08	24	1.42	31	1.53
Manufacture of Tobacco	163	0.03	0	0.00	0	0.00
Manufacture of Medicines	6,801	1.39	56	3.30	59	2.91
Manufacture of Measuring Instruments	6,474	1.33	31	1.83	38	1.87
Printing, Reproduction of Recording Media	7,681	1.57	50	2.95	54	2.66
Mining and Processing of Non-ferrous Metal	2,885	0.59	7	0.41	8	0.39
Smelting and Pressing of Non-ferrous Metals	9,175	1.88	26	1.53	34	1.67
Manufacture of Paper and Paper Products	11,389	2.33	45	2.65	52	2.56
Manufacture of Special-purpose Machinery	21,837	4.47	88	5.19	100	4.93
Total	488,017	100	1,696	100	2,030	100

Table A3.2 Regional Distribution

	Population		1,696 Firms From Q3 Survey		Final Q4 Response Sample	
	Number of Firms	Percent	Number of Firms	Percent	Number of Firms	Percent
Anhui	13,600	2.79	64	3.77	75	3.69
Beijing	7,911	1.62	37	2.18	44	2.17
Fujian	19,528	4.00	70	4.13	94	4.63
Gansu	2,113	0.43	6	0.35	6	0.30
Guangdong	59,050	12.1	210	12.38	248	12.22
Guangxi	5,699	1.17	30	1.77	36	1.77
Guizhou	3,497	0.72	6	0.35	9	0.44
Hainan	657	0.13	1	0.06	1	0.05
Hebei	17,731	3.63	71	4.19	84	4.14
Henan	19,395	3.97	61	3.60	80	3.94
Heilongjiang	4,919	1.01	22	1.30	26	1.28
Hubei	13,058	2.68	40	2.36	50	2.46
Hunan	12,378	2.54	29	1.71	38	1.87
Jilin	5,328	1.09	16	0.94	18	0.89
Jiangsu	80,695	16.54	238	14.03	298	14.68
Jiangxi	10,145	2.08	32	1.89	37	1.82
Liaoning	22,335	4.58	80	4.72	92	4.53
Inner Mongolia	5,268	1.08	13	0.77	14	0.69
Ningxia	1,288	0.26	3	0.18	3	0.15
Qinghai	519	0.11	0	0.00	1	0.05
Shandong	43,369	8.89	175	10.32	196	9.66
Shanxi	7,128	1.46	19	1.12	26	1.28
Shaanxi	4,398	0.9	17	1.00	20	0.99
Shanghai	20,253	4.15	82	4.83	89	4.38
Sichuan	14,795	3.03	44	2.59	54	2.66
Tianjin	7,901	1.62	42	2.48	47	2.32
Tibet	112	0.02	0	0.00	0	0.00
Xinjiang	2,126	0.44	3	0.18	3	0.15
Yunnan	5,291	1.08	19	1.12	22	1.08
Zhejiang	69,935	14.33	240	14.15	292	14.38
Chongqing	7,595	1.56	26	1.53	27	1.33
Total	488,017	100	1,696	100	2,030	100

Table A3.3 Comparison of Company Characteristics

	Population		1,696 Firms From Q3 Survey		Final Q4 Response Sample	
	Mean	Median	Mean	Median	Mean	Median
Assets	90,050	12,920	102,467	17,774	98,724	17,217
Sales	104,697	20,072	125,394	24,145	118,987	23,543
Employment	182	70	203	83	196	80
Sales Per Capita	687	310	539	219	566	219
Total	488,017	100	1,696	100	2,030	100