

Chine bleue, Chine jaune : dynamiques spatiales et convergence

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1. Industrial enterprises census database

Harmonization and adjustments

The Industrial enterprises census database provides data at firm level and covers all state-owned and non-state-owned industrial enterprises with annual sales above 5 million Yuan.

We made the following harmonization and adjustment in the data set.

The industry codes changed in 2003, and we connected the old codes with the new ones using the concordance file proposed by Zheng Wang (<http://zhengwang.weebly.com/research.html>); Excel File: [3-digit_Chinese_GB/T_industry_codes_consistent_before_and_after_2003](#)).

There were changes in the prefecture codes assigned to the same firm during the all period. These codes have been converted into the relevant ones. For the four municipalities which have a provincial rank (Beijing, Chongqing, Shanghai and Tianjin), we have merged the different prefectures' codes because they were not relevant for our convergence analysis.

There is no data for value-added value in the database for the following years: 2001, 2004, 2008, 2009. For 2001 and 2004, we have the data for the Gross value of industrial output (GVIO) and the intermediate input. So we calculated the value added by subtracting the input to the output. For 2008 and 2009, we had data only for GVIO. Considering that the ratio value added/output by industry is quite steady over time, we have calculated the average ratio on 2006-2007 and applied this ratio to estimate the value added by industry in 2008 and 2009.

For 2000, 2008 and 2009, the data concern only the average number of employees. But the difference between this variable and the total number of employee at industry level is minimal for the other when the comparison can be made.

In our dataset, some variables take abnormal values (excessively low or high) which is likely to be due to unit problems (e.g. 1000 Yuan instead of 10000). In order to correct this, we dropped the following firms:

- Those with negative fixed assets
- The very small firms (i.e. with less than 8 workers) because their accountability system is presumably not reliable enough. These firms don't fill generally the criterion of at least 5 million Yuan annual sales.
- The firms which record a ratio of value added/sales which is negative or above 1.

The following session presents the representativeness of the two databases, i.e. the initial database and the new one which excludes the above mentioned firms.

Representativeness

Our database includes all state-owned and non-state-owned industrial enterprises with annual sales above 5 million Yuan. In principle, the aggregated data should be identically with the data published in China's statistical yearbooks (CSY). In order to measure the representativeness of our database, we compared the two statistical data sets by year, region, industry and firm type.

First, we compare the initial database with the CSY data to capture the general representativeness of our database (Table A.1). We compared four variables: the number of firms, the output value (in current prices), the industrial value added and employment (this variable is not exactly the same in the CSY which give the annual average of employees; however the differences between these two variables are small).

Table A.1
Initial database representativeness by year

| Year | Firm number | Output Value | Value Added | Employment |
|-------|-------------|--------------|-------------|------------|
| 1998 | 100 | 100 | 100 | 91 |
| 1999 | 100 | 100 | 100 | 100 |
| 2000 | 100 | 100 | 100 | 97 |
| 2001 | 99 | 99 | 99 | 97 |
| 2002 | 100 | 100 | 100 | 100 |
| 2003 | 99 | 99 | 99 | 98 |
| 2004 | 100 | 100 | 104 | 101 |
| 2005 | 100 | 100 | 100 | 101 |
| 2006 | 100 | 100 | 100 | 100 |
| 2007 | 100 | 100 | 100 | 101 |
| 2008 | 97 | 95 | | 96 |
| 2009 | 100 | 100 | | 100 |
| 2009* | 94 | 96 | | 96 |

*2009 excluding firms without a code (6.2% of the firms in our database in 2009 have no code nor region).

Table A.1 presents the discrepancy for the four variables between the initial data set and the CSYs (ratio: the value of the variable in the initial dataset/the corresponding variable in the CSY).

On the one hand, our database seems to represent quite well the number of firms with an annual sales income of over 5 million Yuan, especially during the period from 1998 to 2007 (we lose 1.3% of the firms in 2001 and 2003). Concerning industrial employment the representativeness of the data set is less clear mainly because of the differences in the definition of the variables; but, except in 1998, the gap does not vary that much.

On the other hand, the two last years of our database show a less good coverage. The second line of the year 2009 represents our database without the firms which do not have a code or a region and which will not be used in our convergence analysis (Lemoine *et alii*, 2014, section 4). However we still have a good coverage in terms of all variables (around 95% of CSD's values for all variables).

We have checked the representativeness of the data set at the level of province, industry and category of types. Due to space limitation, the tables are not shown here but the following observations stand out.

The coverage is the best at the level of firm category, less good at the level of provinces, and the worst at the level of industry. The main issues are the following:

- In 2001 and 2008, the number of firms is under-reported in Non ferrous metal industries (including the Smelting and Pressing of Non-ferrous Metals industry which represents 4.5% of firms present in our database for other years) and the number of firms is over-reported in recycling industry.
- The codes of Logging and Transport of Timber and Bamboo industry has changed after 2002 and we have included it in sector Wood-Paper. In the same way, Recycling and Disposal of Waste is present in the database only since 2003 and we have included it in Other manufacturing).
- In 2003, there is no data for the Tibet (Xizang) province, and half of the firms for Yunnan and Shaanxi provinces are missing.
- In 2008 and 2009, the data set shows a better coverage for Coastal and North-East region provinces that for the Central and Western provinces.
- The data set over-represents Cooperative firms in 2009.

The above comparison concerns the representativeness of the initial database. The representativeness of the new data base (without the firms we have excluded) is presented in **Table A.2**.

Table A.2
New database representativeness by year

| Year | Firm number | Output Value | VA | Employment |
|-------|-------------|--------------|-----|------------|
| 1998 | 85 | 92 | 95 | 84 |
| 1999 | 91 | 97 | 99 | 95 |
| 2000 | 89 | 96 | 97 | 95 |
| 2001 | 92 | 97 | 97 | 94 |
| 2002 | 94 | 98 | 99 | 97 |
| 2003 | 95 | 98 | 97 | 96 |
| 2004 | 95 | 98 | 101 | 98 |
| 2005 | 97 | 98 | 99 | 98 |
| 2006 | 97 | 98 | 99 | 98 |
| 2007 | 97 | 98 | 98 | 99 |
| 2008 | 96 | 94 | | 96 |
| 2009 | 99 | 100 | | 100 |
| 2009* | 93 | 96 | | 95 |

*2009 without firms without a code (6.2% of the firms in our database in 2009 have no code, nor regions).

Table A.2 shows that we lose from 1% to 15% of the firms, depending of the year, compared with the CSY. The loss is smaller for the other variables (less than 5%, in general, for output, value added and employment); mainly because we dropped small firms (i.e. the ones with less than 8 workers). Moreover, it is likely that the firms which show abnormal values (of fixed asset, value added or sales) are the small ones. The representativeness of our new database is lower during the first years of our sample and improves in more recent years. Lastly, in 2008 and 2009, the representativeness of the new data set is not very different from the initial data set.

To sum up, the initial database provides data which are, in general, quite close to that of the China Statistical Yearbooks, with some exceptions (for a particular industry, province and year). The revised database, which excludes the small firms and the firms showing abnormal variable values, is also relatively close to the CSY. Except for 1998, more than 90% of our four main variables (number of firms, value added, output and employment) are covered.

2. Classifications

Classification by industry

Table A.3

China: Breakdown by sector of industrial value added, employment and exports, 2009

| GB/T | | VA | Employees | Exports |
|------|--|--------------|--------------|--------------|
| | MINING & ENERGY | 13.3 | 9.7 | 0.8 |
| 06 | Mining and Washing of Coal | 5.1 | 5.7 | 0.1 |
| 07 | Extraction of Petroleum and Natural Gas | 3.4 | 1.2 | 0.2 |
| 08 | Mining and Processing of Ferrous Metal Ores | 1.0 | 0.6 | 0.0 |
| 09 | Mining and Processing of Non-Ferrous Metal Ores | 0.7 | 0.6 | 0.0 |
| 10 | Mining and Processing of Nonmetal Ores | 0.5 | 0.6 | 0.0 |
| 11 | Mining of Other Ores | 0.0 | 0.0 | 0.0 |
| 25 | Processing of Petroleum, Coking, Processing of Nuclear Fuel | 2.5 | 1.0 | 0.5 |
| | MANUFACTURING | 78.8 | 86.4 | 99.0 |
| | Food products | 10.6 | 7.3 | 3.6 |
| 13 | Processing of Food from Agricultural Products | 4.7 | 3.8 | 2.4 |
| 14 | Manufacture of Foods | 1.8 | 1.8 | 0.9 |
| 15 | Manufacture of Beverages | 1.7 | 1.4 | 0.2 |
| 16 | Manufacture of Tobacco | 2.4 | 0.2 | 0.0 |
| | Textiles | 6.9 | 16.0 | 12.4 |
| 17 | Manufacture of Textile | 3.8 | 7.0 | 5.2 |
| 18 | Manufacture of Textile Wearing Apparel, Footwear, & Caps | 1.9 | 5.1 | 4.4 |
| 19 | Manufacture of Leather, Fur, Feather and Related Products | 1.2 | 2.9 | 2.8 |
| | Wood & Paper Industries | 3.1 | 4.1 | 1.8 |
| 20 | Processing of Timber, Manuf. Wood, Bamboo, Rattan, Palm & Straw Products | 1.0 | 1.5 | 0.8 |
| 22 | Manufacture of Furniture | 1.4 | 1.7 | 0.6 |
| 23 | Manufacture of Paper and Paper Products | 0.6 | 0.9 | 0.4 |
| | Chemicals | 16.4 | 17.1 | 9.9 |
| 26 | Manufacture of Raw Chemical Materials and Chemical Products | 6.3 | 5.0 | 3.2 |
| 27 | Manufacture of Medicines | 2.1 | 1.8 | 1.0 |
| 28 | Manufacture of Chemical Fibers | 0.5 | 0.5 | 0.4 |
| 29 | Manufacture of Rubber | 0.8 | 1.1 | 1.2 |
| 30 | Manufacture of Plastics | 1.8 | 2.9 | 2.4 |
| 31 | Manufacture of Non-metallic Mineral Products | 4.9 | 5.8 | 1.7 |
| | Metallurgy | 10.6 | 6.7 | 2.6 |
| 32 | Smelting and Pressing of Ferrous Metals | 7.3 | 3.7 | 1.4 |
| 33 | Smelting and Pressing of Non-ferrous Metals | 3.3 | 2.1 | 1.1 |
| | Machinery | 10.4 | 12.6 | 8.9 |
| 34 | Manufacture of Metal Products | 2.7 | 3.6 | 3.0 |
| 35 | Manufacture of General Purpose Machinery | 4.8 | 5.5 | 3.8 |
| 36 | Manufacture of Special Purpose Machinery | 3.0 | 3.3 | 2.1 |
| 39 | Electrical Machinery | 6.4 | 6.1 | 8.6 |
| | Electronics | 6.8 | 8.8 | 39.7 |
| 40 | Manuf. of Communication Equipment, Computers & Oth. Electronic Equipment | 5.9 | 7.5 | 37.3 |
| 41 | Manuf. of Measuring Instr. & Machinery for Cultural Activity & Office Work | 0.9 | 1.3 | 2.4 |
| | Transport Equipment | 6.6 | 6.7 | 6.7 |
| 372 | Manufacture of automobiles | 4.6 | 3.5 | 1.9 |
| 376 | Manufacture of aerospace vehicles | 0.2 | 0.4 | 0.3 |
| 37x | Other transport equipment | 1.8 | 1.8 | 4.5 |
| | Other manufacturing Industries | 2.0 | 4.2 | 6.1 |
| 21 | Manufacture of Furniture | 0.6 | 1.1 | 1.4 |
| 24 | Manufacture of Articles For Culture, Education and Sport Activity | 0.4 | 1.4 | 1.8 |
| 42 | Manufacture of Artwork and Other Manufacturing | 0.8 | 1.6 | 1.9 |
| 43 | Recycling and Disposal of Waste | 0.2 | 0.2 | 0.0 |
| | ELECTRICITY, GAZ & WATER | 7.8 | 3.9 | 0.2 |
| 44 | Production and Distribution of Electric Power and Heat Power | 7.2 | 3.2 | 0.1 |
| 45 | Production and Distribution of Gas | 0.3 | 0.2 | 0.0 |
| 46 | Production and Distribution of Water | 0.3 | 0.5 | 0.0 |
| | TOTAL INDUSTRY | 100.0 | 100.0 | 100.0 |

Source: National Bureau of Statistics of the PRC, Industrial enterprises census data.

Classification by category of firm and type of ownership

Table A.4
China: breakdown of industrial capital by category of firms and type of ownership
2007 (% total)

| Code | Category of firm | Type of capital ownership | | | | | Foreign | Total |
|------|---|---------------------------|------------|-------------|-------------|------------|-------------|--------------|
| | | State | Collective | Corporate | Personal | HMT | | |
| | Public firms | 13.5 | 0.9 | 8.7 | 0.3 | 0.1 | 0.1 | 23.7 |
| 110 | SOE (State owned enterprise) | 9.0 | 0.1 | 5.5 | 0.1 | 0.0 | 0.0 | 14.7 |
| 120 | Collective-owned enterprise | 0.0 | 0.8 | 0.3 | 0.1 | 0.0 | 0.0 | 1.2 |
| 141 | State cooperative enterprise | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 |
| 142 | Collective cooperative enterprise | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 143 | State and collective cooperative enterprise | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 151 | State-owned limited liability Co. | 4.4 | 0.1 | 2.8 | 0.1 | 0.0 | 0.0 | 7.4 |
| | Private & corporate firms | 6.4 | 1.1 | 17.7 | 16.3 | 0.3 | 0.4 | 41.2 |
| 130 | Equity joint venture | 0.0 | 0.1 | 0.3 | 0.2 | 0.0 | 0.0 | 0.6 |
| 149 | Other cooperative enterprise | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 |
| 159 | Other limited liability Co. | 2.7 | 0.7 | 8.9 | 3.7 | 0.1 | 0.2 | 16.3 |
| 171 | Private wholly owned enterprise | 0.0 | 0.0 | 0.6 | 1.3 | 0.0 | 0.0 | 2.0 |
| 172 | Private partnership enterprise | 0.0 | 0.0 | 0.1 | 0.3 | 0.0 | 0.0 | 0.4 |
| 173 | Private limited liability company | 0.0 | 0.1 | 3.4 | 7.5 | 0.0 | 0.1 | 11.1 |
| 174 | Private Co., Ltd | 0.0 | 0.0 | 0.3 | 0.6 | 0.0 | 0.0 | 0.9 |
| 190 | Other domestic enterprise | 0.0 | 0.0 | 0.3 | 0.1 | 0.0 | 0.0 | 0.3 |
| 160 | Share-holding Co, Ltd | 3.6 | 0.2 | 3.7 | 1.7 | 0.1 | 0.1 | 9.5 |
| | Firms with foreign capital | 1.6 | 0.3 | 6.8 | 0.9 | 9.6 | 17.1 | 36.2 |
| | Hong Kong, Macao, Taiwan (HMT) | 0.6 | 0.1 | 1.9 | 0.4 | 9.1 | 0.3 | 12.4 |
| 210 | HMT equity joint venture | 0.3 | 0.1 | 1.4 | 0.3 | 1.9 | 0.2 | 4.1 |
| 220 | HMT cooperative venture | 0.1 | 0.0 | 0.1 | 0.0 | 0.4 | 0.0 | 0.6 |
| 230 | HMT wholly owned enterprise | 0.0 | 0.0 | 0.2 | 0.0 | 6.7 | 0.1 | 7.1 |
| 240 | HMT invested Co., Ltd | 0.1 | 0.0 | 0.2 | 0.1 | 0.2 | 0.0 | 0.6 |
| | Other foreign firms | 1.1 | 0.2 | 3.9 | 0.6 | 0.4 | 16.8 | 22.8 |
| 310 | Foreign equity joint venture | 0.9 | 0.2 | 3.0 | 0.4 | 0.2 | 4.8 | 9.5 |
| 320 | Foreign cooperative venture | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.5 | 0.9 |
| 330 | Foreign wholly owned enterprise | 0.0 | 0.0 | 0.4 | 0.0 | 0.1 | 10.9 | 11.4 |
| 340 | Foreign invested Co., Ltd | 0.1 | 0.0 | 0.3 | 0.1 | 0.0 | 0.5 | 1.0 |
| | All firms | 21.4 | 2.4 | 32.2 | 16.6 | 9.8 | 17.6 | 100.0 |

Source: National Bureau of Statistics of the PRC, Industrial enterprises census data.

Classification by regions and provinces

Table A.5
China's population by region and provinces, 2011

| Code | Total population | | Urban population | | Rural population | | |
|------|-----------------------|---------------|------------------|---------------|------------------|---------------|-------------|
| | 10 000 persons | % of total | 10 000 persons | % of region | 10 000 persons | % of region | |
| | 134 041 | 100.0 | 69 312 | 51.7 | 64 730 | 48.3 | |
| | 51 063 | 38.1 | 31 022 | 60.8 | 20 041 | 39.2 | |
| 11 | Beijing | 2 019 | 1.5 | 1 740 | 86.2 | 279 | 13.8 |
| 35 | Fujian | 3 720 | 2.8 | 2 181 | 58.1 | 1 559 | 41.9 |
| 44 | Guangdong | 10 505 | 7.8 | 6 986 | 66.5 | 3 519 | 33.5 |
| 46 | Hainan | 877 | 0.7 | 443 | 50.5 | 434 | 49.5 |
| 13 | Hebei | 7 241 | 5.4 | 3 302 | 45.6 | 3 939 | 54.4 |
| 32 | Jiangsu | 7 899 | 5.9 | 4 889 | 61.9 | 3 010 | 38.1 |
| 37 | Shandong | 9 637 | 7.2 | 4 910 | 51.0 | 4 727 | 49.1 |
| 31 | Shanghai | 2 347 | 1.8 | 2 096 | 89.3 | 251 | 10.7 |
| 12 | Tianjin | 1 355 | 1.0 | 1 091 | 80.5 | 264 | 19.5 |
| 33 | Zhejiang | 5 463 | 4.1 | 3 403 | 62.3 | 2 060 | 37.7 |
| | INLAND | 82 979 | 61.9 | 38 290 | 46.1 | 44 688 | 53.9 |
| | North-East | 10 966 | 8.2 | 6 442 | 58.7 | 4 525 | 41.3 |
| 21 | Liaoning | 4 383 | 3.3 | 2 807 | 64.1 | 1 576 | 36.0 |
| 22 | Jilin | 2 749 | 2.1 | 1 468 | 53.4 | 1 281 | 46.6 |
| 23 | Heilongjiang | 3 834 | 2.9 | 2 166 | 56.5 | 1 668 | 43.5 |
| | Center | 61 734 | 46.1 | 27 153 | 44.0 | 34 581 | 56.0 |
| 34 | Anhui | 5 968 | 4.5 | 2 674 | 44.8 | 3 294 | 55.2 |
| 50 | Chongqing | 2 919 | 2.2 | 1 606 | 55.0 | 1 313 | 45.0 |
| 62 | Gansu | 2 564 | 1.9 | 953 | 37.2 | 1 611 | 62.9 |
| 52 | Guizhou | 3 469 | 2.6 | 1 213 | 35.0 | 2 256 | 65.0 |
| 41 | Henan | 9 388 | 7.0 | 3 809 | 40.6 | 5 579 | 59.4 |
| 42 | Hubei | 5 758 | 4.3 | 2 964 | 51.8 | 2 774 | 48.2 |
| 43 | Hunan | 6 596 | 4.9 | 2 975 | 45.1 | 3 621 | 54.9 |
| 36 | Jiangxi | 4 488 | 3.3 | 2 051 | 45.7 | 2 437 | 54.3 |
| 63 | Qinghai | 568 | 0.4 | 263 | 46.2 | 305 | 53.8 |
| 61 | Shaanxi | 3 743 | 2.8 | 1 770 | 47.3 | 1 973 | 52.7 |
| 14 | Shanxi | 3 593 | 2.7 | 1 785 | 49.7 | 1 808 | 50.3 |
| 51 | Sichuan | 8 050 | 6.0 | 3 367 | 41.8 | 4 683 | 58.2 |
| 53 | Yunnan | 4 631 | 3.5 | 1 704 | 36.8 | 2 927 | 63.2 |
| | West/Periphery | 10 278 | 7.7 | 4 695 | 45.7 | 5 582 | 54.3 |
| 45 | Guangxi | 4 645 | 3.5 | 1 942 | 41.8 | 2 703 | 58.2 |
| 15 | Inner Mongolia | 2 482 | 1.9 | 1 405 | 56.6 | 1 077 | 43.4 |
| 64 | Ningxia | 639 | 0.5 | 318 | 49.8 | 321 | 50.2 |
| 54 | Xizang | 303 | 0.2 | 69 | 22.7 | 234 | 77.3 |
| 65 | Xinjiang | 2 209 | 1.6 | 962 | 43.5 | 1 247 | 56.5 |

Source: National Bureau of Statistics, China statistical yearbook 2012.

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