

# CHINA: Regional Input-Output Analysis (2002)

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# Outline

- **Data in China**
- **8 Regions**
- **Regional IO Analysis**
  - Industrial Structure
  - Similarity of Industrial Structure
  - Location Quotient
  - Intermediate input rate



# IO Tables in China

- The Input-Output tables for China's Economy
  - 1982, 1987, 1992, 1997 and 2002
    - Tables based on large-scale input-output survey across the country
  - 1990, 1995 and 2000
    - Extension tables



# 2002 Input-Output table

- The latest input-output table for China's economy
- This table is constructed based on large-scale input-output survey across the country and the 1<sup>st</sup> Economic Census of China in 2004



# Cont.

- The basic structure of 2002 IO table is the same as 1997 table
  - Final demand: Household consumption, government consumption, capital formation, changes in stock and exports
  - Value added: Depreciation of fixed capital, Compensation of employees, Net taxes on production and Operation surplus
- The sectoral classification for the 2002 IO table
  - 122 sectors, of which there are 5 sectors for agriculture, 81 sectors for mining and manufacturing, and 36 sectors for services.
  - 42 sectors



# Cont.

- Some new service sectors are introduced
  - e.g Information communication and Service, Computer service and software
- There are 30 provincial IO tables
- Some issues to be paid more attention
  - The errors term in 2002 table are relatively large
    - There are 16 of 122 sectors the error term is beyond 4 percent of sectoral gross output.
    - While the error terms are relatively small, most of them below 2 percent of sectoral gross output in 1997 IO table.
  - The provincial Tables are constructed only based on large-scale input-output survey across the country, but the 1st Economic Census of China in 2004

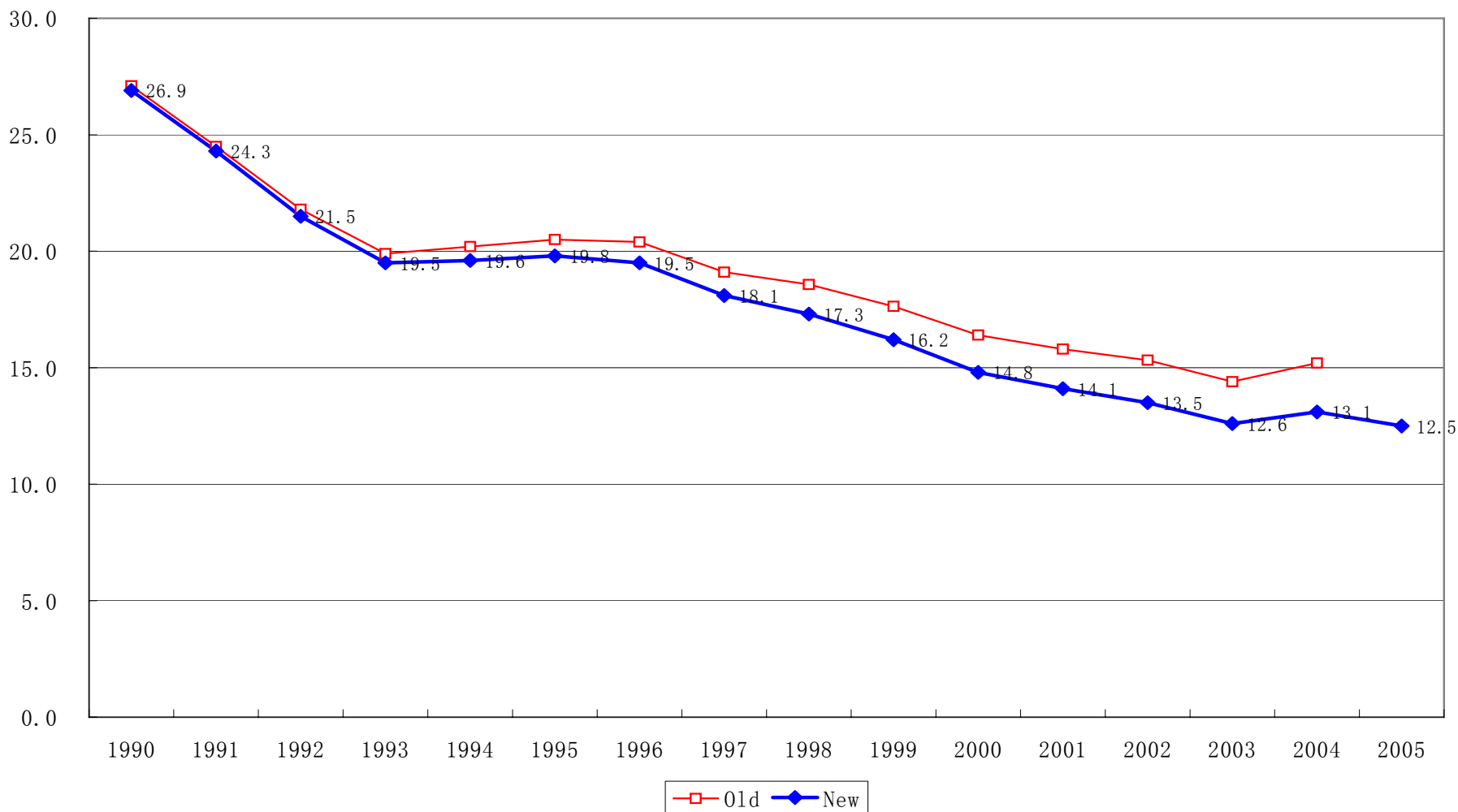


# GDP ,1991-2005 (100 million Yuan)

	Old Data	New Data	Difference	%
1991	<b>21617.8</b>	21781.5	163.7	0.76
1992	<b>26638.1</b>	26923.5	285.4	1.07
1993	<b>34634.4</b>	35333.9	699.5	2.02
1994	<b>46759.4</b>	48179.9	1420.5	3.04
1995	<b>58478.1</b>	60793.7	2315.6	3.96
1996	<b>67884.6</b>	71176.6	3292.0	4.85
1997	<b>74462.6</b>	78973.0	4510.4	6.06
1998	<b>78345.2</b>	84402.3	6057.1	7.73
1999	<b>82067.5</b>	89677.1	7609.6	9.27
2000	<b>89468.1</b>	99214.6	9746.5	10.89
2001	<b>97314.8</b>	109655.2	12340.4	12.68
2002	<b>105172.3</b>	120332.7	15160.4	14.41
2003	<b>117390.2</b>	135822.8	18432.6	15.70
2004	<b>136875.9</b>	159878.3	23002.4	16.81
2005		182320.6		



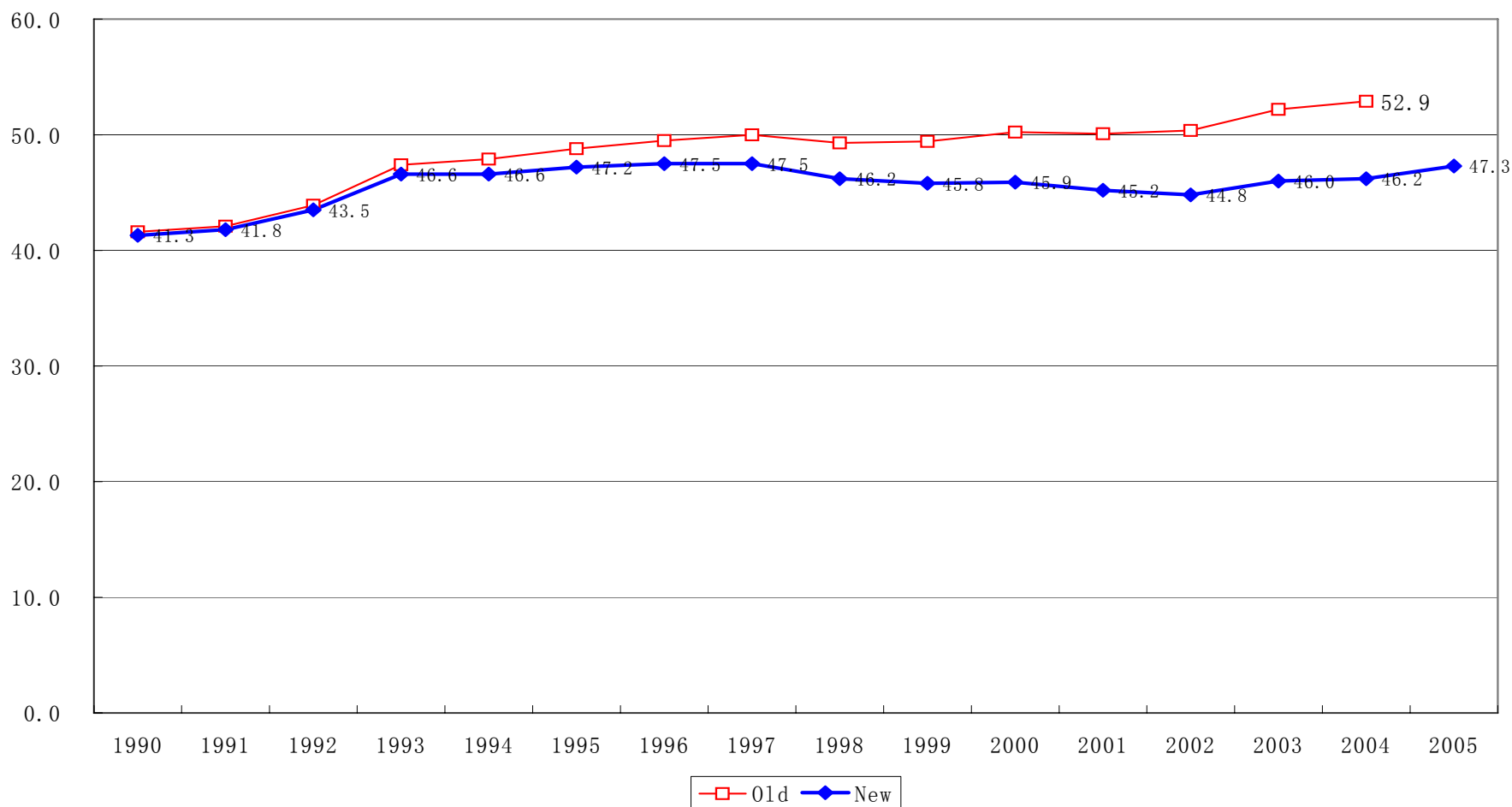
# Share of Agriculture in GDP





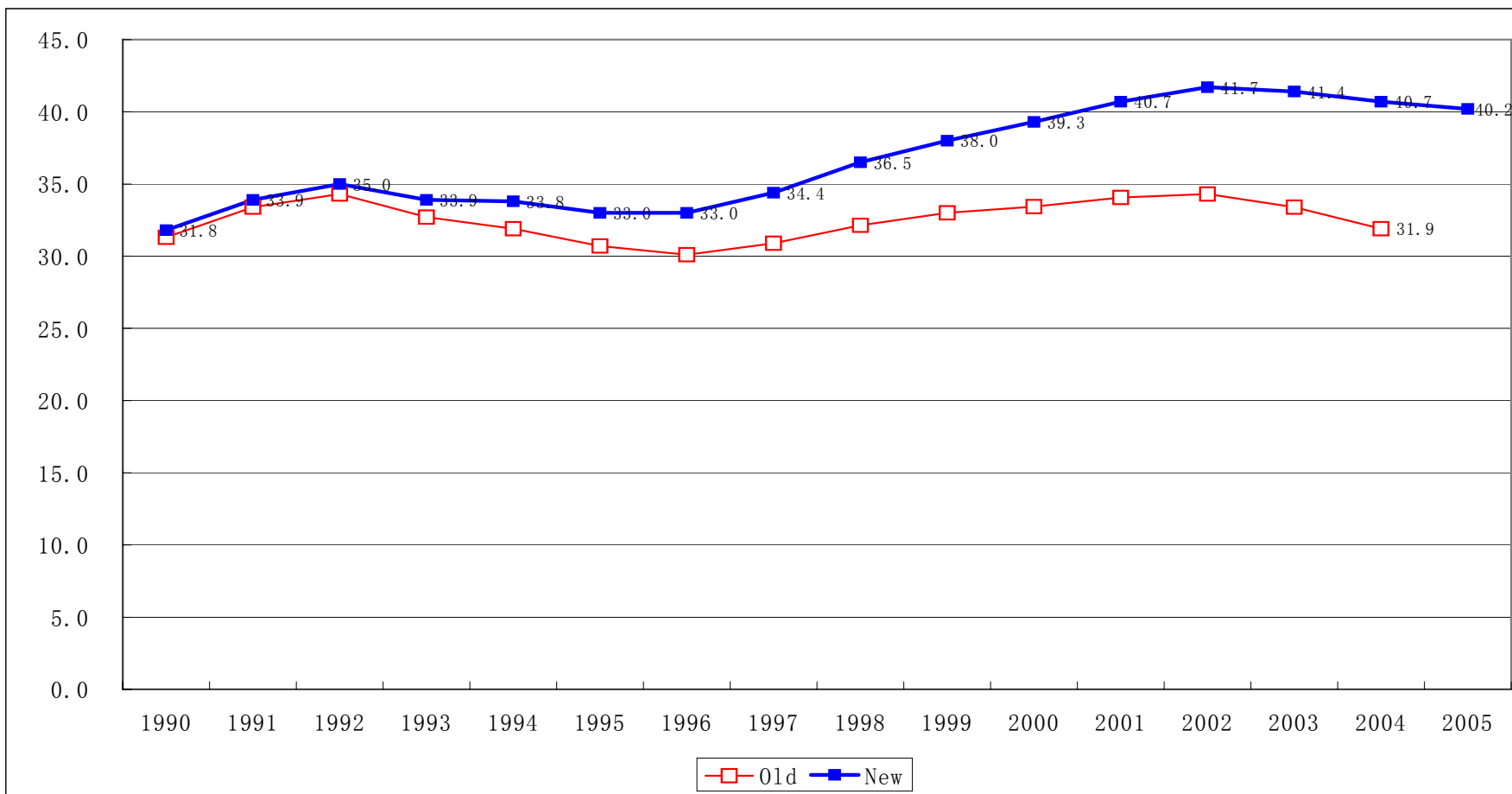


# Share of Secondary Industry in GDP





# Share of Tertiary Industry in GDP





# Four Regions( Western, North-Eastern, Central, Eastern)





# 8 Regions--1

- **Northeast region (NE)** consists of **Liaoning, Jilin, and Heilongjiang** provinces, which cover 8.5% of national area, and had 8.4% of national population. These areas are provided with similar natural conditions and resource structure, and have close relations in history. At present, they are faced with many common issues such as exhausted resources and upgrading of industrial structure.



## 8 Regions--2

- **North coastal region (NC)** consists of **Beijing and Tianjin municipalities, Hebei, and Shandong** provinces, which cover 4.0% of national area, and have 14.2% of national population. With an ideal geographical location, this region is provided with convenient transport facilities and developed undertaking of science, education and culture. It has made tangible results in the national reform and opening to the outside world



## 8 Regions--3

- **East coastal region (EC)** consists of **Shanghai municipality, Jiangsu, and Zhejiang** provinces, which cover 2.3% of national area, and had 10.7% of national population. These areas started modernization earlier, have close foreign economic ties in history, take the lead in many fields in the national reform and opening to the outside world, and have rich human capital and tangible advantage in development



## 8 Regions--4

- **South coastal region (SC)** consists of **Fujian, Guangdong, and Hainan** provinces, which cover 3.5% of national area, and have 9.5% of national population. This region is adjacent to Hong Kong, Macao and Taiwan, has rich overseas social resources, and opens wider to the outside world.



## 8 Regions--5

- **The middle reaches of the Yellow River (YE) includes Shaanxi, Shanxi, Henan provinces and the Inner Mongolia Autonomous Region**, which cover 17.2% of national area, and have 14.9% of national population. This region abounds in natural resources, rich coal and natural gas resources in particular, and is located in the interior with important strategic position. However, it has not yet opened enough to the outside world, and it shoulders a heavy task in adjusting its structure





## 8 Regions--6

- **The middle reaches of the Yangtze River (YZ)** includes **Hubei, Hunan, Jiangxi, and Anhui** provinces, which cover 7.3% of national area, and have 18.2% of national population. This region has sound farming conditions and dense population. But it has not yet fully opened to the outside world. It shoulders heavy pressure in shifting industrial structure.



## 8 Regions--7

- **Southwest region (SW)** consists of **Yunnan, Guizhou, and Sichuan provinces, and Chongqing Municipality, the Guangxi Zhuang Autonomous Region**, which 14.4% of national area, and have 19.4% of national population. The region is located in a remote area with poor soil and people. However, it is provided with ideal conditions of opening to South Asia



## 8 Regions--8

- **Northwest region (NW)** consists of **Gansu, Qinghai provinces and Ningxia Hui, Tibet and Xinjiang Uygur autonomous region**, which cover 42.8% of national area, and have 4.6% of national population . With the adverse natural conditions, this region has vast territory with scarce population and limited market. It is provided with certain conditions of opening to west



# Regional Industrial Structure(2002)

	Nati onal	NE	NC	EC	SC	YE	YZ	SW	NW
Agriculture	8.4	9.2	7.3	4.8	6.1	12.3	12.2	13.4	12.3
Secondary Industry	60.5	59.0	59.4	67.2	63.1	59.7	55.4	52.9	51.7
Mining	2.8	5.9	3.7	0.4	1.5	6.1	2.5	2.6	6.1
Resources based	12.8	14.3	15.4	9.6	11.0	16.1	13.8	12.7	12.6
Low Tech.	9.2	5.0	7.0	15.0	13.0	7.5	7.2	3.4	2.5
Meddle Tech.	19.9	20.8	19.3	26.7	17.3	15.5	17.8	17.3	11.1
High Tech.	4.4	1.7	3.9	6.0	11.0	1.0	1.2	1.4	0.3
Electricity	2.8	3.1	1.9	2.5	2.7	3.4	3.0	3.2	4.8
Construction	8.5	8.1	8.0	7.0	6.4	9.9	9.9	12.3	14.4
Tertiary Industry	31.1	31.9	33.3	28.0	30.9	28.0	32.4	33.7	36.1
Transportation	4.2	4.4	4.2	3.2	4.4	5.9	4.1	4.2	5.8
Trade and restaurant	4.3	3.7	5.2	4.4	4.6	2.5	4.5	4.3	3.8
Finance and real estate	7.6	9.2	7.2	7.1	7.2	7.2	8.6	8.2	8.6
Other Service	14.9	14.6	16.7	13.4	14.6	12.4	15.2	17.0	17.9



# Industrial Regional Structure (2002)

	NE	NC	EC	SC	YE	YZ	SW	NW
Agriculture	9.5	16.9	13.2	11.6	13.1	16.9	14.9	3.9
Mining	18.2	25.7	3.2	8.8	19.5	10.3	8.6	5.7
Resource Based	8.8	21.1	21.0	16.9	10.5	11.7	8.0	2.1
Low Tech.	4.4	16.7	38.4	19.6	7.1	9.3	3.5	0.9
Middle Tech.	9.1	19.0	30.8	14.0	7.0	10.5	8.1	1.5
High Tech.	3.4	17.3	30.8	40.1	2.1	3.1	3.1	0.2
Electricity	9.8	13.8	21.1	16.1	11.0	12.7	11.0	4.5
Construction	8.3	18.5	18.9	12.2	10.4	13.6	13.6	4.5
Transportation	9.1	19.8	17.3	16.9	12.5	11.3	9.5	3.6
Retail and Whole Sale、 Restaurant	10.5	18.4	21.3	15.3	8.4	13.1	10.1	3.0
Finance、 Real Estates	7.4	23.3	23.1	17.1	5.2	12.2	9.4	2.3
Other Service	8.6	21.9	20.6	15.8	7.4	11.9	10.7	3.2



## Similarity Coefficient

$$r_k = \frac{\sum_{i=1}^n (x_i^k \bar{x}_i)}{\sqrt{\sum_{i=1}^n (x_i^k)^2} \sqrt{\sum_{i=1}^n (\bar{x}_i)^2}}$$

$$(i=1,2,\dots,n; k=1,2,\dots,m)$$



## Regional Similarity of Industrial Structure (2002)

Rank	Province	相似系数	Rank	Province	相似系数	Rank	Province	相似系数
1	Hubei	0.723	11	Guangxi	0.667	21	Shanghai	0.579
2	Hunan	0.723	12	Zhejiang	0.664	22	Heil. J.	0.569
3	Henan	0.71	13	Jiangxi	0.652	23	Yunnan	0.565
4	Anhui	0.706	14	Hainan	0.648	24	Xinjiang	0.557
5	Hebei	0.705	15	Guangdong	0.62	25	Chongqing	0.543
6	Neimeng	0.685	16	Shaanxi	0.618	26	Shanxi	0.533
7	Jiangsu	0.681	17	Gansu	0.6	27	Ningxia	0.529
8	Sichuan	0.681	18	Jilin	0.599	28	Tianjin	0.516
9	Fujian	0.677	19	Guizhou	0.594	29	Qinghai	0.496
10	Liaoning	0.675	20	Shandong	0.592	30	Beijing	0.491



## Regional Similarity of Industrial Structure (1997)

Rank	Province	相似系数	Rank	Province	相似系数	Rank	Province	相似系数
1	Hubei	0.977	11	Jianxi	0.932	21	Zhejiang	0.884
2	Hebei	0.976	12	Hunan	0.923	22	Jilin	0.868
3	Shandong	0.968	13	Guangxi	0.922	23	Xinjiang	0.867
4	Fujian	0.955	14	Ningxia	0.922	24	Tianjin	0.841
5	Anhui	0.953	15	Gansu	0.911	25	Chongqing	0.838
6	Jiansu	0.951	16	Neimeng	0.905	26	Qinghai	0.831
7	Sichuan	0.948	17	Yunnan	0.898	27	Shanxi	0.819
8	Henan	0.945	18	Guangdong	0.898	28	Beijing	0.797
9	Liaoning	0.936	19	Guizhou	0.895	29	Shanghai	0.789
10	Shaanxi	0.934	20	Hei.L.J	0.886			





# Location Quotient

$$LQ_{ij} = \frac{L_{ij} / \sum_i L_{ij}}{\sum_j L_{ij} / \sum_i \sum_j L_{ij}}$$

$i$ ——  $i$ th region;

$j$ ——  $j$ th sector;

$L_{ij}$  —— output for  $i$ th region and  $j$ th sector;



# Location Quotient (2002)

	NE	NC	EC	SC	YE	YZ	SW	NW
Agriculture	1.09	0.87	0.58	0.72	1.44	1.45	1.59	1.45
Mining	<b>2.07</b>	1.33	0.14	0.55	<b>2.14</b>	0.88	0.92	2.15
Resource Based	1.00	1.09	0.91	1.05	1.15	1.01	0.85	0.79
Low Tech.	0.50	0.86	<b>1.67</b>	1.22	0.78	0.80	0.38	0.35
Middle Tech.	1.04	0.98	1.34	0.87	0.77	0.90	0.87	0.55
High Tech.	0.39	0.89	1.34	<b>2.49</b>	0.23	0.27	0.33	0.07
Electricity	1.12	0.71	0.92	1.00	1.21	1.09	1.17	<b>1.71</b>
Construction	0.95	0.95	0.82	0.76	1.14	1.17	1.45	1.68
Transportation	1.03	1.02	0.76	1.05	1.38	0.97	1.01	1.37
Retail and Whole Sale、 Restaurant	1.20	0.95	0.93	0.95	0.92	1.12	1.07	1.12
Finance、 Real Estates	0.85	1.19	1.01	1.06	0.58	1.04	1.00	0.87
Other Service	0.98	1.12	0.90	0.98	0.83	1.02	1.14	1.20



# Location Quotient (1997)

	NE	NC	EC	SC	YE	YZ	SW	NW
Agriculture	0.97	0.85	0.54	0.80	1.29	1.40	1.55	1.52
Mining	1.93	1.17	0.20	0.46	1.99	1.10	0.94	1.79
Resource Based	1.22	1.07	0.77	0.70	1.19	1.24	1.10	0.87
Low Tech.	0.61	0.90	1.43	1.48	0.72	0.90	0.51	0.55
Middle Tech.	1.04	1.03	1.35	0.82	0.79	0.90	0.86	0.62
High Tech.	0.67	1.04	1.40	1.68	0.53	0.41	0.91	0.17
Electricity	0.93	0.84	0.95	1.30	1.40	0.79	0.85	1.29
Construction	0.90	1.03	0.91	1.02	1.04	0.91	1.10	1.68
Transportation	1.00	1.03	0.80	1.37	1.17	0.90	0.81	1.11
Retail and Whole Sale、 Restaurant	1.16	0.90	0.96	1.09	0.85	0.97	1.13	1.17
Finance、 Real Estates	0.65	1.26	1.23	1.09	0.63	0.73	1.06	0.65
Other Service	1.06	1.08	0.84	1.03	1.02	0.92	1.10	1.30



# Agriculture

NE:Jilin (1.50) 、 H. L. J. (1.12)

NC:Hebei (1.21) 、 Shandong (1.02) 、

SC:Hainan (3.02) 、

YE:Henan (1.56) 、 Shaanxi (1.16) 、 Neimeng (2.01) 、

YZ:Anhui (1.72) 、 Hubei (1.11) 、 Hunan (1.47) 、 Jiangxi (1.76)

SW:Guangxi (1.87) 、 Sichuan (1.63) 、 Guizhou (1.71) 、 Yunnan (1.76)

NW:Gansu (1.44) 、 Qinghai (1.00) 、 Ningxia (1.20) 、 Xinjiang (1.60)



# Mining

Coal mining and processing	<p>NE: Liaoning (1.05) 、 Hei.L. J (1.71)</p> <p>NC: Hebei (1.18) 、 Shandong (1.71)</p> <p>YE: Shanxi (11.38) 、 Henan (2.02) 、 Shaanxi (1.48) 、 Neimeng (3.79)</p> <p>YZ: Anhui (1.85) 、 Hunana (1.47) 、 Jiangxi (1.33)</p> <p>SW: Sichuan (1.34) 、 Guizhou (2.45)</p> <p>NW: Gansu (1.03) 、 Ningxia (4.12) 、 Xinjiang (1.02)</p>
Crude petroleum and natural gas products	<p>NE: Liaoning (1.76) 、 Hei.L. J (10.21)</p> <p>NC: Tianjin (3.20) 、 Shandong (2.56)</p> <p>YE: Shaanxi (3.72)</p> <p>NW: Qinghai (4.90) 、 Ningxia (3.11) 、 Xinjiang (7.03)</p>



# Mining

Metal ore mining	<p>NE:Liaoning (1.22) 、</p> <p>NC:Hebei (3.33) 、 Shandong (1.39)</p> <p>SC:Fujian (3.12) 、 Hainana (1.21)</p> <p>YE:Shanxi (1.69) Henan (2.18) 、 Shaanxi (1.69) 、 Neimeng (1.61) 、</p> <p>YZ:Hubei (1.00) 、 Hunan (1.61) 、 Jiangxi (1.70)</p> <p>SW:Guangxi (2.73) 、 Yunnan (1.95)</p> <p>NW:Gansu (1.72) 、 Qinghai (1.33) 、 Ningxia (3.25)</p>
Non-ferrous mineral mining	<p>NE:Liaoning (1.21) 、 Hei.L.J (1.14)</p> <p>SC:Fujian (1.31) 、 Guangdong (1.00)</p> <p>YE:Shanxi (1.47) 、 Henan (1.99) 、 Neimeng (1.57) 、</p> <p>YZ:Anhui (2.29) 、 Hubei (2.08) 、 Hunan (1.30) 、 Jiangxi (1.35)</p> <p>SW:Guangxi (1.19) Sichuan (2.87) Guizhou (1.62) Yunnan (1.43)</p> <p>NW:Ningxia (2.47)</p>



## Resources Based

<p>Manufacture of food products and tobacco processing</p>	<p>NE:Jilin (1.46) 、 H. L. J (1.42)          NC:Shandong (2.18)          SC:Fujian (1.02)          YE:Henan (1.59) 、 Neimeng (1.02)          YZ:Anhui (1.19) 、 Hubei (1.33) 、 Hunan (1.20)          SW:Guangxi (1.09) Sichuan (1.18) Guizhou (1.32) Yunnan (2.36)</p>
<p>Petroleum processing and coking</p>	<p>NE:Liaoning (3.47) 、 Jilin (1.28) 、 H. L. J (2.20)          NC:Beijing (1.64) 、 Tianjin (1.52) 、 Shandong (1.51)          YE:Shanxi (2.31) 、 Shaanxi (1.09)          NW:Gansu (4.02) 、 Ningxia (1.36) 、 Xinjiang (3.16)</p>
<p>Nonmetal mineral products</p>	<p>NE:Liaoning (1.06)          NC:Hebei (1.84)          YE:Shanxi (1.26) 、 Henan (2.44) 、 Shaanxi (1.04) 、 Neimen (1.13) 、          YZ:Anhui (1.39) 、 Hubei (1.12) Hunan (1.21) 、 Jiangxi (1.24) 、          SW:Guangxi (1.36) Sichuan (1.38)</p>



# Low Tech.

Textile goods	NC:Hebei (1.12) 、 Shandong (1.15) EC: Jiangsu (2.15) 、 Zhejiang (2.84) 、 SC:Fujian (1.03) 、 YZ: Hubei (1.32)
Wearing apparel, leather, furs, down and related products	EC:Shanghai (1.15) 、 Jiansu (1.54) 、 Zhejiang (2.59) SC:Fujian (1.28) 、 Guangdong (1.94) 、 YE: Henan (1.02)
Paper and products, printing and record medium reproduction	NC:Hebei (1.34) 、 Shandong (1.03) EC:Shanghai (1.05) 、 Zhejiang (1.55) SC:Fujian (1.29) 、 Guangdong (1.71) 、 SW:Guangxi (1.46)





# Low Tech.

Other manufacturing products	EC:Jiangsu (1.03) 、 Zhejiang (1.60) SC:Fujian (1.96) 、 Guangdong (1.49) 、 YE:Shanxi (1.09) 、 Henan (2.49) 、 YZ:Hunan (1.50) 、 Jiangxi (1.16) SW:Guangxi (1.32)
Sawmills and furniture	NE:HeiL. J. (1.69) 、 EC:Zhejiag (1.10) 、 SC:Fujian (3.01) 、 Guangdong (1.41) YE:Henan (2.10) 、 YZ:Anhui (1.34) Hubei (1.03) Hunan (1.05) Jiangxi (1.09) SW:Guangxi (1.35)



# Middle Tech.

Chemicals	<p>NC:Tianjin (1.13) 、 Hebei (1.09) 、 Shandong (1.14)</p> <p>EC:Shanghai (1.14) 、 Jiangsu (1.59) 、 Zhejiang (1.35)</p> <p>SC:Guangdong (1.05)</p> <p>NW:Ningxia (1.01)</p>
Metals smelting and pressing	<p>NE:Liaoning (1.98)</p> <p>NC:Tianjin (1.53) 、 Hebei (1.79)</p> <p>EC:Shanghai (1.22) 、 Jiangsu (1.36)</p> <p>YE:Shanxi (2.24) 、 Neimeng (1.57)</p> <p>YZ:Hubei (1.23) 、 Hunan (1.16) 、 Jiangxi (1.06)</p> <p>SW:Sichuan (1.16) 、 Guizhou (2.20) 、 Yunnan (1.32)</p> <p>NW:Gansu (1.83) 、 Qinghai (2.10) 、 Ningxia (2.09)</p>



# Middle Tech.

Transport equipment	<p>NE:Liaoning (1.13) 、 Jilin (4.11)</p> <p>EC:Shanghai (2.27) 、 Zhejiang (1.01) 、 Hainan (1.23) 、</p> <p>YE:Shaanxi (1.19)</p> <p>YZ:Anhui (1.02) 、 Hubei (2.05) 、</p> <p>SW:Chongqing (5.04)</p>
Electric equipment and machinery	<p>NC: Tianjin (1.32) 、 Shandong (1.03) 、</p> <p>EC: Shanghai (1.51) 、 Jiangsu (1.22) 、 Zhejiang (2.01)</p> <p>SC:Guangdong (2.04)</p>



# High Tech.

Electronic and telecommunication equipment	NC: Beijing (2.47) 、 Tianjin (3.09) EC: Shanghai (1.69) 、 Jiangsu (1.61) 、 SC: Fujian (1.05) 、 Guangdong (3.14)
Instruments, meters, cultural and office machinery	NC: Beijing (1.69) 、 EC: Shanghai (1.65) 、 Jiangsu (1.04) 、 Zhejiang (2.28) 、 SC: Fujian (1.95) 、 Guangdong (2.23) 、 YE: Shaanxi (1.03) 、 SW: Chongqing (1.46)



# Intermediate input rate

$$LQ_{ij} = \frac{L_{ij} / \sum_i L_{ij}}{\sum_j L_{ij} / \sum_i \sum_j L_{ij}}$$

$i$ ——  $i$ th region;

$j$ ——  $j$ th sector;

$L_{ij}$  —— output for  $i$ th region and  $j$ th sector;

# Intermediate input rate

	Intermediate input rate	
	1997	2002
National Average	<b>0.62</b>	<b>0.64</b>
NE	<b>0.61</b>	<b>0.60</b>
NC	<b>0.63</b>	<b>0.64</b>
EC	<b>0.66</b>	<b>0.68</b>
SC	<b>0.63</b>	<b>0.67</b>
YE	<b>0.60</b>	<b>0.59</b>
YZ	<b>0.61</b>	<b>0.60</b>
SW	<b>0.58</b>	<b>0.58</b>
NW	<b>0.58</b>	<b>0.59</b>

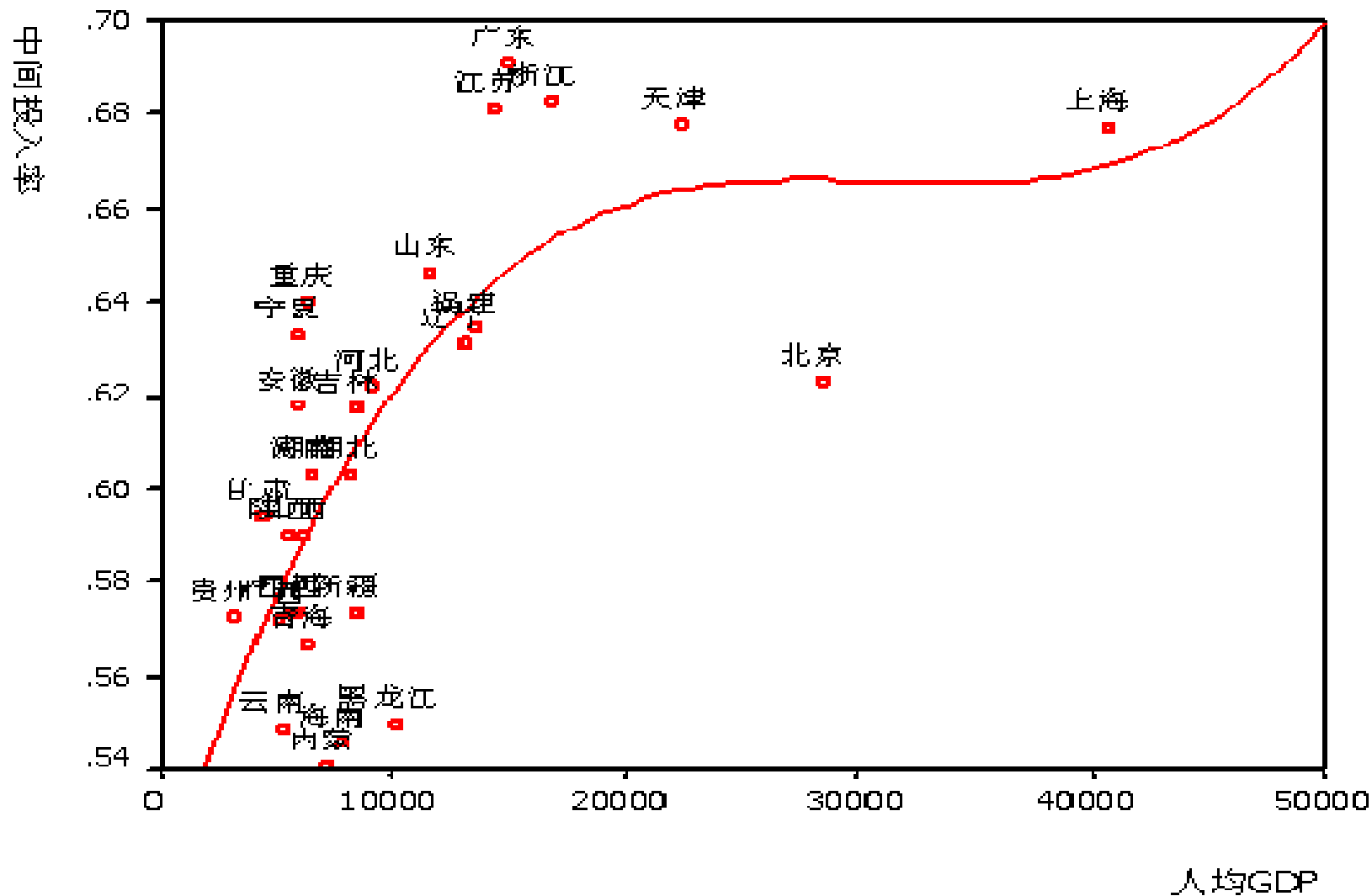


# Intermediate input rate and per capita GDP

	Per capita GDP	Intermediate input rate		Per capita GDP	Intermediate input rate
Guangdong	15030	0.691	Hubei	8319	0.603
Zhejiang	16838	0.683	Hunan	6565	0.603
Jiangsu	14391	0.681	Gansu	4493	0.594
Tianjin	22380	0.678	Shanxi	6146	0.59
Shanghai	40646	0.677	Shaanxi	5523	0.59
Shandong	11645	0.646	Jiangxi	5829	0.574
Chongqing	6347	0.64	Sichuan	5766	0.574
Fujian	13497	0.634	Xinjiang	8382	0.574
Ningxia	5804	0.633	Guizhou	3153	0.573
Liaoning	12986	0.631	Guangxi	5099	0.572
Beijing	28449	0.623	Qinghai	6429	0.567
Hebei	9115	0.622	Heil. J.	10184	0.55
Anhui	5817	0.618	Yunnan	5179	0.549
Jilin	8334	0.617	Hainan	7803	0.546
Henan	6436	0.603	Neimeng	7241	0.541



# Intermediate input rate and per capita GDP







## Regional Intermediate input rate (2002)

	Nation	NE	NC	EC	SC	YE	YZ	SW	NW
Agriculture	0.42	0.45	0.44	0.47	0.41	0.39	0.40	0.36	0.48
Mining	0.50	0.30	0.56	0.52	0.69	0.51	0.54	0.58	0.40
Resource Based	0.74	0.79	0.73	0.77	0.76	0.73	0.73	0.66	0.79
Low Tech.	0.74	0.68	0.73	0.78	0.73	0.73	0.72	0.66	0.73
Middle Tech.	0.76	0.72	0.76	0.79	0.79	0.72	0.72	0.75	0.74
High Tech.	0.80	0.76	0.80	0.79	0.81	0.73	0.72	0.73	0.81
Electricity	0.55	0.50	0.55	0.59	0.57	0.55	0.52	0.51	0.54
Construction	0.72	0.70	0.74	0.74	0.73	0.68	0.72	0.74	0.68
Transportation	0.53	0.51	0.52	0.60	0.51	0.53	0.54	0.46	0.55
Retail and Whole Sale、Restaurant	0.52	0.49	0.59	0.45	0.55	0.51	0.53	0.51	0.55
Finance, Real Estates	0.42	0.50	0.47	0.34	0.45	0.26	0.45	0.38	0.43
Other Service	0.46	0.49	0.46	0.46	0.52	0.39	0.45	0.47	0.42
Regional	0.64	0.60	0.64	0.68	0.67	0.59	0.60	0.58	0.59



## Index of backwards linkage and index of forwards linkage

index of backwards linkage  $> 1$   
index of forwards linkage  $< 1$

index of backwards linkage  $> 1$   
index of forwards linkage  $> 1$

index of backwards linkage  $< 1$   
index of forwards linkage  $< 1$

index of backwards linkage  $< 1$   
index of forwards linkage  $> 1$



Electric equipment and machinery(1.334, 0.937)	Electronic and telecommunication equipment (1.395, 1.707)
Instruments, meters, cultural and office machinery (1.299, 0.677)	Transport equipment(1.263, 1.1)
Wearing apparel, leather, furs, down and related products(1.207, 0.657)	Metal products(1.228, 1.001)
Construction(1.184, 0.56)	Textile goods (1.223, 1.11)
Other manufacturing products(1.183, 0.683)	Metals smelting and pressing (1.205, 2.219)
Nonmetal mineral products(1.152, 0.935)	Chemicals(1.178, 3.197)
Gas production and supply(1.126, 0.484)	Paper and products, printing and record medium reproduction(1.161, 1.342)
Sawmills and furniture(1.125, 0.724)	Petroleum processing and coking(1.069, 1.353)
Metal ore mining(1.054, 0.767)	Manufacture of food products and tobacco processing(1.047, 1.044)
Non-ferrous mineral mining(1.027, 0.568)	
Tourism (1.001, 0.74)	
Eating and drinking places(0.926, 0.993)	Coal mining and processing (0.932, 1.048)
General technical services(0.89, 0.508)	Transport and warehousing (0.915, 1.963)
Water production and supply(0.879, 0.508)	Electricity, steam and hot water production and supply (0.888, 1.644)
Other social services(0.878, 0.592)	Wholesale and retail trade (0.834, 1.959)
Scientific research(0.86, 0.498)	Finance and insurance (0.798, 1.374)
Education, culture and arts, radio, film and television(0.776, 0.423)	Agriculture (0.77, 1.704)
Real estate(0.737, 0.687)	Crude petroleum and natural gas products (0.676, 1.175)
Scrap and waste(0.38, 0.502)	

Thanks for your attention!



*See you next year!*

