

EMPLOYMENT PAPER
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Employment, wages and income inequality in the internationalization of China's economy

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INTERNATIONAL LABOUR OFFICE GENEVA

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Foreword

This is one of the case studies prepared within the framework of the research project on “global economic integration and employment policy” carried out by the Employment Policy Department. The case studies are designed to provide detailed empirical assessment of the effects of growth of manufactured trade, induced by trade liberalization, on manufacturing employment and wages in a carefully selected set of countries. While there is widespread concern about these effects, they remain inadequately understood. There exists a large literature on the experience of industrialized countries, but controversies abound. On developing countries, the literature is extremely limited. Given this backdrop, the case studies are expected to make a substantial contribution to our understanding of the changes being engendered by globalization, a subject of much current interest to international organizations, national policy makers, the academic community and civil society organizations.

China’s economic achievement is perhaps the best illustration of the potential benefits of integration into the global economy. In 1978, the country embarked on a process of transition from a centrally planned economic system to a market oriented economic system. The process of trade liberalization started in the mid-1980s and gathered pace in the early-1990s. The share of manufactured exports in total merchandise exports increased from 57 per cent to 86 per cent during the same period. FDI inflows grew rapidly from 1986 onwards to make China by far the largest recipient of FDI inflows in the developing world. All this changed China’s economy beyond recognition in the course of less than two decades. Since the mid-1980s, the annual rate of growth of GDP has hovered around 9 per cent, the structure of GDP (as also that of employment) has undergone a dramatic change, and the incidence of poverty has declined at an impressive pace. This paper focuses on two specific aspects of this process of transformation: the changes in manufacturing employment and wages and the rising income inequality.

The growing trade openness has had the most direct and significant effects on employment and wages in manufacturing industries, since China’s export growth has been driven by the growth of manufactured exports. The analysis presented in the paper shows: (i) that the growth of trade orientation had a stimulating effect on aggregate manufacturing employment; (ii) that much of the incremental employment was that of low-skilled labour drawn from the pool of surplus labour in rural areas; (iii) that the system of life-long employment in state owned enterprises was progressively replaced by contract-based employment in non-state enterprises; and (iv) that real wages of all types of labour grew at impressive rates.

Rising income inequality is a well-known outcome of China’s recent economic transformation. The paper considers two particular processes underlying this outcome. The first is the growth of wage inequality. This seems to have been driven by the differential rates of growth of labour productivity across industries, though, the author argues, the progressive disappearance of the stock of surplus labour may also have been a

factor. The second underlying process is that of growing inter-province income inequality. The stimulating effect of trade on growth was naturally larger for the coastal provinces than for the inland provinces so that the inter-province inequality in per capita income showed a rising trend. With regard to both processes, however, it is important to note that the growth of inequality did not involve the poor getting poorer; all types of workers benefited from real wage increases, and even the provinces farthest from the coastline achieved impressive economic growth.

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Contents

	Page
Foreword	
Acknowledgement	
1. Introduction	1
2. The context	3
3. The process of economic opening in China	5
The evolution of trade policy	5
Integration into the global trade and financial systems	6
4. Output, productivity, wages and trade orientation in manufacturing	7
5. Changes in manufacturing employment, and the impact of trade	8
Changes in manufacturing in the reform era	8
Econometric analysis of the impact of trade of employment and output	10
6. The effects of trade on the wage gap between unskilled and skilled labour: evidence from the literature	12
7. Changes in (W_u/W_s), and their causes	14
Tracking the movements	14
Explaining the observed W_u/W_s movement	16
8. Econometric testing for the effects of trade on wages	18
The estimation framework	18
Estimation results	19
9. Impact of trade on the distribution of provincial income	21
10. Conclusion	24
Figures and Statistical Tables	27
References	83

1. Introduction

China has become an important trading nation over the last two decades. Its exports rose from \$9.7 billion in 1978 to \$183.7 billion in 1998, boosting its share of world exports from 0.8percent to 3.4percent. While this figure may not seem much, it makes China a leading exporter even by East Asian standards and the largest exporter among non-oil developing Asian economies. In 1978, China ranked fifth among this group behind the Republic of Korea, Taiwan Province of China, Hong Kong (China) and Singapore.¹

China's integration into the international trade and finance systems, and its growing stature in them, have transformed both the international economic landscape as well as its own domestic economic situation. This paper focuses on some of the domestic consequences of the increasing internationalization of China's economy, but we wish to emphasize that the international consequences are no less important and interesting. The implications for South-East Asia in particular, are clearly apparent. With the recent accession of China to the World Trade Organization (WTO), and hence the removal of the annual uncertainty over the continuation of normal trade relations with the United States - China's biggest export market - some foreign companies are moving many of their production operations from South-East Asia to China. Surprisingly such relocation is occurring even though these countries greatly devalued their currencies against China's renminbi as a result of the 1997-99 financial crisis. This development, together with the slowdown – and in some cases, decline – in exports has led to some South-East Asian leaders expressing publicly some of their hitherto unspoken fears about China's emergence, and growing presence, on the world stage.

In August 2001, the Prime Ministers of Singapore and Malaysia warned that for continued high growth of their economies they would need to pursue new development strategies taking into account China's low-cost advantage. In the words of the Prime Minister of Singapore:

"China poses a big economic challenge ... In the early 90s, China took 20 per cent of the total foreign direct investment into East Asia (excluding Japan), while ASEAN absorbed 50 per cent. Today, the numbers are reversed ... I have seen China's transformation at close quarters. It is scary ... you will be astonished by how quickly they have learnt and caught up ... Our biggest challenge is therefore to secure a niche for ourselves as China swamps the world with her high quality but cheaper products."²

¹ If we regard the bulk of exports from Hong Kong (China) to be re-exports from China, then China ranked third in 1978.

² National Day speech, 19 August 2001, www.gov.sg. In a similar vein, the Malaysian Prime Minister, Mahathir Mohamed, emphasized the necessity for Malaysia "to find niche markets for itself to meet rising competition from China, including concentrating on industries that could ride on the Asian giant's growth, in "Carve a niche for edge over China", The Straits Times Interactive, August 31, 2001. According to Lee

While China's low wages are doubtlessly forcing structural adjustment in the manufacturing sectors of some developed and developing economies, in this paper we are interested in examining how China's participation in world trade has affected its own economy, specifically, growth, employment and income equality.³ Specifically, we examine:

- (i) The impact of trade on output growth and employment creation across the manufacturing industries; and
- (ii) The relationship between trade and income distribution at two levels:
at the microeconomic level: how trade has affected the distribution of income between skilled and unskilled workers; and
at the macroeconomic level: how trade has affected the distribution of income across provinces.

This paper is organized as follows. Section 2 sets the economic context for analysis of the impact of trade on employment and wages in China's manufacturing sector; section 3 outlines the process of internationalization of China's economy since 1978; section 4 documents the main features of the manufacturing sector and of trade in manufactures; section 5 describes the evolution of the level and pattern of employment in manufacturing and presents an econometric investigation of how trade has affected output and employment in each industry within the manufacturing sector. Section 6 draws on economic theory to discuss how wages in the manufacturing sector should have behaved with the internationalization of the economy. Section 7 reports the pattern of wage movements, and relates it to the nature of China's sources of economic growth, China's industrial structure and regulation, and the household registration system that impeded labour mobility. Section 8 conducts regression analysis of the wage movements in the manufacturing sector. Section 9 discusses the impact of economic opening on the distribution of provincial income. Finally, section 10 contains some observations, and a discussion on policy implications.

This paper has involved an effort in data construction that was just as massive as our effort in data analysis. We had to combine information from the (infrequent) input-output tables, the (occasional) industrial census, and the annual industrial surveys; and to interpolate data, where necessary, in order to build a data set of annual output, employment and wage rates in the 28 three-digit level (industries, as categorized by the International Standard Industrial Classification (ISIC) system). The creation of a consistent data set, where the output data is consistent with the employment data is an enormous undertaking of many years, and the reader is referred to Szirmai, Bai and Ren (2001) to get a sense of the amount of investigation involved.

(footnote 2 continued) Kuan Yew, former Prime Minister of Singapore, "Singapore has about five to ten years to maneuver on its highway of growth, before it is overrun by huge convoys coming from China and India The learning curve of the Chinese was so steep, it was scary ..." in "Singapore has to squeeze between giants," *The Straits Times Interactive*, September 3, 2001.

³ See Ghose (2000a, 2000b, and 2001) for analytical surveys on the international experience of how trade liberalization has affected employment, wages and global inequality.

The trade statistics used follow a customs classification system that is different from the production statistics. Furthermore, as there was a switch to a new customs classification system during the period of our analysis, the early data on trade had to undergo two conversions: first, to reclassify the export and import items according to the Harmonized Commodity Description and Coding System; and the second, to reclassify the export-import data according to the ISIC data.

We wish to emphasize at the outset the preliminary nature of the results reported here. We plan in future work to check the robustness of our results due to variations in the procedures used in putting together the data set.

2. The context

China is undergoing two simultaneous economic processes: it is moving from an autarkic, centrally-planned economy to a market economy that is integrated into the international division of trade; and it is developing from an agriculture-based economy to a modern industrialized economy with a large service sector. Analyses that have focused only on China's transition from central planning have led to erroneous diagnoses of the mechanisms behind its post-1978 growth.⁴ On the other hand, analyses that focus only on the development process will arrive at results that are widely at odds with the predictions of standard neoclassical economic theory, and hence may wrongly conclude that standard economic theory is inapplicable to developing economies. The two key analytical points to remember for comparative analysis are that:

1. Unlike Poland and the Russia Federation, which were urbanized, industrialized economies, on the eve of their respective market reforms, China had a subsistence agricultural economy.
2. Compared with Indonesia and India, China's private sector faced much more severe legal discrimination (it was in fact largely illegal until the mid-1980s); Regulation of economic activities in China was both much more pervasive and stringent, and China's State-owned sector was proportionately much bigger.

Table 1 summarizes the pattern and sources of growth in China over the last two decades. Part A of table 1 shows that China's growth pattern displays the features of a developing economy in transition. China began as an overwhelmingly subsistence peasant economy with 70.5 per cent of its workforce in 1978 in agriculture. The subsequent growth of the industry-dominated secondary sector is typical of a developing economy undergoing industrialization; the share of agricultural in GDP fell from 41.3 per cent in 1978 to 17.4 per cent in 1999, and the secondary sector's share surged from 34.0 per cent to 51.8 per cent.

The dramatic increase in the employment share of the tertiary sector is also typical of a transition economy. Prior to liberalization, the service sector under central planning was suppressed in conformity with Soviet-style Marxism that views the service sector as "non-productive", if not superfluous. This explains why net material output (the

⁴ For a review of the misdiagnoses, see Woo (1999; 2001).

measure of total output and the proxy for economic welfare in Soviet-inspired economies) does not include service-sector output in its calculation. Naturally, the size of the service sector in a command economy was normally kept to the minimum necessary for everyday life to be tolerably convenient. When service activities were gradually permitted from 1979, the emergence of retail, commercial and transportation firms pushed the tertiary sector's share of employment from 12.2 per cent in 1978 to 26.9 per cent in 1999 - an increase that exceeded employment growth in the fast growing secondary sector.

Table 1, part B shows the average GDP growth rate in the four main phases of China's economic history, and the contribution of each sector to the average growth rate.⁵ It confirms that industrialization has been the main engine of growth since 1984, and that it is continuing to expand. The industry component of the secondary sector accounted for 39 per cent of growth in 1985-88, 41 per cent in 1989-91, and 56 per cent in 1992-99. The rapid growth of the share of manufactures in China's exports since 1978-99 indicates that China's growing foreign trade spurred the growth of industrial firms.

Figure 1 uses a three-dimensional production possibility frontier (PPF) to show the structural transformation of China as a result of reforms. In 1978, China was at point C on the KLM plane; and since then it has been moving towards point B on the NOP plane, causing output to increase in its heavy industries, light industries, and service industries.⁶ Figure 1 shows the fundamental reason why economic transition in China did not cause a collapse in industrial output as in Poland and the Russian Federation which, as mentioned earlier, were already urbanized, industrialized economies when reform was introduced. However, central planning had created in these two countries a heavy industrial sector that was too big, and light industrial and service sectors that were too small, in the context of the market economy situation; marketization thus meant moving from point A to point B, causing output in heavy industries to fall.⁷

⁵ The four phases are: (1) growth led by agricultural reforms, 1979-84; (2) growth led by industrial reforms, 1985-88; (3) growth in 1989-91, following the freezing of the 1979-88 growth strategy; and (4) growth guided by the new doctrine of a socialist market economy with Chinese characteristics; the process of convergence to a private market economy was accelerated from 1992 onwards.

⁶ Strictly speaking, the inefficiencies of collective agriculture meant that China was actually operating below the PPF, which was a major reason why agricultural output did not fall. Since a PPF is drawn for a given labour size and capital stock, figure 2 cannot account for all features of China's economic transformation. For example, while the proportion of employment in agriculture has gone down, the absolute number has risen from 283 million in 1978 to 354 million in 1999.

⁷ See Sachs and Woo (1994) for a detailed discussion of this comparison. Essentially, marketization of a centrally-planned economy that is already industrialized leads to economic restructuring, while marketization of a centrally-planned economy that is characterized by subsistence agriculture leads to economic development. This difference explains why all the economies of Eastern European and the former Soviet Union have experienced output collapse even though they have differed greatly in the speed and extent of their marketization programmes, and why China, the Laos People's Democratic Republic and Viet Nam experienced increases in their growth rates despite big differences in their marketization programmes. The output difference within Eastern Europe and the former Soviet Union came only after the initial collapse, the fast-reforming economies recovering faster and better, and the slow-reforming economies experiencing delayed, and weaker recoveries (Berg, et. al., 1999).

It is important to realize that the primary mechanism propelling the movement from point C to B in figure 1 was the emergence of non-State industrial firms, particularly in rural China. Table 2 shows the composition of industrial output (measured in 1995 prices) by ownership over time. Because the bulk of collectively-owned enterprises and individually-owned enterprises are located in the rural areas, their sum is a proxy for rural industrial enterprises. The State-owned enterprises (SOE) share of industrial output has plummeted from 85 per cent in 1978 to 24 per cent in 1999 while the rural share leapt from 15 per cent to 49 per cent. Woo (1998) calculated that rural industrial enterprises accounted for 30 to 37 per cent of the increase in GDP in the 1985-93 period.

As we find in our investigation of the impact of trade on employment and wages in China's manufacturing sector, the gradual retreat of central planning has caused the outcomes to be different from those in a market economy. For example, although China has a clear comparative advantage in manufactured wearing apparel exports as evidenced by their steady growth, there is no clear indication that employment in this industry has increased as a result of the export surge.

We also find some seemingly surprising results when we look at the influence of trade on the wage gap between unskilled and skilled labour. However, these results cease to be surprising when we relax the assumptions of the Heckscher-Ohlin model to render the model more in line with China's economic circumstances. In particular, the ratio of wages for unskilled and skilled labour should increase, according to the standard resource-endowment model of international trade (i.e. Heckscher-Ohlin), but decrease, according to the newer foreign outsourcing model of international trade (Feenstra and Hanson, 1996). However, regardless of whether the resource-endowment model or the outsourcing model is correct, the observed change in this wage ratio could instead be reflecting the nature of China's policy regimes, especially in terms of industrial regulation and rural-urban migration.

Thus while the same market forces could cause different outcomes in different models of international trade, government preferences, expressed through economic regulation, could modify - or even reverse - any outcome that a free market economy might produce. Attention to this point is particularly important in interpreting economic developments in China because there has been, and still is, pervasive government intervention in resource allocation. We argue that the changes in China's employment and wage structures have been heavily influenced both by its economic institutions and its economic structure.

3. The process of economic opening in China

The evolution of trade policy

The first Customs Import and Export Tariff Schedule of the People's Republic of China was issued in 1951 and was in force until 1984. The average tariff rate was 52.9 per cent: the tariff rate for agricultural products was at 92.3 per cent and that for industrial products was 47.7 per cent. The second Customs Import and Export Tariff Schedule was introduced in 1985. The new average tariff rate was 38 per cent, with a rate of 43.6 per cent for agricultural products and a rate of 36.9 per cent for industrial

products. The tariff structure was also adjusted. The new tariff rates were 27.2 per cent for intermediate goods, 31.2 per cent for capital goods and 62.6 per cent for consumer goods.

Table 3 summarizes the deregulation of trade from 1986 to 1996, and table 4 shows the tariff structure for the 1982-1998 period, when the average tariff rate declined from 55.6 per cent in 1982 to 17.1 per cent in 1998.

Some authors have disputed the validity of the tariff picture portrayed in table 4 by computing what they call effective tariff rates (i.e. tariff revenue divided by total imports) as shown in table 5. However, effective tariff rates are analytically vacuous for a country which engages in a large amount of export processing activities; imported inputs have to be tariff-free otherwise the export processing activities would not be located in China. Besides, effective tariff rates do not portray accurately the added cost to the Chinese consumers of imported items. Of course, the official tariff rates err in overstating the added cost when substantial smuggling exists, which appears to be the case in recent years as revealed by the crackdown on smuggling in Xiamen in 2000.

Integration into the global trade and financial systems

The value of trade (export plus import of goods and services) was US\$20.64 billion in 1978 and US\$289.9 billion in 1996, which means in real terms, that it was 4.8 times higher in 1996 than in 1978. The growth and composition of exports are shown in tables 6 and 7. Table 8 shows the proportion of manufactures that are exported; the two most export-oriented manufacturing industries being wearing apparel (17.2 per cent), and machinery (10.1 per cent). Table 9 shows the destinations for China's exports; the biggest export markets for China (excluding Hong Kong (China) because of its role as an entrepôt or re-exporter) are Japan and the United States.

China's capital inflows have been mainly in the form of foreign direct investment (FDI). FDI inflows averaged US\$1 billion a year during the period 1981-1986, and grew quite rapidly after that. In 1992, FDI exceeded US\$10 billion, which represented over 20 per cent of total FDI inflows into developing countries. China is the second largest recipient of FDI after the United States. Table 10 shows the distribution of FDI by manufacturing sector.

Table 11 conveys the large extent to which China's economy has been internationalized. It shows that China's exports grew from an average of 7 per cent of GDP during the period 1979-1984 to 19.3 per cent in 1992-1999, and imports increased from an average of 7.1 per cent of GDP to 17.3 per cent. Trade in manufactured products is becoming the primary channel of global economic integration. Manufactured exports increased from 4.0 per cent of GDP in 1979-84 to 16.5 per cent in 1992-99, and manufactured imports increased from 5.1 per cent of GDP to 14.4 per cent.

Throughout this process of economic integration, China has been experiencing an unprecedented period of sustained high growth. This relationship between economic opening and a higher rate of sustained growth in China has been no accident; there can be no doubt about the causality between the two. Sachs and Warner (1995) showed, in a seminal paper on the trade-growth nexus, that 73 per cent of (economically) open developing economies had annual GDP per capita growth rates of more than 3 per cent while only 5 per cent of (economically) closed developing economies had annual growth rates higher than 3 per cent. More importantly, Sachs and Warner also showed that open

developing economies were catching up with the developed economies while the closed developing economies were not.

Even though international trade is good for growth, a more complete assessment of trade on a country's welfare must also analyze the distribution of the gains from trade-induced growth. Specifically, were there losers, and in what sense were they losers? And, how has China's global economic integration affected income distribution?

4. Output, productivity, wages and trade orientation in manufacturing

Table 12 shows the value added in 28 of the three-digit SITC product categories in China over the period 1980-1995 at 1980 prices (in yuan). Table 13 shows trade in manufactured goods (measured in US dollars) over the same period. Broadly speaking, the manufacturing sector does not appear to have been consistently hurt by trade over the entire 1980-1995 period. Every industry recorded increased output as well as increased imports during this period.

The only obvious signs of import-induced retrenchment were in the 1990-1995 subperiod, and these were largely limited to two industries: industrial chemicals and petroleum refineries. There were eight industries that experienced a decline in output growth between 1990 and 1995: tobacco, miscellaneous petroleum and coal products, rubber, fabricated metal products, other manufactures, textiles, industrial chemicals, and petroleum refineries (table 14). But for the first five of these eight items, the increase in each industry's exports in 1990-95 exceeded their increase in imports. This suggests that their decline in output would have been more severe without trade. This leaves three industries (textiles, industrial chemicals and petroleum refineries) that might have experienced trade-induced contraction in output during 1990-95.

Table 12 which reports labour productivity in the 28 product categories, shows that, overall, there was an increase in labour productivity over the 1980-1995 period. Table 15 reports the CPI-adjusted wage rates and the real product wage rates in these industries. Given the general rise in labour productivity (as shown in table 12), it was only to be expected that the wage rate by both measures rose. The general rise in real wages in 1980-1995 reflected the fact the average annual growth rate of GDP per capita was over 6 per cent during this period.

The changes (positive or negative) in the net trade position - exports minus imports - of most industries were stable during the 1980-95 period. Thus the net trade position of each industry can be used to classify it as either "export-oriented" or "import-competing". Table 16 shows the export-import ratio of each industry during the period 1980-1995; there are five types of trade orientation in the 28 industry categories:

- (1) Traditional exporters are the 10 industries that were net exporters throughout the period: food products (ISIC 311), beverages (ISIC 313), textiles (ISIC 321), wearing apparel (ISIC 322), footwear (ISIC 324), furniture (ISIC 332), miscellaneous petroleum and coal products (ISIC 354), rubber products (ISIC 356), pottery, china and earthenware (ISIC 361), and other manufactured products (ISIC 390). The two most export-oriented categories were the "wearing apparel"

and “footwear” industries, the exports of which were always higher than their imports by a factor of 10.

(2) New exporters are either industries that were net importers in 1980 and had become net exporters, at least since 1992, or industries that were briefly net importers before 1992: tobacco (ISIC 314), plastic products (ISIC 356), other non-metallic products (ISIC 369), and fabricated metal products (ISIC 381). The plastics industry was a net importer up to 1991, and its exports were twice the amount of its imports by 1995.

(3) Unclear trade orientation refers to the leather goods industry (ISIC 323), whose trade balance swung between positive and negative.

(4) New importers are the four industries that began as net exporters and have been net importers since 1992: wood products (ISIC 331), other chemical products (ISIC 352), petroleum refineries (ISIC 353), and glass products (ISIC 362).

(5) Traditional importers are industries that were net importers throughout the period: paper products (ISIC 341), printing and publishing (ISIC 342), industrial chemicals (ISIC 351), iron and steel products (ISIC 371), non-ferrous products (ISIC 372), non-electrical machinery (ISIC 382), electrical machinery (ISIC 383), transport equipment (ISIC 384), and professional and scientific equipment (ISIC 385). Paper products, non-electrical machinery, and industrial chemicals were exported in amounts significantly less than half of the value of their imports.

For convenience, we occasionally use the term "export-oriented industries" to encompass traditional exporters and new exporters, and the term "import-competing industries" to cover traditional importers, new importers and the leather industry.

5. Changes in manufacturing employment, and the impact of trade

Changes in manufacturing employment in the reform era

In the context of changes in China's economic circumstances described earlier, the post-1978 deregulations have initiated a process of economic restructuring and accelerated economic development. This has had two opposing effects on manufacturing employment. First, economic restructuring has meant the removal of direct and indirect subsidies to SOEs, resulting eventually in a reduction in their number of workers (unless the SOEs are able to undertake reforms similar to their capitalist competitors). Second, economic development has meant the reallocation of labour from agriculture to industries and services, resulting in a higher proportion (and number) of workers in the manufacturing sector. The implication is that the level and pattern of employment at any point in time depends on, the pace at which the SOEs are restructured as well as on the pace at which private firms are allowed to be established.

It is important to point out in this context that numerous changes in ownership classification have made analytical characterization of the firms still officially classified as SOEs rather difficult. Most of the enterprises classified as "urban collectives" are subsidiaries of SOEs, and they were set up to diversify the range of activities undertaken

by the SOEs. These urban enterprises (especially prior to 1992) resemble SOEs in their employment practices. From about 1994 onwards, a significant number of profitable SOEs listed themselves on the stock exchange, and hence changed their registered ownership status to "stockholding companies", with the State as the majority shareholder in most cases and the dominant shareholder in all cases. It is our understanding that urban collectives - and former SOEs - still operate in the mode of the remaining SOEs; thus our use of the term "SOE" in this section encompasses both these types of enterprises. There are two types of employment within SOEs: (i) staff and workers; and (ii) contract workers. The first type have implicit lifetime tenure and receive more generous benefits. From the mid-1980s onwards, new SOE workers were increasingly hired as contract workers, although not necessarily treated worse than the staff and workers. The workforce of the private enterprises, especially the township and village enterprises (TVEs), consists almost entirely of contract workers.

China's deregulation of the SOE sector can be divided into the following phases: no reform during the period 1978-84, gradual reform in 1985-88, macroeconomic austerity in 1989-91, renewed gradual reform in 1992-94, and intensified restructuring from 1995 onwards. The deregulation of the non-SOE sector began in 1984, halted during 1989-91, and accelerated from 1992 onwards. From table 17 it is possible to gain an insight into the employment consequences of these two sets of deregulation. The timing of these deregulations combined with the overall marketization of the economy to create rapid growth in manufacturing employment in the 1984-88 period, but reduced manufacturing employment after 1995. Heuristically speaking, the development process:

- dominated the half-hearted restructuring process in the 1978-88 period,
- slightly offset the restructuring process in 1991-95, and
- was strongly affected by the strong restructuring process in 1996-2000.

For the sake of accuracy, it should be pointed out that the post-1995 employment level also reflected the stringent economic austerity programme undertaken during the 1994-98 period.

The composition of manufacturing employment in table 17 also shows the interaction between the economic restructuring and economic development processes. Employment of staff and workers increased by 43 per cent between 1978 and 1988 along with a 100 per cent rise in the number of contract workers, indicating that there was little restructuring of SOEs during this period. The small 6 per cent growth in employment of staff and workers between 1988 and 1995 compared with the 25 per cent growth in employment of contract workers suggests that restructuring took the form mainly of freezing traditional SOE employment. The big change occurred over the period 1995-2000 with the retrenchment of 12 million staff and workers, a number that exceeded the 4 million new contract workers, resulting in a fall in total manufacturing employment of 18 per cent. Manufacturing employment in 2000 remained the same as it had been in 1986.

Two important points can be made concerning this recent loss in manufacturing employment. First, however regrettable the hardships associated with job losses, it is important to provide adequate social safety nets and effective job retraining programmes. The funds spent on these structural adjustment programmes would be a temporary burden on the budget; but they will be a permanent claim on the budget if they are used to

continue to subsidize the economically non-viable SOEs. These inefficient, and often corrupt SOEs are a drag on economic growth because they reduce capital formation by the private sector and divert labour resources from jobs which have higher income growth potential. The basic point is simply that China's growth would have been higher if the SOE subsidies had, instead, been used on adjustment programmes in the short-run, and then on capital formation in the long-run.

Second, when assessing the 1995-2000 reduction in manufacturing employment it is important to bear in mind that this reduction represents only a short-term consequence of the process of economic restructuring. The long-term consequence of this process is the replacement of inefficient operational practices in enterprises by more efficient operational practices (e.g. the replacement of staff and workers by contract workers). When the inefficient operational practices cannot be separated from the public ownership nature of the enterprises, then the process of economic restructuring, working through market mechanisms (of which international trade is a powerful example), will replace SOEs with non-SOEs (e.g. TVEs) (township and village enterprises). Thus, while the short-term consequences of economic restructuring may reduce the level of manufacturing employment, this may not represent a permanent trend. The long-term consequences of economic restructuring are to be seen in the pattern of manufacturing employment (e.g. distribution of employment within the sector, and the proportion of contract workers) and not in the level of employment. The long-term level of manufacturing employment is determined by the process of economic development.

Econometric analysis of the impact of trade on employment and output

Optimally, the econometric work should be grounded in the understanding that international trade is a necessary component of the measures to effect economic transition to a market economy. International trade has two functions:

- (i) It reinforces economic restructuring of the manufacturing sector by promoting change in production relations and production patterns within the sector; and
- (ii) It enables economic development in that foreign demand helps promote production and thus the level of manufacturing employment.

Since increased international trade leads to the appearance of new employment forms (e.g. contract workers), and new types of enterprise (e.g. TVEs), the analytically correct variables for studying (i) the employment effect of trade on any particular manufacturing industry; and (ii) the output effect of trade are the proportion of contract workers and the output from the new enterprises respectively. However, data on these variables at the disaggregated manufacturing industrial level are not available; we only have data on the *total* output and *total* employment in each manufacturing industry. Since these aggregate figures encompass the direct and powerful influences of other variables (e.g. general macroeconomic conditions and degree of preferential treatment received by SOEs), our econometric analysis is handicapped from the start with the use of poor proxies for the theoretically-relevant dependent variables.

Given the significant effects of deregulation of the SOE and non-SOE sectors and the two episodes of macroeconomic austerity on the level and pattern of manufacturing employment, our quantitative investigations could not isolate the independent effects of

trade on employment. Heavy subsidies for the SOE sector up to 1995 meant that import penetration did not lead to employment losses in the import-competing industries. Considerable discrimination against private enterprises until 1992 resulted in employment growth in the export sector being smaller than it should have been. The resulting dominance of the economic development process over the restructuring process in 1980-95 was the main reason why employment increased in both the export sector and the import-competing sector during this period. This explains the figures shown in table 18 concerning the share of the labour force.

- In traditionally export-oriented manufacturing industries, employment rose from 3.4 per cent in 1980 to 4.4 per cent in 1995 (a movement in the expected direction);
- In newly export-oriented manufacturing industries employment rose from 2.0 per cent to 2.3 per cent (a movement in the expected direction);
- In the newly import-competing manufacturing industries employment increased from 0.7 percent to 1.0 percent (a movement **not** necessarily in the expected direction); and
- In the traditionally import-competing manufacturing industries employment rose from 6.4 percent to 6.5 percent (a movement **not** necessarily in the expected direction).

We divide our econometric analysis into two phases. The first phase examines the employment and output consequences in the traditionally export-oriented manufacturing industries, and the second phase focuses on the traditionally import-competing industries.

For the traditionally export-oriented industries, the specification for the cross-section regression for each year is:

$$(\text{employment or output growth}) = a + b * (\text{export performance})$$

where *export performance* is measured as either the growth rate of exports or the net export position normalized by the export level. The expected sign of coefficient "b" is positive. Table 19 reports the results of this specification: the estimated coefficients of export performance are generally insignificant. In the two cases in 1994, where the positive coefficients are statistically significant, the result was not robust for the second specification of export performance.

Table 20 uses time series regressions to investigate the employment and output effects from export performance. The specification of the regression equation for each export-oriented industry is:

$$(\text{employment or output growth}) = a + b * (\text{export performance})$$

and we add the term "*c*(general macroeconomic conditions)*" to some regressions. The results from the time series regressions repeat the statistical insignificance found in table 19. The results are unchanged when we control for the overall business-cycle conditions by including the growth rate of aggregate GDP as a regressor.

The difficulty in obtaining a satisfactory estimate of how export performance has affected the export industry can be appreciated by looking at table 21, which shows the "gross" employment-export elasticities of the 10 traditionally export-oriented industries. These gross elasticities are computed as the ratio of the actual percentage change in

employment to the actual percentage change in exports; they are not the *ceteris paribus* elasticities (the partial derivatives) identified by theory. (We excluded 1989-91 in our calculations because of the unusual economic circumstances of that period.) Only 4 of the 10 industries showed positive ratios as expected.

For our econometric investigation of the traditionally import-competing industries, the specification for the cross-section regressions is:

$$(\text{employment or output growth}) = a + b * (\text{import penetration})$$

where *import penetration* is measured as either the growth rate of imports or the net export position normalized by the export level (with expected sign of coefficient "b" being negative and positive respectively). Table 22 reports the estimations' results concerning the impact of import penetration on employment and labour growth. The estimated coefficients that have the theoretically predicted sign are almost always statistically insignificant. Furthermore, as shown in table 23, only for 2 of the 9 industries (non-ferrous metals, and non-electrical machinery) do gross employment-import elasticities have the expected sign.

We wish to emphasize that we do not regard the lack of strong statistical results as evidence that the trade in manufactured products has not affected China's manufacturing sector; rather, we regard this as evidence of the inappropriateness of the proxy variables used by us in the absence of data on the correct variables. We can venture towards the conclusion of a zero trade impact only if our econometric investigation of wage behaviour in the next few sections also shows a lack of statistical significance. The wage data are better than the employment data because the Government allowed them to reflect labour market conditions more fully.

6. The effects of trade on the wage gap between unskilled and skilled labour: evidence from the literature

The Heckscher-Ohlin (H-O) model is the standard for analyzing issues in international trade. It states that when trade is opened up, a country will export goods that use more intensively the factor with which that country is more abundantly endowed. One of the model's well-known properties, known as the Stolper-Samuelson theorem, is that increased trade liberalization will cause the rate of return on the more abundant factor to rise, and vice-versa. With this analytical framework, it was natural for many United States economists to link the post-1973 increase in wage inequality to the growing import volume of low-skill-intensive goods from developing economies, which, they believe, caused the ratio of wages of unskilled labour (W_u) to wages of skilled labour (W_s) to fall.

In a landmark study, Robert Lawrence and Matthew Slaughter (1993) found that the prices of high-skill-intensive goods almost always increased less than the prices of low-skill-intensive goods, a finding that contradicts the logic of the Stolper-Samuelson mechanism, and thus implies that increased international trade could not have been an empirically important cause of the large rise in the skill premium between 1973 and 1992. Lawrence and Slaughter (1993) suggested that skill-biased technical change was the main cause of the increased skill premium. To use a simple example, the decline in W_u/W_s was the result of W_s rising because of the technology-led expansion of the

computer chip industry, and not the result of Wu falling because of the import-induced contraction of the potato chip industry.⁸

Feenstra and Hanson (1996) have responded to Lawrence and Slaughter's conclusion by proposing that the fall in the Wu/Ws ratio be interpreted in the context of a foreign outsourcing model that emphasizes trade in intermediate inputs, and not in the context of the H-O model that emphasizes trade in final goods. Specifically, the production of a good can be divided into a series of activities that are arranged in ascending order according to the ratio of skilled to unskilled labour required to perform each activity. The lower range of this continuum of activities is located in the developing economies, and the upper range in the developed economies.

Outsourcing from a developed economy to a developing economy means the transfer of the bottom portion of the upper range production activities undertaken in the developed country to the developing country. These transferred activities then constitute the top portion of the lower range production activities engaged in by the developed country. To stay employed, the laid-off low-skilled workers in the *developed economy* have to accept lower wages, resulting in a widening wage gap between skilled and unskilled labour. In the *developing economy*, meanwhile, the demand for skilled labour increases, causing a rise in the wages of skilled labour, and thus a widening of the wage gap there.

It is important to note the difference in implications of the H-O model and the foreign outsourcing model for the wage gap between unskilled and skilled labour. For the developed economy, both models predict that trade liberalization will increase the proportion of output that is skill-intensive, and thus raise the Wu/Ws ratio. For the developing economy, the H-O model predicts that it will export low-skill-intensive goods, leading to a narrowing of the wage gap between unskilled and skilled labour because of the fall in Ws and the rise in Wu. The foreign outsourcing model predicts that the increased trade will lead to a transfer of production activities to the developing economy. This transfer will raise the average level of skills required in the production activities of the developed economy, causing Ws to rise, thereby widening the wage gap between skilled and unskilled labour.⁹

As China has the world's largest pool of unskilled labour, and receives the most FDI among developing countries both the H-O model and the foreign outsourcing model apply to it, arguably it is in the transition from the H-O model to the foreign outsourcing model. However, China appears to be undergoing an even more fundamental transition: from a command economy to a market economy. The undeniable reality is that China's economy is still a far cry from the market economy assumed by the H-O model and the foreign outsourcing model.

The household registration system severely impedes labour mobility between rural and urban residents. The absence of a housing market and the non-transferable nature of most retirement schemes are further hindrances to labour mobility. Capital

⁸ Sachs and Shatz (1994) found that international trade had a statistically significant effect on prices of goods that conformed to the H-O model, but they could not determine the relative contribution of import competition and skill-bias on technical change.

⁹ Feenstra and Hanson (2001) provide a recent survey on the debate between the H-O model and the foreign outsourcing model.

mobility is hampered by the monopoly status of the State banks, that base their functions on many non-economic considerations, and by the bias of the stock exchange against the listing of non State enterprises. The tax system has been improved, but there remain substantial defects in its operation to justify the quip that the value-added tax (VAT) introduced in 1994 stands for "very arbitrary taxation".

Many SOEs receive subsidies and various types of preferential treatment, and many more of them do not operate on a profit-maximization basis. It was only recently that private property received equal constitutional protection as State property.

The basic point is that regardless of whether the H-O model or the foreign outsourcing model applies more appropriately to China, there are enough policy interventions and institutional barriers to cause such that the observed movement in W_u/W_s to be the opposite of what the true model predicts. The danger to avoid is making China fit a model when the goal is to understand how policy actions and structural characteristics have interacted with economic forces to shape the observed outcome.

7. Changes in (W_u/W_s) , and their causes

Tracking the movements

We do not have direct data on wages for skilled and unskilled labour. However, if we can show that China's exports comprise low-skill-intensive goods and that its imports comprise mainly high-skill-intensive goods, then we can use the average wage in the export-oriented industries as a proxy for the wages of unskilled labour, and the average wage in the import-competing industries as a proxy for the wages of skilled labour. *This is a valid proxy if we are interested only in the direction of the (W_u/W_s) movement*, and not in the absolute size of the wage gap.

Using informal reasoning, it follows that skilled labour earns a higher wage because its marginal productivity is higher than that of unskilled labour. The corollary is that if the average labour productivity in industry A is higher than the average productivity in industry B, then industry A has a higher proportion of skilled labour in its total labour force. Thus, if import-competing industries have a higher labour productivity than export industries, then export industries are employing unskilled labour more intensively than the import-competing industries, which makes $(W_{\text{export}}/W_{\text{import}})$ move in the same direction as (W_u/W_s) is moving.

More formally, we know

$$W_{\text{export}} = \text{sexp} \cdot W_u + (1 - \text{sexp}) \cdot W_s$$

$$W_{\text{import}} = \text{simp} \cdot W_u + (1 - \text{simp}) \cdot W_s$$

where sexp = share of unskilled labour in the export industry, and

simp = share of unskilled labour in the import industry.

If we find in the data that $(W_{\text{export}}/W_{\text{import}}) < 1$, then we know that $\text{sexp} > \text{simp}$, i.e. the export industry has a high intensity of unskilled labour and the import industry is skill-intensive.

To show that $(W_{\text{export}}/W_{\text{import}})$ moves in the same direction as (W_u/W_s) , we prove that there is a positive monotonic relationship between the two ratios, using the following notation:

$$\begin{aligned}
y &= (W_{\text{export}}/W_{\text{import}}) \\
x &= (W_u/W_s) \\
y &= [(s_{\text{exp}}*x) + (1-s_{\text{exp}})] / [(s_{\text{imp}}*x) + (1-s_{\text{imp}})] \\
dy/dx &= \{ [s_{\text{exp}}-s_{\text{imp}}] / [(s_{\text{imp}}*x) + (1-s_{\text{imp}})]^2 \} \\
&> 0 \text{ when } s_{\text{exp}} > s_{\text{imp}}, \text{ which is the case when } (W_{\text{export}}/W_{\text{import}}) < 1.
\end{aligned}$$

There is a monotonic relationship between $(W_{\text{export}}/W_{\text{import}})$ and (W_u/W_s) when $(W_{\text{export}}/W_{\text{import}}) < 1$.

Table 24, part A shows the ratio of weighted labour productivity in the traditionally export-oriented industries to the weighted labour productivity in the traditionally import-competing industries. Table 24, part B shows the ratio of the weighted wage in the traditionally export-oriented industries to the weighted wage in the traditionally import-competing industries. We use five weighting schemes:

- simple average;
- current contribution of each industry to the net export position of the group to which its trade orientation is classified;
- 1985 contribution of each industry to the net export position of the group to which its trade-orientation is classified;
- 1990 contribution of each industry to the net export position of the group under which its trade orientation is classified; and
- 1995 contribution of each industry to the net export position of the group under which its trade orientation is classified.

In work not reported in table 24, we also use an alternative set of weights that reflect the base year employment share of the industry in its trade-orientation classification.

We obtain the same answer in all five weighting schemes used.¹⁰ The ratio $(W_{\text{export}}/W_{\text{import}})$ is always below 100 per cent, confirming that the export industries have a higher intensity of unskilled workers than the import-competing industries. It is therefore valid to look at movements in $(W_{\text{export}}/W_{\text{import}})$ to determine the direction in which W_u/W_s is moving.

We derive the W_u proxy by constructing two weighted averages of wages in the export industries and a simple average of wages in the import industries. The first set of weights are based on the 1980 (beginning of period) employment share of the export-oriented industries. The second set of weights are based on the 1995 employment share. The weighted average version of W_u indicates the expected wage for an individual, while the simple average version of W_u indicates the expected wage for an industry.

The equivalent procedures were those used in the import industry to construct three indicators of W_s . We use:

- USI80 to denote the W_u/W_s index constructed with 1980 weights;
- USI95 to denote the W_u/W_s index constructed with 1995 weights; and
- USIS to denote the W_u/W_s index constructed from simple averages.

For the purpose of our analysis, we focus on USI80 and USI95 in order to determine the wage for the typical worker in the export-oriented industries and in the

¹⁰ In work not reported in Table 24, we also use as an alternative set of weights that reflect the base year employment share of the industry in its trade-orientation classification, and we obtain answers that are qualitatively similar to those in Table 24.

import-competing industries. Figure 2 reports all three indicators of (Wu/Ws), with its value in 1980 set at 1000. We omitted 1981-83 because wages in each industry in these years were interpolated by us from 1980 data in a proportional manner according to the total wage bill and total labour in the entire manufacturing sector in 1981, 1982 and 1983. USI80 and USI95 moved in very similar ways. They indicated a 7 per cent drop in the unskilled-skilled wage ratio between 1980 and 1984. USI80 and USI95 continued falling in the 1984-1992 period, and then reversed themselves to produce in the 1993-95 period an average (Wu/Ws) ratio that almost equalled the average Wu/Ws ratio in the 1984-85 period. Overall, we would describe the weighted average Wu/Ws as generally falling during the 1980-92, and then returning to (almost) the 1984-85 level in the 1993-95 period.

The USIS indicator gives a substantially different picture. After falling 5 per cent between 1980 and 1984, this Wu/Ws index was generally trendless until 1992, and then jumped in 1993 above the 1980 level. As mentioned earlier, USIS is less relevant for us than USI80 and USI95.

The common features of all three Wu/W indices are: (a) a decline in the 1980-84 period; (b) a further decline in the 1984-92 period, and (c) a jump in the 1993-95 period to the 1988-90 level or higher.

Explaining the observed Wu/Ws movement

It is our assessment that the piecemeal introduction of the market mechanism in resource allocation and the gradual lifting of restrictions on entry into the industrial section by non-State enterprises after 1978 necessarily meant that Wu/Ws would have declined in the short and medium term even if China had remained closed to international trade and international investment. In the short and medium term, *China's opening up to trade reinforced this decline in Wu/Ws*, because the opportunity to export accelerated the growth of domestic non-State enterprises, especially the (TVEs), in the rural areas. *China's opening up to international investment also helped to lower Wu/Ws* because foreign-funded enterprises (FFE) were more skill-intensive in their operations than the TVEs. We conclude that marketization of economic activities, diversification of the ownership structure, and expansion of international trade exerted the most downward pressure on Wu/Ws in the 1978-91 period. Our reasoning is based on the nature and pattern of China's economic growth since 1978, which absorbed surplus agricultural labour. The point is that the movement of China's economy from point C to point B in figure 1 necessarily entailed a drop in Wu/Ws even if economic opening had not accompanied marketization and diversification of the ownership structure. The two features, besides surplus labour, required to generate this outcome have been:

- (1) the continued existence of the household registration system that render movement of unskilled labour from the rural to urban areas difficult; and
- (2) domination of the industrial sector by SOEs until about 1992, and their continued significant role in the economy since then.

In 1978, nearly all urban workers were employed in government agencies or in SOEs and nearly all technically-trained personnel worked in SOEs, which are located only in urban areas. a typical urban resident in 1978 consumed about three times that of a

rural resident; and this did not take into account the host of benefits accorded urban resident (e.g. free housing, and pension). The wage of urban unskilled labour greatly exceeded that of rural unskilled labour. The latter could not move to the cities because it was illegal to do so under the household registration system, and the SOEs would not have hired them even if they had offered to work for less.

When new non-State industrial enterprises were allowed to be established, the bulk of them were located in the rural areas because they could hire unskilled labour at a lower wage than that paid to the fully employed urban labour force. Moreover, they could obtain land much more easily than in the cities, where the land market was, in any case, non-existent. In order to hire skilled labour, the rural enterprises had to offer higher wages than the SOEs in order to entice them to give up the guaranteed lifetime appointments and generous fringe benefits they received at the SOEs. Since the newly-established non-State industrial firms could pay a Wu lower than SOEs but had to pay a Ws higher than SOEs, their Wu/Ws ratio was naturally lower than that of SOEs. As the number of non-State enterprises increased and their share of total output rose, the economy-wide average Wu/Ws naturally dropped as a matter of mathematical necessity.¹¹

Hence the drop of 7 per cent in USI80 and USI90 in figure 2 between 1980 and 1984, and their continued decline until 1992 are not surprising. The increase in international trade spurred the growth of new non-State firms, particularly in the coastal provinces, and this quickened the decline in the economy-wide Wu/Ws. Fundamentally, it was the existence of a large amount of surplus labour that allowed the emergence of new non-State enterprises without a reduction in the size of the SOE sector, and caused the economy-wide Wu/Ws ratio to decline.¹²

This ability to draw upon the large pool of agriculture labour explains why the expansion of the export sector in China was also accompanied by an expansion of the import sector, contrary to what the H-O model predicts (table 18). While we have provided an explanation for the decline in USI80 and USI90 over the period 1980-92, we now need to explain the rise in these two indices in 1993-95. On the basis of the econometric evidence that will be presented in section 8, we believe that this upswing in Wu/Ws reflected both the cumulative effects of the market reforms, and a significant change in the Government's approach to economic management.

There was a fundamental change in the zeitgeist of China's politics and economy after the former Soviet Union self-destructed at the end of 1991, and the Russian Federation moved quickly towards a market economy. By the end of 1992, China had committed itself to accelerating the pace of deregulation and the pace of establishing the necessary market-oriented infrastructural institutions. Shortly thereafter, new rural enterprises were no longer forced to adopt the guise of collectively-owned enterprises, and the existing collectively-owned rural enterprises were allowed to implement "insider privatization" by converting themselves into shareholding cooperatives, export

¹¹ Zhao (2001) has independently used a similar line of reasoning to argue that FFEs would naturally have a higher (Ws/Wu) ratio than SOEs even if FFEs were no more skill-intensive in their manufacturing than the SOEs.

¹² The number of SOE workers increased every year between 1978 and 1995, from 74.5 million to 112.6 million, which were 19 per cent and 17 per cent respectively of total employment.

procedures were simplified, import barriers were lowered, interest rate controls were loosened, a VAT system was introduced, and the currency was unified at the black market level. The accelerated pace of market-based reforms took place in an economic setting that was very different from 1978. By 1993, the State no longer controlled the economy, and SOEs produced 44 per cent of industrial output compared to 85 percent in 1978. The pool of surplus labour was also much smaller; agriculture's share of employment was 56 per cent (or, more likely, less than 47 per cent because of the large illegal rural migration that had occurred) compared to 71 per cent in 1978.

The question is whether increased trade pressures from China's greater integration into the world economy, together with the structural changes within its economy, caused Wu/Wsto rise. Specifically, did Wu/Ws rise because the large expansion of export-oriented industry pulled up Wu? Or was it because the easier inflow of imports forced Ws to decline? Or, again, was it the result of both Wu rising and Ws falling because of identifiable trade reasons? The next section attempts to answer these questions through econometric testing.

8. Econometric testing for the effects of trade on wages

The estimation framework

Our discussion provides guidance to the econometric analysis in two ways:

- If an industry aims to expand production, it has to increase wages in order to attract workers away from their present employment unless there is a large pool of rural workers who are receiving a wage lower than that in the industrial sector; and
- Productivity improvements will cause a firm to increase production, and thus raise the wage unless the pool of lower-wage workers is large.

The three key variables - wage, production, and productivity - have to be measured in relative terms to filter out the overall trends in the economy so that the econometric framework, based on partial equilibrium reasoning, can be tested correctly. Thus the *relative wage in sector i* is "wage in sector i" normalized by "economy-wide wage rate," and *relative productivity in sector i* is "productivity in sector i" normalized by "economy-wide productivity."

The effects of trade on wages are introduced into the estimations by the following three specifications:

Specification 1 is designed for export-oriented industries. The rationale is that, *ceteris paribus* (which includes domestic demand being given), an expansion of exports (X) will require an increase in production. We therefore regress:

$$\left(\frac{\text{wage rate in sector } i}{\text{overall wage rate}}\right) = \partial_0 + \partial_1 \left(\frac{X \text{ in sector } i / \text{sector } i \text{ GDP}}{\text{overall } X / \text{overall GDP}}\right) + \partial_2 \left(\frac{\text{labor productivity in sector } i}{\text{labor productivity in economy}}\right) + e$$

On the basis of our discussion, we expect the signs of the export coefficient and the productivity coefficient to be positive.

Specification 2 is designed for import-competing industries. *Ceteris paribus*, a rise in imports (M) will mean a cutback in production. So we regress:

$$\left(\frac{\text{wage rate in sector } i}{\text{overall wage rate}}\right) = \partial_0 + \partial_1 \left(\frac{M \text{ in sector } i / \text{sector } i \text{ GDP}}{\text{overall } M / \text{overall GDP}}\right) + \partial_2 \left(\frac{\text{labor productivity in sector } i}{\text{labor productivity in economy}}\right) + e$$

We expect the import coefficient to have a negative sign and the productivity coefficient to be positive.

Specification 3 is designed to be applicable to both export-oriented and import-competing industries, and for the pooling of both types of industries. By stressing the observation that an industry exports as well as imports, the appropriate trade variable may be the trade balance (X-M) of the industry. The rationale, as before, is that, *ceteris paribus*, a rise in the trade balance (X-M) requires an increase in production. We employ two measures for the trade balance:

- the actual size of the trade balance of each industry, denoted in thousands of US\$; and
- the trade balance (X-M) of the industry normalized by the total trade (X+M) of the industry.

The regression equation is:

$$\text{relative wage} = a_0 + a_1 * (\text{trade balance measure}) + a_2 * (\text{relative productivity}) + e$$

We expect both coefficients to be positive.

Our testing procedure is standard. If the sign of the coefficient is in line with our theoretical assumptions, then we will consider a coefficient to have:

- convincing statistical support if its t-statistic equals or is greater than 2; and
- plausible statistical support if its t-statistic is greater than 1.8 but less than 2.

Estimation results

Table 25 reports the results for the cross-section regressions using Specification 1 for 1980 and for every year from 1984 to 1995.¹³ Columns (a) and (b) contain the estimates from the entire sample of 14 export-oriented industries, and columns (c) and (d) are the estimates from a sample that limits itself to the 10 industries that had positive trade balances throughout the period.

Columns (a) and (b) show a strong break in the wage equation from 1993 onwards. In the 1980-1992 period, no export coefficient receives any statistical support, and only 1 out of 10 productivity coefficients is statistically significant. Things change after 1992. The export coefficient receives plausible statistical support in 1993 and 1994, and convincing statistical support in 1995. The productivity coefficient has convincing statistical support in 1993, 1994 and 1995. The pooling of the 1993-1995 observations verifies the convincing statistical support for specification 1.

The estimates reported in columns (c) and (d) repeat the broad features of the results in columns (a) and (b), but with lower statistical significance. For example, the productivity coefficient from the pooled regression has a t-statistic of 1.4 compared with the t-statistic of 8.4 in column (b).

Our reading of the regression results in table 25 is that:

¹³ As explained earlier, we omit 1981-1983 here because we interpolated the wage data were interpolated by us using 1980 as the base.

- The existence of substantial surplus labour in the 1980-92 period prevented export expansion from pulling up the wages of unskilled labour. Export growth increased the employment of unskilled labour in manufacturing but did not raise its wage rate.
- With the reduction in the pool of surplus labour after 15 years of high growth, the continued strong export growth was able to raise the wages of unskilled labour from 1993 onwards. China is on the verge of moving out of the Lewis model into the realm of neoclassical economics.
- Given the smaller t-statistics in columns (c) and (d), improvements in productivity have positive but unreliable effects on the wage of unskilled labour.

Table 26 contains the estimates for specification 2. Columns (a) and (b) are the estimates based on all import-competing industries, broadly defined; and columns (c) and (d) are the estimates based on the 9 industries that ran trade deficits throughout 1980-1995 period. Both sets of estimates fail to find support for the hypothesis that import competition restrained wage increases for skilled labour. The import coefficient is negative only in 1987, and it is not statistically different from zero. Column (a), in fact, shows 4 positive estimates that have t-statistics above 1.8. This contradiction suggests that causality may be running from higher wages to higher imports (via loss in competitiveness). As we discuss later, unexpected finding reveals something about the nature of China's SOEs.

The productivity coefficients in column (b) are all positive, and they have t statistics greater than 1.9 in 12 out of 13 cases. The latter finding indicates that productivity growth in the import-competing industries consistently translated into wage gains. Column (d) tempers this conclusion with the qualification that this productivity-wage link may have been statistically reliable only from 1991 onwards.

Overall, the results in table 26 lead us to an explanation that is consistent with what we know about SOE behaviour during the 1980-1995 period.¹⁴ Fundamentally, SOEs were more keen to maximize the welfare of their employees (particularly their managers) than to maximize profits for the State. Thus any productivity improvement was quickly disbursed through higher wages. Although the SOEs were concentrated in the import-competing industries, import competition did not restrain the proclivity of the SOEs to overpay their employees because the Government was committed to bailing them out through various means, including subsidies and trade barriers.¹⁵ This would explain why the import coefficient was positive.

Table 27 summarizes the regression results based on specification 3. The actual trade balance was used for the trade variable. Columns (a) and (b) display the full sample estimates, columns (c) and (d) the estimates for the export-oriented industries, and columns (e) and (f) the estimates for the import-competing industries. Given the difference in wage response in the two types of industries, we do not expect a good statistical fit, and this is borne out by column (a). Since the productivity coefficient was estimated quite satisfactorily in Specifications 1 and 2, it is reassuring that column (b) also shows this to be the case. Columns (c) and (d) yield about the same results as the Specification 1 regressions in table 13, especially the finding that strong statistical

¹⁴ See Woo, et.al. (1994) and Fan and Woo (1996) on this topic.

¹⁵ Zhang, Zhang and Wan (1998) provide estimates of protection levels for various industries in 1994.

support emerges after 1992 for a trade-wage link in the export-oriented industries. Columns (e) and (f) essentially broadly confirm the results of specification 2 regressions in table 14; that is, there is no negative relationship between wages and import penetration and a strong positive relationship between productivity and wages.

Table 28 differs from table 27 in that the trade variable is net export normalized by total trade (which is export plus import). The results in table 28 are fairly similar to those in table 27, albeit less satisfactory.

Tables 29 and 30 report our attempts to find a trade-wage link by running regressions for each industry across time with Specifications 1 and 2 respectively. If our interpretations of the cross-section regressions are valid, then: (a) there should not be a strong negative relationship between trade and wages for the import-competing industries because of the non-profit maximizing behavior of the SOEs that dominate these industries, (b) there should not be a strong positive relationship between trade and wages for the export-oriented industries because of the change in the supply of surplus labour during the period, and (c) there should not be strong evidence contradicting a positive relationship between productivity and wages.

Table 29 reports convincing evidence in support of the expected wage-trade link in 6 out of the 14 cases, and convincing evidence against this link in 4 cases. The link is unreliable because the labour supply conditions changed during the period of the regressions. The wage-productivity link is supported in 4 instances, and there is no instance of strong statistical contradiction. Table 30 shows 1 convincing case for, and 1 convincing case against, a negative wage-trade link, hence making any conclusions untenable. The positive productivity-link received some support and was not strongly contradicted.

Our interpretations of the cross-section regressions in tables 25 to 28, are confirmed by the time series regression results in tables 29 and 30.

9. Impact of trade on the distribution of provincial income

The well-known positive relationship between outward orientation and economic growth found in many comparative country analyses is replicated in the provinces of China. Table 31 shows the average annual GDP per capita growth rates and average export-GDP ratio in the 1997-99 period for each of the 31 provinces. The first half of the sample (16 provinces) shows an average export-GDP ratio of 4.1 per cent and an average growth rate of 8.2 per cent. The second half of the sample (15 provinces) shows an average export-GDP ratio of 21.7 per cent and an average growth rate of 8.8 per cent.

Table 32, part A examines the trade-growth nexus at the provincial level more systematically. The regression of the provincial growth rate on the provincial export-GDP ratio produced a positive coefficient with a *t*-statistic of 2.79. Because the data indicate that China's rich provinces are more export-oriented than the poor provinces, our finding of a statistically significant positive relationship between export-orientation and output growth raises the possibility that international trade is widening the income gap between the rich and poor provinces. Table 32, part B tests for the existence of income divergence by regressing the provincial income growth rate in 1997-99 on the level of

provincial income in 1996. The regression yields a positive coefficient with a t-statistic of 4.01, thus confirming that the rich provinces have been growing faster.

Recently, Demurger et.al. (forthcoming) completed a detailed analysis of regional growth in China. Their study found that the extent to which a province is export oriented depends on its geographical location and on its economic policy towards FFEs. The more coastline or more access to navigable rivers that flow to the sea that a province has, the more likely are its domestic enterprises (e.g. TVEs) to be export oriented. The more a province is allowed by the central Government to exempt FFEs from the bulk of industrial regulations, the greater would be the number of export-oriented FFEs established in the province. Until 1992, the central Government clearly favoured the coastal provinces in economic opening because it allowed only these coastal provinces to extend preferential policies to FFEs.

According to Demurger et.al.'s estimates of the contributions of geographic and policy effects on the 1996-99 growth rates of each region, the coastal provinces benefited the most from both effects (table 33). The growth rate of an average coastal province received a boost of 2.62 percentage points from geography and 2.67 percentage points from policy, whereas a north-western province received no growth boost from geography and only a 1.47 percentage point boost from policy. The point is that policy effects can be rendered equal across provinces, but since geographic effects cannot be equalized, the coastal provinces can be expected to continue to grow faster than the north-eastern, north-western and south-western provinces.

It is important to emphasize that this increase in provincial income inequality was not accompanied by reduced in economic welfare in any province. The rise in inequality was caused by the rich provinces growing faster than the poor provinces and not by the rich getting richer and the poor getting poorer. Even the GDP per capita of the poorest province, Guizhou, grew at an average annual rate of 7.2 per cent – an impressive growth rate by any international standard.¹⁶

Strictly speaking, the fact that income per capita had risen in every province need not mean that the poor provinces were not hurt in some meaningful sense by the faster growth of the rich provinces. More importantly, it also does not rule out the opposite possibility: the poor provinces benefited from the faster growth of the rich provinces. The answer depends on several factors, including the particular time period, the barriers to factor mobility between provinces, and the ability of the poor provinces to master and create new technologies.

One of the standard models in regional science is that the emergence of a growth pole hurts its hinterland in the short-term through "backwash effects", and benefits its hinterland from the medium-term onwards through "spread effects." Typically a growth pole emerges on the coast because of increasing international trade. In the short term, a growth pole increases its growth rate at the expense of the growth rate of its neighbours by pulling in skilled labour and investment capital from the neighbours. However, production costs (especially land prices) in the growth pole inevitably rise with its growing prosperity, and thus businesses, especially manufacturing industries, will relocate their operations to the hinterland, hence boosting the growth rates of the

¹⁶ It must be noted that the provincial income statistics may not be collected on the same basis as the national income statistics, which explains why, in recent years, almost all provinces report growth rates that are higher than the official national growth rate.

neighbouring provinces. Beginning in the medium term, the growth pole and its neighbours will be characterized by a complex production chain that generates an income that is higher for each linked member than if these regional entities were not so closely linked in the division of labour.

It is important to stress that international trade is fundamental to allowing this mutually beneficial cross-province production chain to develop and endure; since the prerequisite for such a production chain is large-scale production which enables economies of scale, only the world market is big enough to absorb the large output. In our assessment, the standard model of centre-periphery interaction, with some modifications, applies to regional development and regional income inequality in China since 1978. The important difference is that the negative output impact of the initial “backwash effects” was not seen because the positive output impact from the market reforms that were introduced along with economic opening was much more powerful. This point is developed at greater length in section 6 when we examine the effects of international trade on the wages of skilled and unskilled labour.

After 20 years of economic opening, China is now in the medium-term stage of the standard centre-periphery model. Naturally, the question arises as to how regional income inequality will evolve as China deepens its integration into the global economy, a commitment evident in its decision to join the WTO. To obtain an impression of this evolution, we combine the standard model of core-periphery interaction with recent developments in economic growth theory. One likely long-term, steady state equilibrium has the original growth pole maturing into a technological innovation centre and benefiting its former hinterland through the technological diffusion occurring through the production chain. The size of the income gap (or of the discrepancy in growth rates) between the centre and the periphery will depend on the ability of the former hinterland to absorb the flow of new technologies and to kick-start its own innovation process. In any case, both the centre and the periphery will experience increases in material well-being despite the possibility of a continued gap between their growth rates.

To summarize, international trade promotes economic growth, and since China's coastal provinces are more advantageously located to engage in it, international trade has accentuated provincial inequality by enabling the coastal provinces to grow faster. As no province has experienced a decline in GDP per capita, and as the lowest GDP per capita growth rate in recent years was over 6 per cent¹⁷, our conclusion is that the growth of international trade has been a major contributor to, or at least is compatible with, the “win-win” situation that characterizes economic growth across China's 31 provinces. Any effort to improve the distribution of provincial income should be based on reducing the difficulties that inland provinces face in participating in international trade, and in acquiring new technological capabilities. It would be akin to killing the golden goose if the reduction in provincial income disparity were to be achieved by measures that decreased the economic openness of China.

¹⁷ It was 6.6 per cent for Hainan, 6.8 per cent for Xinjiang, and 6.9 per cent for Ningxia, but see cautionary statement in previous footnote.

10. Conclusion

Trade has greatly facilitated China's economic transition and hastened its pace of economic development. By exploiting its comparative advantage in producing low-skill-intensive manufactured goods, China has used the vastness of the world market to reduce its centuries old problem of rural poverty caused by chronic underemployment. While trade has benefited the coastal provinces the most, and hence widened the income gap between the coastal and inland provinces, it must be noted that the gap was not the result of the rich getting richer and the poor getting poorer. Every province has gained from economic opening; for example, Xinjiang in the far western region of China is now the world's biggest producer and exporter of tomato paste. The lowest average annual growth rates of provincial GDP per capita in the 1997-1999 period were impressive by international standard - Hainan's GDP per capita grew by 6.6 per cent and Xinjiang's by 6.8 per cent.

Because China is an underdeveloped economy in transition, international trade has contributed to the processes of both economic restructuring and economic development. An important reason why manufacturing employment grew so strongly in the 1978-88 period is because only the process of economic development was at work; the process of economic restructuring was impeded by the continued high level of subsidization of SOEs. Manufacturing employment fell in 1996-2000 partly because of the State's reduced support for the SOEs, partly because of macroeconomic austerity implemented in 1994, and partly because of the Asian financial crisis of 1997-99.

The wage ratio of unskilled-skilled labour in the manufacturing sector fell in the 1980-1992 period, which should be viewed as a good sign. Wages paid by SOEs for unskilled labour were many times higher than the effective wages paid to farmers. When new manufacturing firms appeared in the countryside (largely because of the household registration system that tied the peasants to their land), they employed unskilled labour at a wage between the SOE wage and the farmer's effective wage, and they paid a premium above the SOE wage for skilled labour to induce it away from the comfort and security of SOE employment (which sometimes also means relocating to the non-State sector in the countryside). As the wage ratio of unskilled-skilled labour was lower at the new non-State firms, the steady expansion of their share of industrial production meant that the economy-wide wage ratio of unskilled-skilled labour also fell. No one was worse off by the decline in this wage ratio because the initial wage ratio set by central planners had no basis in the conditions of China's supply and demand for labour.

Just as international trade led to a rapid decline in the wage ratio of unskilled-skilled labour by accelerating the rate of establishment of new industrial firms, it also helped to reverse the decline beginning in 1993 when the continued fast growth of exports caused the wages for unskilled labour to rise because of the greatly diminished pool of "surplus labour" after 15 years of fast economic growth. China is a capital-poor country, and thanks to its integration into the global economy, it is now the world's second largest recipient of FDI after the United States. This inflow of foreign funds has been accompanied by an infusion of technology to enable the foreign firms to outsource the production of their required intermediate products to China.

Integration into the global economy has been good for China. It has certainly helped to improve the economic dimensions of human rights in China. While China's accession to the WTO will cause some difficult structural adjustments, this step towards further integration will allow China to help shape the new trading rules required to address the myriad economic changes brought about by technological innovations (e.g. trade in genetically modified food products). The benefits from WTO membership are not all in the future. The biggest immediate payoff to China from WTO membership is the elimination of the economic insecurity caused by the United States Congress's annual review of China's most favored nation status. The end of uncertainty over China's access to the United States market is the reason why the completion of United States-China negotiations over WTO membership caused an avalanche of FDI into China that unnerved some South-East Asian leaders.

**FIGURES and
STATISTICAL TABLES**

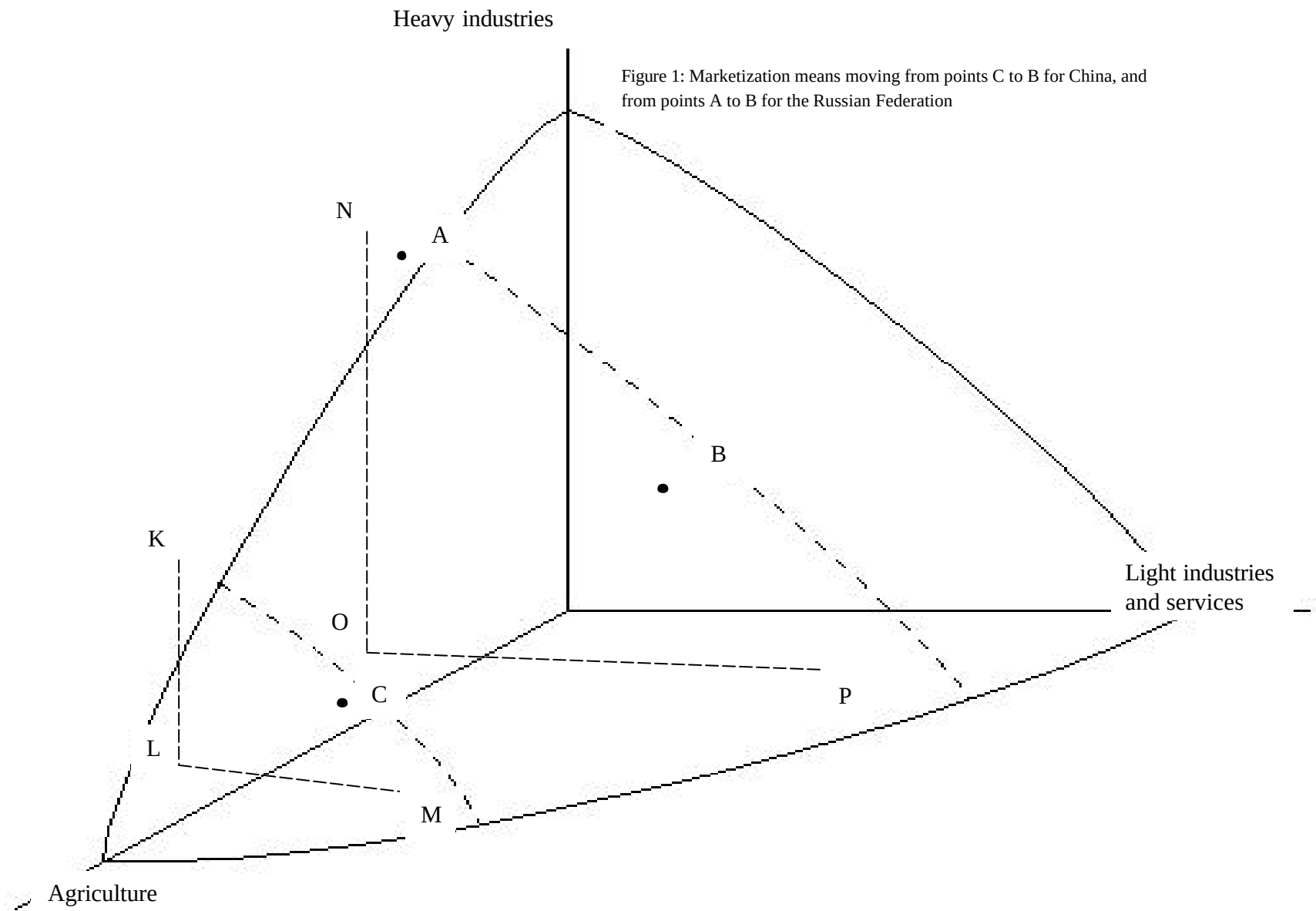


Figure 2: Wage ratio of export and import sectors (1980=100)

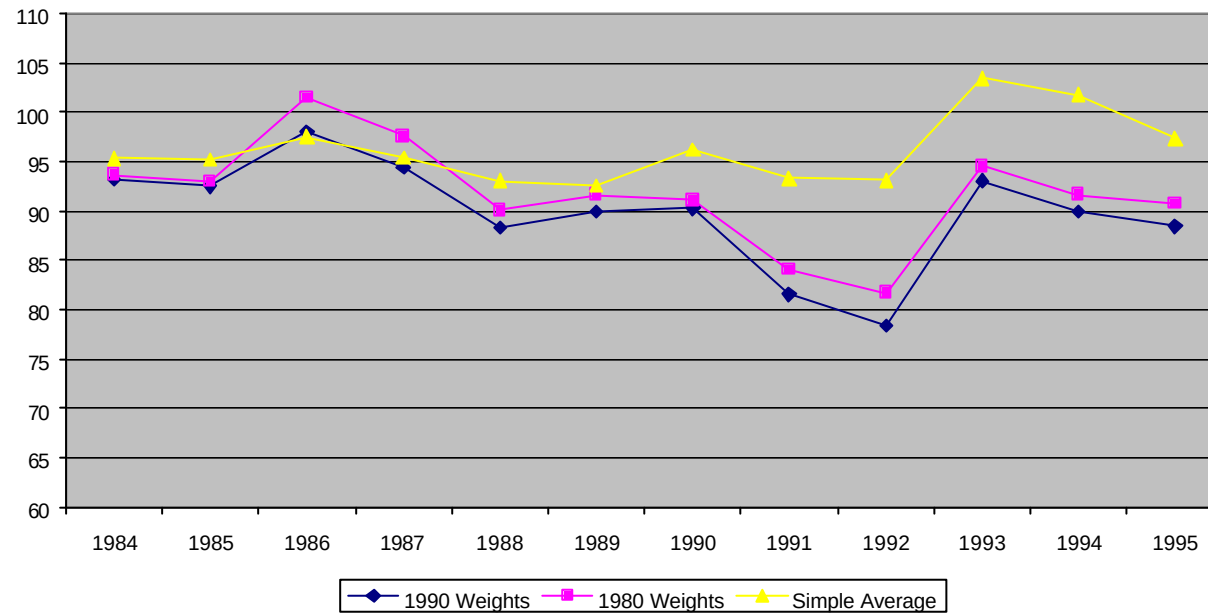


Table 1. Transformation of China's economy, 1978-99**Part A: Transformation of production and employment pattern (%)**

	Structure of GDP (measured in 1995 prices)			Distribution of Employment		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1978	41.3	34.0	24.7	70.5	17.3	12.2
1988	28.2	38.8	33.0	59.3	22.4	18.3
1999	17.4	51.8	30.8	50.1	23.0	26.9

Part B: Average annual contribution of each sector to structural transformation (%)

Period	Contribution of each sector to GDP growth					Total growth of each sector			
	GDP Growth	Primary	Secondary	Tertiary		Primary	Secondary	Tertiary	
			<i>Industry Construction</i>				<i>Industry Construction</i>		
1979-84	9.1	2.9	2.6	0.6	3.1	29.6	29.7	6.9	33.9
1985-88	10.6	1.0	4.2	1.0	4.4	9.9	39.3	9.0	41.8
1989-91	5.5	1.2	2.5	0.0	1.8	27.6	41.4	-2.4	33.4
1992-99	10.2	0.9	5.7	0.7	2.9	9.0	55.7	6.4	29.0

Structure of GDP (measured in current prices)

	Primary	Secondary	Tertiary
1978	28.1	48.2	23.7
1988	25.7	44.1	30.2
1990	27.1	41.6	31.3
1999	17.7	49.3	33.0

Note: A common pitfall, China as an over-industrialized economy in 1978: little agricultural transformation in 1st decade.
 A misleading picture emerges from measuring sectoral size by current prices because of price controls in the early years that kept prices of industrial goods high relative to prices of agricultural products

Table 2. Change in ownership pattern in China's industrial sector, 1978-1999

	Share of industrial output (%)				<i>Rural sector proxy</i> <i>(e)=(b)+(c)</i>
	State-controlled enterprises (a)	Collectively-owned enterprises (b)	Individually-owned enterprises (c)	Other ownership forms (d)	
1978	85.03	14.97	0.00	0.00	14.97
1979	85.07	14.93	0.00	0.00	14.93
1980	83.14	16.48	0.07	0.32	16.55
1981	82.14	17.31	0.15	0.40	17.46
1982	81.66	17.61	0.25	0.47	17.86
1983	80.57	18.35	0.50	0.57	18.85
1984	76.71	21.63	0.87	0.79	22.50
1985	73.37	24.30	1.40	0.93	25.70
1986	70.72	26.03	2.13	1.13	28.15
1987	67.85	27.65	2.87	1.62	30.53
1988	64.37	29.86	3.57	2.21	33.42
1989	62.25	30.71	4.11	2.93	34.82
1990	60.10	31.40	4.67	3.83	36.07
1991	57.24	32.59	5.13	5.04	37.72
1992	52.04	35.14	6.10	6.72	41.24
1993	43.82	37.80	8.07	10.30	45.87
1994	37.50	37.93	10.14	14.43	48.07
1995	33.97	36.59	12.86	16.57	49.45
1996	30.82	38.16	13.32	17.70	51.48
1997	27.90	37.69	13.77	20.65	51.46
1998	25.23	37.14	14.27	23.37	51.41
1999	24.30	34.86	14.44	26.40	49.30

Table 3. Changes in tariffs, taxes and non-tariff barriers, 1986-1996

	Tariffs and taxes	Non-tariffs barriers
1986-91	Rates reduced by 30-85 per cent For 81 of 6,300 tariff lines	
1992	Rates reduced by an average of 7.3 per cent in January and by the same amount again in December for 3,596 tariff lines. Elimination of adjustment tax Levied since 1985 on 15 classes of imports.	Reduction in the number of export goods subject to quota licence regulation, from 212 to 183. Elimination of import-quota licence requirements for 16 classes of goods.
1993	Rates reduced by an average of 8.8 per cent for 2,989 tariff lines.	Elimination of import-quota licence Requirements for 9 categories of goods (i.e. 283 goods).
1994	Rates reduced for sedans from 220 and 180 per cent (depending on the model) to 150 and 110 per cent. “Temporary tariff rates” (tariff reductions) stipulated for 282 tariff lines.	Stopped issuing mandatory plans for imports and exports. Elimination of import licence requirements for 195 goods.
1995		Elimination of import licence requirements for 120 goods.
1996	Rates reduced for 4,997 tariff lines by an average of 35 per cent. Rates reduced for all goods to a single rate of 23 per cent.	Elimination of 30 per cent of remaining quotas.

Source: Zhang, S., Zhang, Y. and Wan, Z. (1998).

Table 4. Tariff structure in China %

Goods category	1982	1985	1988	1991	1996	1998	Rate of decrease
1	55.92	43.88	43.88	43.88	31.56	20.6	53.1
2	104.91	39.15	39.56	40.18	23.93	16.9	57.9
3	100.63	40.25	42.93	42.93	28.22	22.7	47.1
4	40.25	62.54	62.68	63.39	41.37	28.7	54.7
5	52.01	22.77	22.75	22.75	5.82	4.5	80.2
6	61.09	34.45	35.82	36.89	18.34	10.9	70.5
7	66.06	36.98	37.29	37.11	23.06	15.2	59.0
8	43.72	66.81	66.81	66.71	34.24	18.1	72.9
9	55.76	47.11	46.95	47.62	18.01	10.4	78.2
10	50.36	19.84	21.78	21.78	21.05	14.3	34.3
11	80.54	61.87	61.89	61.86	30.41	26.6	57.0
12	24.79	90.83	90.83	90.83	46.51	24.3	73.2
13	39.38	46.38	46.17	46.08	25.62	18.3	60.3
14	23.30	23.64	21.67	21.67	23.36	13.8	36.3
15	49.88	29.39	29.49	30.09	14.52	10.5	65.1
16	19.09	28.39	29.33	30.22	19.02	15.0	50.4
17	77.48	19.17	19.88	19.88	33.87	27.0	35.8
18		45.29	47.19	48.39	32.18	15.2	68.6
19		60.00	60.00	60.00	43.24	15.0	75.0
20		71.86	72.37	72.37	41.86	21.4	70.6
21		20.00	20.00	20.00	12.75	10.1	69.5
Average	55.61	43.34	43.77	44.05	27.09	17.1	61.4

Notes :

1. Simple arithmetic average tariff.

2. In 1982, there were 17 categories: 1.food 2.beverage 3.marine products 4.medicinal materials, rubber and plant products 5. woods products 6. animal products 7. leather products 8. mineral products, glass and pottery products 9. oil and fats 10.chemical products 11.textiles and wearing apparel 12. paper and products 13.metal products 14.machinery and electrical products 15. instruments 16.transport equipment 17. miscellaneous goods

3. Since 1985 there are 21 categories: 1. animal products 2.plant products 3. oil and fats 4. foods and beverages 5. mineral products 6.chemical products 7. plastic and rubber products 8. leather products 9.wood products 10. paper and products 11. textiles and wearing apparel 12. footwear and caps 13.glass and pottery products 14.precious metal 15. metal products 16. machinery and electrical products 17. transport equipments 18. optical instruments 19.weapon 20. miscellaneous goods 21.artisty

4. The decrease rates were estimated by comparing the tariff level in 1998 with that in 1991 because the figures in 1982 was not comparable to the figures in the other years.

5. The tariffs for 1982-1996 were estimated by Yin Xiangshuo based on “*Customs Import and Export Tariff*” (various versions in his study) while the tariffs in 1998 are from the published data issued by China’s customs authority.

Source: Yin Xiangshuo, 1998.

Table 5. "Effective" tariff rate in China (100 million Rmb)

Year	Import volume	Import tariff revenue	Tariff (%)
1971—1975	520.20	44.83	8.62
1976—1980	991.20	126.02	12.71
1981	367.70	50.04	13.63
1982	357.50	44.16	12.35
1983	421.80	49.19	11.66
1984	620.50	101.87	16.42
1985	1 257.80	203.47	16.18
1986	1 498.3	148.62	9.92
1987	1 614.2	140.07	8.68
1988	2 055.1	153.32	7.46
1989	2 199.9	178.96	8.13
1990	2 574.3	157.52	6.12
1991	3 398.7	184.48	5.43
1992	4 443.3	209.25	4.71
1993	5 985.7	256.5	4.3
1994	9 966.9	330.0	3.3
1995	11 048.1	291.83	2.64
1996	11 557.4	301.84	2.61
1997	11 806.5	319.49	2.71
1998	11 622.4	313.04	2.69

Source: Figures from *China's Tariff System toward the 21st Century* (1998). Yu Xiasong (ed.) China Economics Publisher (in Chinese), Beijing, China. Some figures were estimated by the authors.

Table 6. Growth of trade

	Exports & imports (US\$ billion)	Exports (US\$ billion)	Purchasing power of dollar	Growth rate of exports %
1978	20.64	9.745	1.532	
1979	29.33	13.658	1.38	26.2
1980	38.14	18.191	1.215	17.3
1981	44.02	22.007	1.098	9.3
1982	41.60	22.321	1.035	-4.4
1983	43.61	22.226	1.003	-3.5
1984	53.55	26.139	0.961	12.7
1985	69.6	27.35	0.928	1
1986	73.84	30.942	0.913	11.3
1987	82.65	39.437	0.88	22.8
1988	102.80	47.516	0.846	15.8
1989	111.68	52.538	0.807	5.5
1990	115.44	62.093	0.766	12.2
1991	135.63	71.842	0.734	10.9
1992	165.53	84.94	0.713	14.8
1993	195.71	91.763	0.692	4.9
1994	236.73	121.011	0.674	28.4
1995	280.85	148.78	0.656	19.7
1996	289.90	151.07	0.638	-1.2
1997	202.51	113.82	0.623	-24.6
1998	194.358	110.256	0.600	-3.1
1999				

Note: The purchasing power of the US dollar was calculated based on CPI, 1982-84=1.00.

Source : *Almanac of China's Foreign Economic Relations and Trade*, The Editorial Board of the Almanac of China's Foreign Economic Relations and Trade, China National Economy Publishing House, Beijing, China, various issues.

Table 7. Values of goods and services exported by industry, 1973-1992 (US\$ million)

	Food	Textiles	Wood	Paper	Chemicals	Non-metallic	Metals	Machinery	Other	Total
1973	938	1 354	44	65	251	121	219	129	129	3 250
1974	1 269	1 278	50	76	400	143	343	177	134	3 870
1975	1 287	1 405	48	59	402	146	263	235	163	4 009
1976	1 038	1 674	64	74	450	161	293	275	200	4 230
1977	1 099	1 840	85	70	509	183	283	256	230	4 554
1978	1 336	2 478	111	90	675	211	400	349	261	5 911
1979	1 464	3 566	156	121	1 369	261	555	475	334	8 302
1980	1 862	4 653	199	165	2 498	331	775	551	486	11 519
1981	1 932	5 591	232	187	2 745	344	1 211	725	598	13 566
1982	2 005	5 702	268	164	2 888	319	1 199	675	606	13 826
1983	2 042	6 392	219	176	2 834	288	836	697	601	14 085
1984	1 958	6 811	158	182	2 925	190	761	1 396	915	15 296
1985	2 013	5 953	124	160	2 830	155	739	608	616	13 199
1986	2 519	8 485	170	217	2 680	241	1 027	1 137	1 047	17 524
1987	2 989	11 148	300	273	3 419	352	1 889	1 764	1 224	23 358
1988	4 025	15 900	412	305	4 271	510	2 931	6 010	2 730	37 095
1989	4 330	16 379	541	344	5 185	751	2 495	3 981	2 081	36 087
1990	4 666	20 796	673	350	5 500	1 168	3 428	11 175	4 583	52 340
1991	4 901	25 135	927	384	5 851	1 616	4 104	14 253	5 223	62 394
1992	5 544	32 550	1 490	547	7 242	1 627	4 695	13 479	8 403	75 578

Source: Feenstra, Lipsey and Boen (1997).

Table 8. Share of selected manufactured exports in total manufacturing (%)1985-1995

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Food	14.09	13.46	11	10.71	9.86	9.37	8.15	6.49	6.06	5.74	5.53
Beverages	2.39	2.2	1.96	1.57	1.49	1.24	1.08	0.85	0.74	0.54	0.46
Tobacco	0.24	0.23	0.24	0.27	0.35	0.36	0.56	0.58	0.77	0.61	0.71
Textiles	28.36	29.12	29.8	23.94	21.96	17.6	16.55	12.65	11.59	11.56	10.48
Wearing Apparel	13.3	15.87	15.3	19.17	20.47	20.5	22.18	22.1	22.26	21.12	17.18
Leather	2.18	2.26	2.3	3.16	3.78	4.85	4.69	5.92	6.68	5.85	5.18
Wood	2.17	2.18	2.27	2.07	2.17	2.13	2.35	2.52	2.66	2.64	2.6
Paper	1.05	0.93	1.14	0.85	0.82	0.71	0.68	0.7	0.77	0.66	0.79
Chemicals	18.89	14.13	12.9	10.94	10.63	10.5	9	7.25	6.74	6.25	7.18
Rubber	0.84	0.86	0.72	0.75	1.03	1.09	1.23	1.9	2.1	2.17	2.23
Non-metallic	1.46	1.72	1.79	1.67	1.99	2.78	3.02	2.26	1.88	2.24	2.45
Metals	4.84	5.3	7.38	8.17	5.95	7.02	7.12	5.91	5.53	5.99	8.44
Machinery	3.58	3.63	3.68	4.07	4.8	5.57	6.24	7.97	8.15	8.19	10.09
Electrical	1.36	2.37	3.42	3.92	4.91	6.26	6.7	9.47	10.24	11.25	12.32
Other	5.24	5.74	6.03	8.75	9.78	10.1	10.45	13.44	13.83	15.18	14.34

Source : *Almanac of China's Foreign Economic Relations and Trade*, The Editorial Board of the Almanac of China's Foreign Economic Relations and Trade, China National Economy Publishing House, Beijing, China, various issues.
Customs Statistics Year Book of China, Customs General Administration of the People's Republic of China, Goodwill Information Ltd., Hong Kong, various issues.

Table 9. Direction of China's trade (export) (%) (first 10 largest export destination)

Country (region)	Share	Country (region)	Share	Country (region)	Share	Country (region)	Share
1 9 7 9		1 9 8 0		1 9 8 1		1 9 8 2	
Hong Kong	0.244	Hong Kong	0.2393	Hong Kong	0.23511	Hong Kong	0.223
Japan	0.202	Japan	0.2217	Japan	0.20889	Japan	0.2178
US	0.044	US	0.0539	US	0.06842	US	0.0725
Romania	0.036	West Germany	0.0391	West Germany	0.03569	West Germany	0.0305
UK	0.035	UK	0.031	UK	0.03228	Singapore	0.0283
West Germany	0.034	Romania	0.0282	Singapore	0.02324	UK	0.0199
North Korea	0.023	Singapore	0.0231	Brazil	0.01575	Brazil	0.017
Italy	0.022	North Korea	0.0206	France	0.01548	France	0.0167
Singapore	0.022	Italy	0.0193	Romania	0.01476	Romania	0.0132
Former Soviet Union	0.018	France	0.0187	Italy	0.01301	Italy	0.0129

Country (region)	Share	Country (region)	Share	Country (region)	Share	Country (region)	Share
1 9 8 3		1 9 8 4		1 9 8 5		1 9 8 6	
Hong Kong	0.243	Hong Kong	0.2244	Hong Kong	0.2217	Hong Kong	0.2799
Japan	0.201	Japan	0.2193	Japan	0.2164	Japan	0.1616
US	0.077	US	0.0942	US	0.1023	US	0.0913
Jordan	0.071	Jordan	0.0518	Singapore	0.0808	Former Soviet Union	0.0447
West Germany	0.038	Singapore	0.0499	Jordan	0.0409	Singapore	0.0396
Singapore	0.028	West Germany	0.0292	Former Soviet Union	0.0374	Jordan	0.0348
UK	0.022	Former Soviet Union	0.0252	West Germany	0.0262	West Germany	0.0313
Brazil	0.018	UK	0.0189	UK	0.0174	UK	0.0192
Former Soviet Union	0.015	Brazil	0.0167	Brazil	0.0163	Poland	0.0152
Italy	0.013	Syria	0.0156	Switzerland	0.0136	Italy	0.0123

Table 9 continued

Country (region) 1 9 8 7	Share	Country (region) 1 9 8 8	Share	Country (region) 1 9 8 9	Share	Country (region) 1 9 9 0	Share
Hong Kong	0.349	Hong Kong	0.3844	Hong Kong	0.417	Hong Kong	0.429
Japan	0.162	Japan	0.1663	Japan	0.16	Japan	0.145
US	0.077	US	0.0711	US	0.084	US	0.083
Jordan	0.034	West Germany	0.0312	Former Soviet Union	0.035	Former Soviet Union	0.036
Singapore	0.034	Singapore	0.0311	Singapore	0.032	Singapore	0.032
Former Soviet Union	0.032	Former Soviet Union	0.031	West Germany	0.031	West Germany	0.03
West Germany	0.031	Zaire	0.0205	Netherlands	0.015	Korea	0.0203
Zaire	0.018	Netherlands	0.0157	Italy	0.0136	Netherlands	0.015
Netherlands	0.015	Italy	0.0156	France	0.01	Italy	0.0134
Italy	0.014	Jordan	0.0152	Thailand	0.0095	Thailand	0.0133

Country (region) 1 9 9 1	Share	Country (region) 1 9 9 2	Share	Country (region) 1 9 9 3	Share	Country (region) 1 9 9 4	Share	Country (region) 1 9 9 5	Share
Hong Kong	0.447	Hong Kong	0.442	Hong Kong	0.2403	Hong Kong	0.267	Hong Kong	0.242
Japan	0.142	Japan	0.138	US	0.1849	Japan	0.178	Japan	0.191
US	0.086	US	0.101	Japan	0.172	US	0.177	US	0.166
Germany	0.033	Germany	0.0289	Germany	0.04325	Germany	0.039	Korea	0.045
Korea	0.030	Korea	0.0283	Korea	0.03118	Korea	0.0364	Germany	0.038
Singapore	0.028	Russian Federation	0.0275	Russian Federation	0.02934	Singapore	0.021	Singapore	0.024
Former Soviet Union	0.025	Singapore	0.0239	Singapore	0.02447	UK	0.02	Netherlands	0.022
Netherlands	0.015	Netherlands	0.0141	UK	0.02102	Netherlands	0.0187	Taiwan	0.021
Italy	0.013	Italy	0.0129	Netherlands	0.01754	Taiwan	0.0185	UK	0.019
Thailand	0.012	UK	0.011	Taiwan	0.01593	Italy	0.013	Thailand	0.0139

Source: *Almanac of China's Foreign Economic Relations and Trade*, various issues.

Table 10. Distribution of FDI by product category (%)

	1995	1996	1997	Average
Food manufacturing	7.83	7.59	7.99	7.81
Beverages	3.65	3.78	3.95	3.79
Tobacco	0.1	0.13	0.12	0.12
Textile products	8.59	7.28	6.94	7.60
Wearing apparel	5.01	4.25	4.17	4.48
Leather and footwear	3.34	2.92	2.73	2.99
Wood products & Furniture	2.07	1.79	2.14	2.00
Paper products	3.35	3.41	3.78	3.51
Chemicals	9.50	9.88	10.56	9.98
Rubber & plastic	5.65	5.08	5.36	5.36
Non-metallic products	6.55	6.14	6.13	6.27
Metals	8.91	7.59	7.76	8.09
Machinery & transport	14.85	18.62	14.91	16.13
Machinery, electrical	17.34	18.74	20.53	18.87
Other manufacturing	3.26	2.79	2.95	3.00
Total	100	100	100	100

Source : Calculations based on data from *Custom Statistics Year Book of China*, Customs General Administration of the People's Republic of China, Goodwill Information Ltd., Hong Kong, various issues.

Table 11. Share of China's exports and imports in GDP (%)

Period	Total exports	Manufactured exports	Total imports	Manufactured imports
1979-84	7.0	4.0	7.1	5.1
1985-88	10.9	6.9	14.0	11.9
1989-91	15.1	11.3	14.2	11.6
1992-99	19.3	16.5	17.3	14.4

Table 12. Value added and labour productivity in 3-digit SITC product categories

		Sectoral GDP (1980 prices, million yuan)				Labour productivity (1980 prices, thousand yuan per person)			
		1980	1985	1990	1995	1980	1985	1990	1995
311	Food products	10'353.06	14'589.38	19'390.50	21'740.48	5.15	4.82	5.27	5.52
313	Beverages	2'413.74	4'714.26	8'044.98	10'859.95	4.74	4.83	6.30	7.32
314	Tobacco	5'772.78	11'894.86	20'009.04	18'814.50	44.89	52.77	67.58	58.65
321	Textiles	17'915.20	30'904.15	36'040.87	32'041.73	4.06	4.52	3.88	3.69
322	Wearing apparel	3'147.00	5'457.99	7'608.85	12'376.69	2.80	3.09	3.34	5.12
323	Leather products	729.90	1'192.88	1'673.86	3'389.53	2.67	3.17	4.59	6.32
324	Footwear	641.33	1'048.13	1'470.74	2'309.76	1.45	1.54	2.24	2.39
331	Wood products	945.07	1'260.48	1'120.64	2'241.92	1.88	1.67	1.23	2.18
332	Furniture	741.49	3'847.03	928.11	1'330.58	1.38	5.64	1.50	2.70
341	Paper products	2'679.73	4'611.14	5'693.21	6'298.45	2.92	3.79	3.52	3.50
342	Printing and publishing	1'669.66	2'926.24	2'950.51	3'338.85	2.42	3.23	2.87	3.10
351	Industrial chemicals	13'659.63	21'973.89	35'691.26	27'992.37	6.50	8.70	10.68	6.90
352	Other chemicals	2'232.93	3'954.28	6'560.92	20'945.18	1.85	2.39	2.94	8.61
353	Petroleum refineries	7'399.49	8'784.87	12'772.23	7'407.71	32.57	31.94	29.82	11.57
354	Miscellaneous petroleum & coal prod.	440.40	692.33	1'259.42	552.88	3.72	4.18	4.76	3.85
355	Rubber	2'788.91	4'240.02	5'185.73	4'801.18	5.23	6.10	5.78	4.96
356	Plastic	1'843.59	3'809.38	5'596.71	7'809.16	2.41	3.23	3.90	4.93
361	Pottery, china, earthenware	632.01	1'058.94	1'330.77	2'179.53	1.34	1.80	2.15	2.29
362	Glass products	914.26	1'531.85	1'925.09	2'977.81	2.25	2.45	2.52	4.28
369	Other non-metallic	6'241.90	10'458.42	13'143.17	17'035.27	1.70	1.94	2.34	2.71
371	Iron and steel	11'028.54	15'353.58	20'771.46	20'782.16	5.15	6.01	6.53	5.39
372	Non-ferrous metals	3'118.52	3'998.00	5'854.27	5'960.73	5.19	5.43	5.73	4.92
381	Fabricated metal products	4'054.77	6'142.80	7'765.19	7'575.77	1.93	2.43	2.75	2.71

382	Machinery, except electrical	16'596.14	30'220.68	36'006.94	44'411.11	1.78	2.75	2.93	5.31
Table 12 continued									
383	Machinery , electrical	6'628.70	15'825.46	24'284.21	49'159.52	2.45	11.66	15.02	9.81
384	Transport equipment	5'145.33	10'327.96	12'911.45	31'949.21	2.17	3.70	4.17	7.67
385	Professional and scientific equipments	1'705.90	2'699.33	2'844.55	4'863.10	2.71	3.58	3.68	5.12
390	Other	2'441.92	4'972.53	7'596.64	3'832.70	2.21	3.11	3.30	5.41
	Overall	133'881.88	213'901.49	306'431.33	374'977.82	3.18	4.24	4.73	5.55

Table 13. Trade in manufactured goods

		(in US\$ thousands)							
		1980		1985		1990		1995	
ISIC		Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
311	Food products	1'589'472	582'917	1'712'780	757'027	3'917'590	1'837'085	7'045'150	6'826'843
313	Beverages	259'697	6'767	285'702	77'178	608'779	117'417	649'587	449'331
314	Tobacco	12'541	21'098	14'807	292'177	139'520	358'561	981'185	818'068
321	Textiles	2'909'752	2'010'993	4'201'460	1'686'788	9'760'767	6'177'803	18'418'020	16'541'844
322	Wearing apparel	1'328'218	15'585	1'332'767	70'371	8'360'590	259'729	18'765'653	970'484
323	Leather products	214'423	154'882	132'427	230'256	595'267	816'415	3'782'411	3'549'500
324	Footwear	200'510	382	286'287	8'571	2'079'358	17'709	6'251'292	61'641
331	Wood products	71'360	51'392	30'747	313'425	331'314	764'637	1'156'484	1'729'231
332	Furniture	127'273	3'982	92'874	45'502	341'350	84'218	1'758'429	173'264
341	Paper products	157'814	592'941	152'973	586'615	307'760	1'386'259	942'212	3'668'708
342	Printing and publishing	7'062	51'448	7'011	102'544	42'437	122'787	174'366	346'695
351	Industrial chemicals	738'493	1'949'433	744'785	4'011'723	2'605'839	7'441'904	7'630'054	20'514'284
352	Other chemicals	414'450	113'190	562'509	627'736	1'180'566	1'134'419	2'356'567	3'605'009
353	Petroleum refineries	1'250'493	54'458	1'399'150	57'499	994'362	898'770	831'802	2'799'005
354	Miscellaneous petroleum & coal prod.	34'875	151	39'814	3'194	192'720	6'828	699'829	30'415
355	Rubber	39'212	19'358	49'863	22'923	200'786	90'879	689'123	345'744
356	Plastic	20'281	23'101	34'193	131'525	325'996	414'450	2'546'224	1'054'691
361	Pottery, china, earthenware	150'667	1'107	93'308	19'646	438'140	21'761	1'051'974	138'262
362	Glass products	40'758	6'851	20'980	118'937	214'880	228'493	651'440	745'870
369	Other non-metallic	139'561	37'025	40'777	81'704	514'625	117'648	1'223'676	656'797
371	Iron and steel	226'469	2'170'587	95'560	6'526'557	1'241'131	2'873'075	5'344'785	6'745'445
372	Non-ferrous metals	150'960	267'927	206'225	1'285'713	622'358	737'502	1'969'441	4'169'600
381	Fabricated metal products	397'183	490'794	437'511	408'823	1'564'880	1'101'137	4'552'790	2'734'421
382	Machinery, except electrical	231'522	2'386'609	259'482	1'205'988	2'742'269	8'655'905	7'952'342	29'854'024

Table 13 continued

383	Machinery , electrical	234'285	851'569	235'566	4'771'602	4'164'940	6'445'539	18'553'310	24'710'634
384	Transport equipment	85'514	1'074'708	113'072	836'337	4'268'063	4'363'398	3'949'322	7'702'831
385	Professional and scientific equipments	126'628	421'741	114'792	1'562'903	1'559'788	1'943'808	4'540'466	4'750'200
390	Other	359'820	58'951	501'200	284'474	3'023'633	1'256'581	9'974'147	2'108'977
	Overall	11'519'293	13'419'947	13'198'622	26'127'738	52'339'708	49'674'717	134'442'081	147'801'818

Table 14. Change in output and trade by product category, 1990-1995

Product category	Output (1980 prices)	Manufactured trade	
		Exports	Imports
Food products	2'350.0	3'127'560	4'989'758
Beverages	2'815.0	40'808	331'914
Tobacco	-1'194.5	841'665	459'507
Textiles	-3'999.1	8'657'253	10'364'041
Wearing apparel	4'767.8	10'405'063	710'755
Leather products	1'715.7	3'187'144	2'733'085
Footwear	839.0	4'171'934	43'932
Wood products	1'121.3	825'170	964'594
Furniture	402.5	1'417'079	89'046
Paper products	605.2	634'452	2'282'449
Printing and publishing	388.3	131'929	223'908
Industrial chemicals	-7'698.9	5'024'215	13'072'380
Other chemicals	14'384.3	1'176'001	2'470'590
Petroleum refineries	-5'364.5	-162'560	1'900'235
Miscellaneous petroleum & coal prod.	-706.5	507'109	23'587
Rubber	-384.5	488'337	254'865
Plastic	2'212.5	2'220'228	640'241
Pottery, china, earthenware	848.8	613'834	116'501
Glass products	1'052.7	436'560	517'377
Other non-metallic	3'892.1	709'051	539'149
Iron and steel	10.7	4'103'654	3'872'370
Non-ferrous metals	106.5	1'347'083	3'432'098
Fabricated metal products	-189.4	2'987'910	1'633'284
Machinery, except electrical	8'404.2	5'210'073	21'198'119

Table 14 continued

Machinery , electrical	24'875.3	14'388'370	18'265'095
Transport equipment	19'037.8	-318'741	3'339'433
Professional and scientific equipments	2'018.5	2'980'678	2'806'392
Other	-3'763.9	6'950'514	852'396
<i>Overall</i>	<i>68'546.5</i>	<i>82'102'373</i>	<i>98'127'101</i>

Table 15. Wages deflated by CPI and by specific product price index

		Wages deflated by CPI (thousand yuan, 1980 prices)				Product wages (thousand yuan, 1980 prices) (deflated by product-specific price deflator)			
		1980	1985	1990	1995	1980	1985	1990	1995
ISIC Product category									
311	Food products	720.6	786.0	909.1	1'169.4	720.6	770.5	894.9	984.1
313	Beverages	700.8	758.3	813.7	1'184.6	700.8	753.5	1'022.7	2'039.0
314	Tobacco	815.8	967.3	1'034.8	2'488.1	815.8	961.2	1'300.6	4'282.5
321	Textiles	737.1	814.2	920.9	1'149.7	737.1	992.6	1'218.1	1'876.3
322	Wearing apparel, except footwear	637.5	722.2	977.0	1'338.6	637.5	880.4	1'292.2	2'162.8
323	Leather products	730.7	826.0	844.5	1'661.8	730.7	1'006.9	1'117.0	2'234.8
324	Footwear, except rubber or plastic	670.7	723.7	740.0	1'661.8	670.7	882.2	978.8	2'560.8
331	Wood products, except furniture	714.3	762.4	689.1	931.8	714.3	799.3	747.5	1'080.1
332	Furniture, except metal	674.8	796.1	844.2	1'137.4	674.8	834.6	960.0	1'848.9
341	Paper and products	698.0	802.4	826.9	1'208.7	698.0	841.3	517.8	808.9
342	Printing and publishing	703.9	827.2	935.9	1'210.1	703.9	867.2	586.0	809.8
351	Industrial chemicals	786.3	900.6	822.2	1'503.0	786.3	944.2	892.0	1'742.1
352	Other chemicals	772.4	929.8	925.3	1'522.3	772.4	974.9	1'003.8	1'764.5
353	Petroleum refineries	919.1	1'248.7	1'591.6	2'465.8	919.1	1'359.4	1'661.5	2'138.1
354	Miscellaneous petroleum and coal products	785.4	937.2	1'317.0	1'319.7	785.4	1'020.2	1'374.8	1'144.3
355	Rubber products	750.7	903.3	1'043.3	1'345.7	750.7	947.1	1'131.8	1'559.8
356	Plastic products	655.0	762.2	946.6	1'236.6	655.0	799.1	1'026.9	1'433.4
361	Pottery, china, earthenware	700.3	777.7	853.2	1'134.2	700.3	815.4	962.1	1'420.7
362	Glass products	740.5	848.3	746.7	1'448.5	740.5	889.3	842.0	1'814.4
369	Other non-metallic mineral products	684.7	779.3	806.7	1'140.1	684.7	817.0	909.7	1'428.1

Table 15 continued

371	Iron and steel	912.2	1'111.5	1'288.8	2'007.5	912.2	1'165.3	1'398.1	2'326.8
372	Non-ferrous metal	939.8	1'145.3	1'047.0	1'794.5	939.8	1'200.8	1'135.8	2'080.0
381	Fabricated metal products	678.7	838.7	886.7	1'342.8	678.7	879.3	961.9	1'556.4
382	Machinery, except electrical	769.0	946.8	1'043.7	1'418.3	769.0	992.6	1'132.2	2'368.1
383	Machinery, electrical	750.4	986.2	1'321.3	1'615.7	750.4	1'034.0	1'433.4	2'697.7
384	Transport equipments	804.8	1'015.2	1'411.9	1'680.2	804.8	1'064.3	1'531.6	2'805.4
385	Professional and scientific equipment	769.9	930.1	1'660.5	1'463.0	769.9	975.1	1'801.3	2'442.8
390	Other manufactured products	626.2	731.5	930.8	1'428.1	626.2	867.1	1'318.2	3'314.2
	Average real wage/average real product wage	747.3	875.1	988.0	1406.5	746.8	940.6	1'110.5	1'947.9

Table 16. Ratio of exports to imports by industry

ISIC Product category	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Net exporter throughout period																
311 Food products	2.73	2.57	1.83	3.51	3.21	2.26	2.74	2.25	1.60	1.76	2.13	1.89	1.88	2.15	1.36	1.03
313 Beverages	38.38	12.40	8.78	4.73	5.82	3.70	4.53	4.54	3.91	5.98	5.18	3.59	2.91	1.77	1.31	1.45
321 Textiles	1.45	1.57	2.23	3.24	3.54	2.49	2.41	2.40	2.03	1.97	1.58	1.42	1.38	1.22	1.17	1.11
322 Wearing apparel	85.22	57.08	50.74	45.78	32.91	18.94	18.46	17.25	32.20	21.91	32.19	7.13	27.23	23.00	24.37	19.34
324 Footwear	524.90	235.71	156.65	117.78	71.03	33.40	149.55	313.28	155.95	101.42	117.42	91.79	110.38	101.17	104.14	101.41
332 Furniture	31.96	28.18	23.55	11.61	4.65	2.04	2.43	3.56	3.39	3.34	4.05	6.88	8.03	7.11	8.47	10.15
354 Miscella. petroleum, coal prod.	230.96	107.43	41.69	3.00	5.40	12.47	6.21	5.81	2.39	16.45	28.22	18.43	16.02	11.63	18.39	23.01
355 Rubber	2.03	4.09	3.07	2.69	2.64	2.18	2.51	1.62	1.57	1.97	2.21	1.93	1.45	1.26	1.48	1.99
361 Pottery, china, earthenware	136.10	50.35	35.64	24.51	8.90	4.75	7.42	9.85	7.35	10.15	20.13	15.19	10.93	5.69	9.78	7.61
390 Other	6.10	5.60	3.97	3.02	2.97	1.76	2.28	1.61	2.28	1.91	2.41	2.45	4.09	3.64	4.56	4.73
Began period as net importer and ended as net exporter																
314 Tobacco	0.59	0.24	0.41	0.29	0.09	0.05	0.07	0.06	0.13	0.21	0.39	0.77	1.27	1.48	1.84	1.20
356 Plastic	0.88	0.87	0.88	0.79	0.89	0.26	0.42	0.40	1.13	1.88	0.79	0.94	1.90	1.90	2.22	2.41
369 Other non-metallic	3.77	1.83	2.35	1.14	0.95	0.50	0.42	0.77	0.95	1.39	4.37	6.33	3.38	1.51	1.52	1.86
381 Fabricated metal products	0.81	1.10	2.41	2.97	2.42	1.07	0.68	0.97	1.20	1.20	1.42	1.94	2.08	1.36	1.52	1.66
Net trade position unstable																
323 Leather products	1.38	1.54	1.38	2.49	1.85	0.58	0.98	1.05	0.96	0.93	0.73	0.57	0.99	0.80	1.01	1.07
Began Period as Net Exporter and Ended as Net Importer																
331 Wood products	1.39	1.28	0.96	0.70	0.13	0.10	0.22	0.17	0.22	0.49	0.43	0.50	0.56	0.50	0.53	0.67
352 Other chemicals	3.66	3.47	2.73	2.66	2.31	0.90	1.32	1.00	0.91	1.08	1.04	0.75	0.76	0.60	0.60	0.65
353 Petroleum refineries	22.96	41.03	54.82	33.81	27.04	24.33	1.99	2.65	1.33	0.73	1.11	0.70	0.52	0.21	0.27	0.30

Table 16 continued

362	Glass products	5.95	2.85	1.43	1.07	0.48	0.18	0.44	0.49	0.45	0.76	0.94	0.95	0.87	0.62	0.62	0.87
Net importer throughout period																	
341	Paper products	0.27	0.37	0.47	0.38	0.41	0.26	0.26	0.21	0.21	0.29	0.22	0.18	0.21	0.24	0.21	0.26
342	Printing and publishing	0.14	0.51	0.17	0.09	0.14	0.07	0.08	0.10	0.18	0.36	0.35	0.37	0.43	0.51	0.52	0.50
351	Industrial chemicals	0.38	0.39	0.38	0.37	0.19	0.19	0.30	0.30	0.22	0.32	0.35	0.28	0.29	0.34	0.36	0.37
371	Iron and steel	0.10	0.37	0.25	0.05	0.03	0.01	0.02	0.09	0.22	0.13	0.43	0.54	0.28	0.08	0.19	0.79
372	Non-ferrous metals	0.56	1.57	0.78	0.21	0.19	0.16	0.28	0.83	0.87	0.44	0.84	0.52	0.30	0.37	0.61	0.47
382	Machinery, except electrical	0.10	0.13	0.22	0.15	0.10	0.22	0.04	0.06	0.15	0.14	0.32	0.35	0.19	0.15	0.19	0.27
383	Machinery , electrical	0.28	0.26	0.46	0.38	0.24	0.05	0.14	0.21	0.33	0.33	0.65	0.64	0.79	0.61	0.66	0.75
384	Transport equipment	0.08	0.29	0.14	0.12	0.24	0.14	0.07	0.12	0.69	0.16	0.98	1.14	0.24	0.13	0.21	0.51
385	Professional, scientific equip	0.30	0.32	0.35	0.25	0.23	0.07	0.11	0.16	0.52	0.34	0.80	0.73	0.75	0.72	0.88	0.96

Table 17. Level and composition of employment in China's manufacturing sector

	Employment (millions)				Share of employment (%)		Growth rate of employment			
	Secondary industry	Manufacturing sector Total	Staff and workers	Contract workers	Secondary Industry	Manufac-turing	Contract workers in manu-facturing labour force (e)=(d)/(b)(%)	Secondary Industry	Total manufac-turing	Manuf. contract workers
	(a)	(b)	(c)	(d)						
1978	69.5	53.3	36.0	17.4	17.3	13.3	32.6			
1979	72.1	55.2	37.5	17.6	17.6	13.4	31.9	3.9	3.5	1.4
1980	77.1	59.0	39.5	19.5	18.2	13.9	33.1	6.8	6.9	10.8
1981	80.0	61.2	41.3	19.9	18.3	14.0	32.5	3.8	3.8	2.0
1982	83.5	63.3	42.4	20.9	18.4	14.0	33.0	4.3	3.4	4.9
1983	86.8	65.1	43.2	21.9	18.7	14.0	33.7	4.0	2.8	4.9
1984	95.9	70.3	44.4	25.9	19.9	14.6	36.8	10.5	8.0	18.0
1985	103.8	74.1	46.2	27.9	20.8	14.9	37.7	8.3	5.4	7.9
1986	112.2	80.2	48.2	32.0	21.9	15.6	39.9	8.0	8.2	14.6
1987	117.3	83.6	49.9	33.7	22.2	15.8	40.3	4.5	4.2	5.4
1988	121.5	86.5	51.5	35.0	22.4	15.9	40.5	3.6	3.5	3.9
1989	119.8	85.5	52.1	33.4	21.6	15.4	39.1	-1.4	-1.2	-4.6
1990	136.5	86.2	53.0	33.2	21.4	13.5	38.5	14.0	0.9	-0.6
1991	138.7	88.4	54.4	34.0	21.4	13.6	38.4	1.6	2.5	2.3
1992	142.3	91.1	55.1	36.0	21.7	13.9	39.5	2.6	3.0	5.9
1993	148.7	93.0	54.7	38.3	22.4	14.0	41.2	4.5	2.1	6.3
1994	152.5	96.1	54.3	41.8	22.7	14.3	43.5	2.6	3.4	9.2
1995	156.3	98.0	54.4	43.6	23.0	14.4	44.5	2.5	2.0	4.4
1996	161.8	97.6	52.9	44.7	23.5	14.2	45.8	3.5	-0.4	2.4

Table 17 continued

1997	165.0	96.1	50.8	45.3	23.7	13.8	47.1	1.9	-1.5	1.3
1998	164.4	83.2	37.7	45.5	23.5	11.9	54.7	-0.3	-13.5	0.5
1999	162.4	81.1	35.0	46.1	23.0	11.5	56.9	-1.2	-2.5	1.4
2000	160.1	80.4	32.4	48.0	22.5	11.3	59.7	-1.4	-0.8	4.1

Table 18. Employment share by manufacturing industries (percent of total employed labor force)

Product category	1980	1985	1990	1995
Traditionally export-oriented (net exporter throughout 1980-95)				
311 food products	0.6	0.8	0.8	0.8
313 beverages	0.2	0.3	0.3	0.3
321 textiles	1.3	1.9	1.9	1.9
322 wearing apparel, except footwear	0.3	0.5	0.5	0.5
324 footwear, except rubber or plastic	0.1	0.2	0.1	0.2
332 furniture, except metal	0.2	0.2	0.1	0.1
354 miscellaneous petroleum and coal products	0.0	0.0	0.1	0.0
355 rubber products	0.2	0.2	0.2	0.2
361 pottery, china, earthenware	0.1	0.2	0.1	0.2
390 other manufactured products	0.3	0.4	0.5	0.2
<i>Subtotal for strongly export-oriented industries</i>	<i>3.4</i>	<i>4.7</i>	<i>4.6</i>	<i>4.4</i>
Newly export-oriented (from net importer in 1980 to net exporter by 1995)				
314 tobacco	0.0	0.1	0.1	0.1
356 plastic products	0.2	0.3	0.3	0.3
369 other non-metallic mineral products	1.1	1.5	1.2	1.3
381 fabricated metal products	0.6	0.7	0.6	0.6
<i>Subtotal for newly export-oriented industries</i>	<i>2.0</i>	<i>2.6</i>	<i>2.1</i>	<i>2.3</i>
Ambiguous net trade tendency (net trade position unclear)				
323 leather products	0.1	0.1	0.1	0.1

Table 18 continued**Newly import-competing (from net exporter in 1980 to net importer by 1995)**

331 wood products, except furniture	0.2	0.2	0.2	0.2
352 other chemicals	0.4	0.5	0.5	0.5
353 petroleum refineries	0.1	0.1	0.1	0.1
362 glass products	0.1	0.2	0.2	0.1
<i>Subtotal for newly export-oriented industries</i>	<i>0.7</i>	<i>0.9</i>	<i>0.9</i>	<i>1.0</i>

Traditionally import-competing sector (net importer throughout 1980-95)

341 paper and products	0.3	0.3	0.3	0.4
342 printing and publishing	0.2	0.3	0.2	0.2
351 industrial chemicals	0.6	0.7	0.7	0.9
371 iron and steel	0.6	0.7	0.7	0.8
372 non-ferrous metal	0.2	0.2	0.2	0.3
382 machinery, except electrical	2.8	3.0	2.6	1.8
383 machinery, electrical	0.8	0.4	0.3	1.1
384 transport equipments	0.7	0.8	0.6	0.9
385 professional and scientific equipment	0.2	0.2	0.2	0.2
<i>Subtotal for strongly import-oriented industries</i>	<i>6.4</i>	<i>6.6</i>	<i>5.8</i>	<i>6.5</i>

Total manufacturing industries	12.6	14.9	13.5	14.4
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Total secondary industry employment	18.2	20.8	21.4	23.0
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The total manufacturing labour force from our data source is smaller than the number given in the China Statistical Yearbook (CSY) 2000. Here, we have increased each sector's employment proportionately to make the total equal to that in CSY before calculating the ratios.

**Table 19. Impact of export performance on employment and value-added growth in traditionally export industries,
cross-section regressions**

(italicised figures are absolute t-statistics)

Specification	Labour growth rate in sector i = a + b*(Export growth in sector i) <u>b</u>	Labor growth rate in sector i = a + b*(net export/ export in sector i) <u>b</u>	Value-added growth rate in sector i = a + b*(export growth in sector i) <u>b</u>	Value-added growth rate in sector i = a + b*(net export/ Export in sector i) <u>b</u>
Expected trend	(+)	(+)	(+)	(+)
1980-84	0.094 <i>0.872</i>	0.005 <i>0.089</i>	0.020 <i>0.176</i>	-0.001 <i>0.022</i>
1985	-0.017 <i>0.359</i>	0.034 <i>0.515</i>	-0.896 <i>0.866</i>	-1.466 <i>1.008</i>
1986	-0.019 <i>0.358</i>	-0.157 <i>2.111</i>	0.274 <i>0.916</i>	0.302 <i>0.555</i>
1987	-0.146 <i>0.712</i>	0.013 <i>0.064</i>	-0.229 <i>0.331</i>	0.625 <i>1.000</i>
1988	0.015 <i>0.318</i>	-0.072 <i>0.867</i>	0.017 <i>0.089</i>	-0.421 <i>1.402</i>
1989	-0.043 <i>0.317</i>	-0.078 <i>0.604</i>	0.061 <i>0.490</i>	0.003 <i>0.021</i>
1990	0.037	0.002	-0.026	0.109

Table 19 continued

	<i>1.719</i>	<i>0.041</i>	<i>0.539</i>	<i>1.502</i>
1991	0.036	0.188	0.075	0.052
	<i>0.141</i>	<i>1.253</i>	<i>0.818</i>	<i>0.889</i>
1992	-0.066	0.029	0.148	0.031
	<i>2.162</i>	<i>0.645</i>	<i>1.627</i>	<i>0.247</i>
1993	-1.062	0.118	-0.896	0.141
	<i>2.854</i>	<i>0.490</i>	<i>1.890</i>	<i>0.543</i>
1994	0.053	0.108	0.000	0.136
	<i>0.568</i>	<i>3.197</i>	<i>0.002</i>	<i>2.179</i>
1995	0.089	-0.041	-0.153	-0.003
	<i>0.898</i>	<i>0.365</i>	<i>0.924</i>	<i>0.015</i>

Table 20. Impact of sector-specific export growth and overall GDP growth on employment growth or value-added growth in traditional export industries, time series regressions
(italicised figures are absolute t-statistics)

Specification	Labor growth = a + b*export growth	Labor growth = a + b*export growth + c*Overall GDP growth		GDP growth = a + b*export growth
	<u>b</u>	<u>b</u>	<u>c</u>	<u>b</u>
Expected sign	(+)	(+)	(+)	(+)
Food products	-0.033 <i>0.272</i>	-0.051 <i>0.418</i>	0.360 <i>0.956</i>	-0.177 <i>0.349</i>
Beverages	-0.026 <i>0.164</i>	-0.019 <i>0.123</i>	0.914 <i>1.349</i>	-0.888 <i>0.996</i>
Textiles	0.134 <i>0.959</i>	0.138 <i>0.929</i>	-0.116 <i>0.203</i>	0.175 <i>0.409</i>
Wearing apparel	-0.034 <i>0.595</i>	-0.028 <i>0.466</i>	0.404 <i>0.596</i>	-0.173 <i>1.041</i>
Footwear	-0.142 <i>1.833</i>	-0.132 <i>1.559</i>	0.269 <i>0.427</i>	-0.060 <i>0.197</i>
Furniture	-0.142 <i>1.617</i>	-0.142 <i>1.503</i>	-0.017 <i>0.023</i>	-1.569 <i>1.586</i>

Table 20 continued

Miscellaneous petroleum and coal products	0.007 <i>0.056</i>	0.026 <i>0.211</i>	-1.739 <i>0.922</i>	-0.082 <i>0.637</i>
Rubber	0.165 <i>1.424</i>	0.205 <i>1.610</i>	0.688 <i>0.826</i>	-0.242 <i>1.756</i>
Pottery, china, and earthenware	-0.028 <i>0.187</i>	0.013 <i>0.085</i>	1.103 <i>0.923</i>	-0.800 <i>0.349</i>
Other manufactured products	0.003 <i>0.060</i>	-0.006 <i>0.105</i>	-0.688 <i>0.981</i>	0.003 <i>0.060</i>

Table 21. Indicative elasticity of employment and exports in traditional export industries
 (ratio of annual growth rate of employment to annual growth rate of exports by product category)

	Food products	Beverages	Textiles	Wearing apparel	Footwear	Furniture	Miscel- -laneous petroleum and coal products	Rubber	Pottery, china, earthenware	Other manufactured products
1980-84	8.35	4.15	0.82	1.09	1.25	-12.06	-0.73	0.65	-0.57	0.41
1985	2.65	-7.07	-1.19	-0.47	1.10	-0.30	0.11	-1.47	-0.35	-0.40
1986	0.21	0.26	0.17	0.00	0.14	0.62	-0.32	0.07	0.09	0.14
1987	0.58	2.51	0.56	0.80	-0.29	-0.19	0.22	0.72	0.19	-0.29
1988	0.07	0.11	0.28	0.00	0.02	-0.14	0.08	0.50	0.63	0.16
1989	-0.10	-0.25	0.21	-0.01	-0.03	-0.35	0.28	0.00	-0.55	-0.79
1990	0.17	-0.35	-2.14	0.07	0.06	-0.08	0.32	0.09	-0.09	0.04
1991	0.63	4.88	0.31	0.20	0.45	0.00	-0.91	0.28	1.80	0.36
1992	0.01	0.27	-0.15	0.07	0.03	-0.06	-0.61	0.14	0.01	-0.02
1993	0.53	-3.09	-1.58	0.33	0.63	-0.41	-1.54	-0.16	-2.38	0.27
1994	0.04	0.96	-0.04	0.21	1.69	-0.01	0.13	0.00	0.09	0.10
1995	0.07	0.62	-0.19	1.44	0.73	-0.35	0.01	0.51	1.19	-0.78
Averages (excluding 1989)	1.21	0.30	-0.29	0.34	0.53	-1.18	-0.29	0.12	0.06	0.00
1985-88	0.88	-1.04	-0.04	0.08	0.24	0.00	0.02	-0.04	0.14	-0.10
1992-95	0.16	-0.31	-0.49	0.51	0.77	-0.21	-0.50	0.12	-0.27	-0.11
1993-95	0.21	-0.50	-0.60	0.66	1.02	-0.26	-0.47	0.12	-0.37	-0.14

Table 22. Impact of import growth on employment and value-added Growth in traditional import-competing industries, cross-section regressions (*italicized figures are absolute t-statistics*)

Specification	Labour growth rate in sector $i = a +$ $b*(\text{Import growth in sector } i)$	Labour growth rate in sector $i = a +$ $b*(\text{net export/}$ $\text{export in sector } i)$	Value-added growth Rate in sector $i = a$ $+ b*(\text{Import growth in sector } i)$	Value-added growth rate in sector $i = a$ $+ b*(\text{net export/}$ $\text{export in sector } i)$
Expected trend	$\underline{b}$ (-)	$\underline{b}$ (+)	$\underline{b}$ (-)	$\underline{b}$ (+)
1980-84	-0.021 <i>0.464</i>	0.001 <i>1.618</i>	0.025 <i>0.217</i>	0.002 <i>1.004</i>
1985	-0.206 <i>1.829</i>	0.000 <i>0.074</i>	-0.005 <i>0.081</i>	0.000 <i>0.206</i>
1986	-0.007 <i>1.584</i>	0.001 <i>0.989</i>	-0.010 <i>0.692</i>	-0.002 <i>0.714</i>
1987	0.051 <i>0.653</i>	0.005 <i>1.078</i>	0.062 <i>0.201</i>	-0.019 <i>0.979</i>
1988	0.039 <i>0.958</i>	-0.001 <i>0.098</i>	0.746 <i>2.621</i>	0.044 <i>0.908</i>
1989	0.087 <i>1.194</i>	-0.007 <i>1.490</i>	0.032 <i>0.089</i>	-0.003 <i>0.143</i>
1990	-0.004	0.003	0.008	0.023

Table 22 continued

	<i>0.120</i>	<i>0.408</i>	<i>0.032</i>	<i>0.438</i>
1991	0.000	-0.002	-0.411	0.035
	<i>0.001</i>	<i>0.269</i>	<i>1.738</i>	<i>1.373</i>
1992	0.004	-0.008	0.032	-0.010
	<i>0.175</i>	<i>1.558</i>	<i>0.276</i>	<i>0.308</i>
1993	0.080	0.059	0.113	-0.001
	<i>0.200</i>	<i>0.978</i>	<i>0.862</i>	<i>0.046</i>
1994	0.129	0.001	0.309	-0.010
	<i>1.881</i>	<i>0.063</i>	<i>2.795</i>	<i>0.556</i>
1995	0.020	0.016	0.089	0.016
	<i>0.487</i>	<i>1.218</i>	<i>0.629</i>	<i>0.329</i>

Table 23. Indicative elasticity of employment and imports in traditional import-competing industries
(Ratio of annual growth rate of employment to annual growth rate of exports)

	Paper and products	Printing and publishing	Industrial chemicals	Iron and steel	Non- ferrous metals	Machinery, except electrical	Machinery, electrical equipment	Transport equipment	Professional and scientific equipment
1980-84	-0.65	0.41	0.41	0.18	0.12	0.37	0.18	0.14	0.16
1985	0.18	0.30	-1.47	0.09	0.09	-0.07	-0.50	-0.09	0.04
1986	0.19	0.10	-0.36	-0.50	-0.25	0.00	-0.06	0.00	3.34
1987	0.26	-0.47	0.20	-0.30	-0.54	-0.21	0.36	-0.21	3.07
1988	1.01	0.04	0.10	0.96	0.24	0.12	0.02	0.11	0.00
1989	-0.01	0.02	-0.21	0.40	0.24	-236.38	1.28	-0.04	0.40
1990	0.09	0.07	0.95	-0.02	-0.16	-0.09	-1.54	0.09	0.08
1991	0.13	0.27	0.17	0.28	0.02	0.20	0.38	0.28	0.16
1992	0.16	0.02	0.63	0.09	0.01	0.02	0.02	0.04	-0.07
1993	0.08	0.18	1.64	0.08	-0.93	-0.50	3.14	0.33	1.73
1994	0.07	0.04	0.01	0.11	-1.42	-0.79	0.27	0.17	-3.27
1995	0.15	-0.09	0.07	-0.08	0.11	-0.24	0.24	-0.13	0.39
Averages (excluding 1989)	0.15	0.08	0.21	0.08	-0.25	-0.11	0.23	0.07	0.51
1985-88	0.41	-0.01	-0.39	0.06	-0.12	-0.04	-0.04	-0.05	1.61
1992-95	0.11	0.04	0.59	0.05	-0.56	-0.38	0.92	0.10	-0.31
1993-95	0.10	0.05	0.57	0.04	-0.75	-0.51	1.22	0.12	-0.38

Table 24: Labour productivity and wages in traditionally export-oriented and import-competing industries

	1980	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Section A: Labour Productivity													
Simple-weighted for export -oriented industries	3.2	3.3	4.0	3.6	4.7	3.6	3.7	3.9	4.0	4.6	5.8	5.5	4.3
Simple-weighted for import -competing industries	3.5	4.1	5.4	5.5	6.1	6.5	5.7	6.1	6.6	7.8	6.2	6.3	5.7
<i>Productivity ratio, export/import-competing industries (%)</i>	92.3	79.3	73.0	64.8	77.0	55.6	64.8	62.9	61.1	58.6	93.3	88.2	75.3
Contemporary-weighted for export-oriented industries	3.6	3.7	4.0	4.0	4.5	3.6	3.7	3.6	3.7	4.4	5.6	5.1	4.5
Contemporary-weighted for import-competing industries	3.6	4.7	7.3	5.6	6.6	8.1	6.4	7.3	8.1	7.7	6.8	6.9	6.3
<i>Productivity ratio, export/import-competing industries (%)</i>	98.5	78.3	55.4	71.1	68.3	44.4	57.2	48.9	46.0	57.1	82.2	73.5	71.1
1985 weighted for export-oriented industries	3.7	3.7	4.0	4.0	4.6	3.9	3.9	4.0	4.2	4.9	6.3	5.8	4.4
1985 weighted for import -competing industries	4.2	5.0	7.3	7.7	8.4	9.1	7.6	8.7	9.2	10.6	7.2	7.2	6.7
<i>Productivity ratio, export/import-competing industries (%)</i>	88.8	74.8	55.4	52.2	54.9	42.6	51.4	45.7	45.8	46.1	87.6	79.8	66.4
1990-weighted for export -oriented industries	3.1	3.1	3.5	3.5	4.3	3.5	3.5	3.6	3.8	4.6	5.9	5.5	4.6
1990-weighted for import -competing industries	3.7	4.5	6.2	6.5	6.8	7.8	6.7	7.3	7.7	8.9	6.6	6.8	6.3
<i>Productivity ratio, export/import competing industries (%)</i>	83.6	69.3	56.0	53.5	62.5	44.7	52.1	48.9	49.6	51.5	89.7	80.8	72.8
1995-weighted for export -oriented industries	2.5	2.5	3.1	3.0	4.1	3.1	3.1	3.1	3.4	4.1	5.4	5.0	4.5
1995-weighted for import -competing industries	3.4	4.1	5.6	5.9	6.3	7.1	6.2	6.7	7.1	8.3	6.5	6.7	6.3
<i>Productivity ratio, export/import-competing industries (%)</i>	73.6	60.6	54.1	50.9	64.4	42.9	49.8	47.2	47.5	49.9	82.3	74.3	71.1
Section B: Wages													
Simple-weighted for export -oriented industries	700	836	942	1093	1137	1381	1655	1830	2263	2784	3157	3961	4618
Simple-weighted for import -competing industries	793	1006	1141	1266	1375	1749	2127	2253	2962	3694	3551	4641	5542
<i>Wage ratio, export/import-competing industries (%)</i>	88.4	83.1	82.6	86.3	82.7	78.9	77.8	81.2	76.4	75.4	88.9	85.4	83.3
Contemporary-weighted for export-oriented industries	687	814	924	1077	1107	1360	1644	1809	2243	2732	3073	3784	4971
Contemporary-weighted for import-competing industries	809	1044	1200	1269	1342	1675	2081	2042	2793	3202	3836	4783	5392
<i>Wage ratio, export/import-competing industries (%)</i>	85.0	77.9	77.0	84.8	82.5	81.2	79.0	88.6	80.3	85.3	80.1	79.1	92.2

1985-weighted for export -oriented industries	702	816	924	1085	1109	1371	1651	1802	2213	2715	2902	3636	4430
1985-weighted for import -competing industries	825	1055	1200	1368	1479	1846	2210	2371	3589	4797	3972	5295	6132
<i>Wage ratio, export/import-competing industries (%)</i>	85.1	77.3	77.0	79.3	75.0	74.3	74.7	76.0	61.7	56.6	73.1	68.7	72.2
1990-weighted for export -oriented industries	673	790	893	1036	1061	1352	1646	1809	2243	2764	3023	3741	4724
1990-weighted for import -competing industries	782	993	1121	1199	1314	1616	1886	2042	2875	3730	3505	4542	5453
<i>Wage ratio, export/import-competing industries (%)</i>	86.1	79.5	79.7	86.4	80.7	83.7	87.3	88.6	78.0	74.1	86.3	82.4	86.6
1995-weighted for export -oriented industries	653	773	876	998	1034	1357	1659	1806	2228	2742	3146	3821	4971
1995-weighted for import -competing industries	781	995	1125	1182	1303	1617	1891	2047	2792	3565	3476	4473	5392
<i>Wage ratio, export/import-competing industries (%)</i>	83.6	77.6	77.9	84.4	79.3	83.9	87.7	88.2	79.8	76.9	90.5	85.4	92.2

Table 25. Export-oriented industries - Cross-section regressions of relative wages in exports and relative productivity

Sample	14 traditional and new export-oriented industries		10 traditional export-oriented industries	
	(a)	(b)	(c)	(d)
Variable	Relative exports	Relative productivity	Relative exports	Relative productivity
Expected trend	Positive	Positive	Positive	Positive
Year	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>
1980	-0.015 -1.282	0.011 2.415	-0.023 -1.442	0.043 0.956
1984	-0.008 -0.637	0.002 0.275	-0.011 -0.551	0.032 0.407
1985	0.011 0.682	0.011 1.314	0.010 0.363	0.049 0.399
1986	0.013 0.576	0.016 1.300	0.009 0.287	0.074 0.477
1987	0.032 1.290	0.020 1.300	0.022 0.585	-0.073 -0.510
1988	0.037	0.021	0.033	0.098

Table 25 continued

	<i>1.646</i>	<i>1.310</i>	<i>1.063</i>	<i>0.424</i>
1989	0.025	0.020	0.021	0.093
	<i>1.168</i>	<i>1.410</i>	<i>0.690</i>	<i>0.439</i>
1990	0.012	0.017	0.009	0.105
	<i>0.701</i>	<i>1.452</i>	<i>0.409</i>	<i>0.544</i>
1991	0.002	0.021	0.005	0.183
	<i>0.101</i>	<i>1.304</i>	<i>0.168</i>	<i>0.796</i>
1992	-0.006	0.020	-0.007	0.166
	<i>-0.277</i>	<i>0.897</i>	<i>-0.241</i>	<i>0.542</i>
1993	0.045	0.076	0.041	0.076
	<i>1.842</i>	<i>2.612</i>	<i>1.159</i>	<i>0.252</i>
1994	0.054	0.102	0.051	0.121
	<i>1.898</i>	<i>4.628</i>	<i>1.208</i>	<i>0.431</i>
1995	0.094	0.154	0.098	0.259
	<i>5.603</i>	<i>8.424</i>	<i>4.455</i>	<i>1.106</i>
Pooled 1993-95	0.067	0.113	0.069	0.203
	5.023	8.422	4.050	1.415

Table 26: Export-oriented industries -- Cross-section regressions of relative wages on exports and relative productivity

Sample	14 traditional and new import-competing industries		9 traditional import-competing industries	
Variable	(a) Relative imports	(b) Relative productivity	(c) Relative imports	(d) Relative productivity
Expected trend	Negative	Positive	Negative	Positive
Year	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>
1980	0.017 0.519	0.026 2.342	0.007 0.139	0.127 1.807
1984	0.055 1.934	0.058 4.111	0.054 1.320	0.118 1.270
1985	0.025 1.021	0.067 3.761	0.028 0.848	0.024 0.338
1986	0.013 0.341	0.077 3.526	0.021 0.408	0.099 1.333
1987	-0.009 -0.182	0.084 1.995	-0.016 -0.272	0.062 0.589
1988	0.120 1.887	0.122 3.480	0.134 1.824	0.027 0.381

Table 26 continued

1989	0.290 <i>4.296</i>	0.133 <i>3.548</i>	0.342 <i>3.954</i>	-0.011 <i>-0.084</i>
1990	0.165 <i>2.551</i>	0.141 <i>2.896</i>	0.217 <i>2.544</i>	0.104 <i>0.841</i>
1991	0.098 <i>0.870</i>	0.176 <i>1.985</i>	0.124 <i>0.957</i>	0.524 <i>2.973</i>
1992	0.090 <i>0.585</i>	0.265 <i>1.949</i>	0.099 <i>0.581</i>	0.828 <i>3.893</i>
1993	0.075 <i>0.949</i>	0.222 <i>1.440</i>	0.004 <i>0.036</i>	0.724 <i>1.980</i>
1994	0.089 <i>1.024</i>	0.426 <i>2.222</i>	0.031 <i>0.229</i>	0.913 <i>2.222</i>
1995	0.131 <i>1.601</i>	0.445 <i>2.931</i>	0.077 <i>0.687</i>	0.720 <i>2.632</i>
Pooled, 1993- 1995	0.095 <i>2.113</i>	0.362 <i>4.055</i>	0.042 <i>0.685</i>	0.772 <i>4.585</i>

Table 27: Cross-section regressions of relative wages on relative productivity and net export (net exports measured in US\$ thousands)

Sample	All 28 industries		14 export-oriented industries		14 import-competing industries	
Variable	(a) Net exports	(b) Relative productivity	(c) Net exports	(d) Relative productivity	(e) Net exports	(f) Relative productivity
Expected trend	Positive	Positive	Positive	Positive	Positive	Positive
Year	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>	Coefficient <i>t-statistic</i>
1980	-5.5677E-08 -2.549	0.019 3.322	-1.873E-08 -0.490	0.013 2.770	-4.565E-08 -1.464	0.032 2.890
1984	-3.5832E-08 -2.070	0.016 1.775	1.0804E-08 0.465	0.004 0.559	-3.57E-08 -1.804	0.058 4.017
1985	-2.4189E-08 -1.635	0.022 2.155	3.7065E-08 1.134	0.011 1.432	-1.475E-08 -0.937	0.065 3.677
1986	-5.1177E-09 -0.381	0.029 2.410	3.7596E-08 1.070	0.016 1.402	2.5805E-09 0.170	0.074 3.514
1987	-1.815E-09 -0.106	0.030 1.679	2.6038E-08 0.830	0.017 1.077	1.1853E-08 0.467	0.083 2.124
1988	1.6145E-09 0.098	0.032 1.800	4.3737E-08 1.569	0.020 1.249	1.3993E-08 0.619	0.107 2.781

Table 27 continued

1989	-8.4382E-09 -0.400	0.032 1.506	4.8809E-08 1.890	0.021 1.654	-2.192E-08 -0.564	0.108 1.812
1990	1.2115E-08 0.574	0.031 1.662	2.7936E-08 1.547	0.019 1.727	1.2785E-08 0.260	0.107 1.821
1991	2.1949E-09 0.09	0.043 1.55	2.6305E-08 1.34	0.025 1.66	-3.738E-09 -0.07	0.156 1.75
1992	6.5627E-09 0.306	0.059 1.402	2.604E-08 1.531	0.027 1.344	-9.485E-10 -0.020	0.246 1.835
1993	-1.7731E-10 -0.023	0.072 2.391	2.9544E-08 1.748	0.071 2.454	-1.608E-08 -1.601	0.194 1.333
1994	-1.8402E-09 -0.241	0.098 3.796	2.2653E-08 1.828	0.097 4.472	-1.7E-08 -1.438	0.369 1.976
1995	3.2995E-09 0.363	0.139 4.401	3.5791E-08 2.254	0.141 4.817	-8.903E-09 -0.702	0.405 2.455
Pooled, 1993-95			2.891E-08 3.457	0.105 7.079		

Table 28. Cross-section regressions of relative wages on relative productivity and net exports (net exports normalized by total trade)

Sample	All 28 industries		14 export-oriented industries		14 import-competing industries	
Variable	(a) Net export/ trade volume	(b) Relative productivity	(c) Net export/ trade volume	(d) Relative productivity	(e) Net export/ trade volume	(f) Relative productivity
Expected trend	Positive	Positive	Positive	Positive	Positive	Positive
Year	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic	Coefficient <i>t</i> -statistic
1980	-4.898E-07 <i>-1.5308</i>	0.0156 <i>2.5990</i>	-3.1339E-07 <i>-1.6924</i>	0.0127 <i>3.0363</i>	-0.0434 <i>-0.8965</i>	0.0295 <i>2.5004</i>
1984	-0.0540 <i>-1.3730</i>	0.0132 <i>1.3763</i>	0.0046 <i>0.0643</i>	0.0036 <i>0.3551</i>	-0.0669 <i>-0.9285</i>	0.0602 <i>3.1544</i>
1985	-0.0138 <i>-0.3401</i>	0.0219 <i>2.0204</i>	0.0659 <i>1.2523</i>	0.0162 <i>1.7244</i>	-0.0023 <i>-0.0223</i>	0.0638 <i>2.3219</i>
1986	0.0140 <i>0.2861</i>	0.0295 <i>2.4137</i>	0.0876 <i>1.1009</i>	0.0229 <i>1.6441</i>	0.1000 <i>0.9409</i>	0.0637 <i>2.7232</i>
1987	0.0352 <i>0.5716</i>	0.0316 <i>1.7650</i>	0.0910 <i>0.9272</i>	0.0257 <i>1.3038</i>	0.2979 <i>1.8853</i>	0.0333 <i>0.7521</i>

Table 28 continued

1988	0.0415 <i>0.4781</i>	0.0350 <i>1.8671</i>	0.1497 <i>0.8954</i>	0.0298 <i>1.2414</i>	0.3561 <i>1.8288</i>	0.0793 <i>2.1547</i>
1989	-0.0307 <i>-0.2990</i>	0.0303 <i>1.3803</i>	0.1193 <i>0.7665</i>	0.0262 <i>1.3093</i>	-0.2538 <i>-0.6774</i>	0.1150 <i>1.9132</i>
1990	0.1117 <i>1.0680</i>	0.0352 <i>1.8627</i>	0.0818 <i>0.6304</i>	0.0215 <i>1.4181</i>	0.7454 <i>2.0552</i>	0.0739 <i>1.4002</i>
1991	0.0481 <i>0.3321</i>	0.0448 <i>1.5849</i>	-0.0394 <i>-0.2218</i>	0.0187 <i>0.9866</i>	0.7780 <i>1.3195</i>	0.1407 <i>1.6948</i>
1992	0.0637 <i>0.3511</i>	0.0595 <i>1.4179</i>	0.0145 <i>0.0608</i>	0.0219 <i>0.9088</i>	0.6647 <i>0.9135</i>	0.2337 <i>1.8027</i>
1993	0.0621 <i>0.6858</i>	0.0719 <i>2.4193</i>	0.2008 <i>0.8555</i>	0.0707 <i>2.1783</i>	-0.1974 <i>-0.6634</i>	0.2012 <i>1.2559</i>
1994	0.0497 <i>0.5142</i>	0.0975 <i>3.8052</i>	0.2347 <i>1.2219</i>	0.0966 <i>4.1177</i>	0.0097 <i>0.0293</i>	0.4167 <i>2.0587</i>
1995	0.1064 <i>0.8659</i>	0.1416 <i>4.5087</i>	0.3616 <i>1.3985</i>	0.1473 <i>4.2927</i>	0.5473 <i>1.5692</i>	0.4409 <i>2.8969</i>

Table 29. Time series regressions on wages in export-oriented industries*(1980 and 1984-1995)**relative wage = a + b * relative (export/GDP) ratio + c * relative productivity level**[absolute t-statistic in bracket]**dependent variable is (wage in sector i / average wage in manufacturing)*

	(a) (X in sector i/GDP in sector i) / (overall X/ overall GDP)	(b) (productivity in sector i) / (labour productivity in economy)
Food products	0.1841 3.3777	0.2707 2.0988
Beverages	-0.1643 -2.3504	-0.0598 -0.5160
Tobacco	4.6643 2.6960	-0.0203 -0.2904
Textiles	0.0883 2.5606	-0.1676 -1.4465
Wearing apparel	0.1127 4.5134	0.5806 2.0355
Footwear	-0.0446 -1.7244	1.2677 1.4925
Furniture	-0.0180 -0.6458	0.0661 0.8378
Miscellaneous petroleum and coal products	-0.2647 -3.4818	-0.3450 -1.4843

Table 29 continued

Rubber	-0.7345	-0.0061
	<i>-2.0774</i>	<i>-0.0492</i>
Plastic	-0.1384	0.3293
	<i>-3.0990</i>	<i>2.0802</i>
Pottery, china, earthenware	0.0817	-0.1866
	<i>2.0171</i>	<i>-0.4149</i>
Other non-metallic	-0.0471	1.0307
	<i>-0.1889</i>	<i>1.9101</i>
Fabricated metal products	0.0572	0.6758
	<i>0.3053</i>	<i>2.7607</i>
Other manufactured products	0.0979	0.0564
	<i>2.4028</i>	<i>0.0768</i>

Table 30. Time series regressions on wages in import-competing industries

*relative wage = a + b * relative (import/GDP) ratio + c * relative productivity level*

[absolute t-statistic in bracket]

dependent variable is (wage in sector i / average wage in manufacturing)

(Expected sign of coefficient)	(a) (M in sector i/GDP in sector i) / (overall M/ overall GDP)	(b) (productivity in sector i) / (labour productivity in economy)
	Negative	Positive
Leather products	-0.2071 -5.7686	0.7676 3.9604
Wood products	0.0695 0.7442	0.9770 1.5565
Paper products	0.0125 0.0924	1.7561 4.4281
Printing and publishing	2.2228 2.1128	1.0852 1.2725
Industrial chemicals	0.1743 0.8478	0.0353 0.2144
Other chemicals	-0.1579 -0.9641	-0.0370 -0.3337
Petroleum refineries	-0.1691 -0.5320	0.0486 1.3967

Table 30 continued

Glass products	-0.2779	0.3267
	<i>-1.9773</i>	<i>1.3389</i>
Iron and steel	-0.0038	-0.1001
	<i>-0.1138</i>	<i>-0.6195</i>
Non-ferrous matters	0.0684	0.1697
	<i>0.9713</i>	<i>1.1592</i>
Machinery, except electrical	-0.0588	0.4502
	<i>-0.8867</i>	<i>1.7548</i>
Machinery, electrical	-0.3213	0.3403
	<i>-0.6545</i>	<i>1.7637</i>
Transport equipment	-0.0752	-0.0275
	<i>-0.8740</i>	<i>-0.1226</i>
Professional and scientific equipment	0.0715	0.9634
	<i>0.6011</i>	<i>0.7226</i>

Table 31. Provincial export orientation, growth rates, and income levels

	Export GDP ratio1997-99 (%)	Average annual GDP growth rate, 1997-99 (%)	GDP per capita, 1996 (Rmb)
Henan	2.6	8.3	4 032
Sichuan	2.9	7.0	3 646
Chongqing	3.0	8.4	3 914
Gansu	3.5	7.7	2 901
Hubei	3.6	9.9	5 122
Hunan	3.7	8.8	4 130
Tibet	3.9	8.8	2 732
Inner Mongolia	4.2	8.2	4 259
Guizhou	4.2	7.2	2 093
Jiangxi	4.4	8.2	3 715
Qinghai	4.6	7.2	3 748
Yunnan	4.6	7.0	3 715
Anhui	4.7	8.9	3 881
Xinjiang	5.1	6.8	5 167
Hebei	5.1	10.1	5 345
Shaanxi	6.3	8.2	3 313
Guangxi	6.6	7.4	4 081
Jilin	6.7	8.2	5 163
Heilongjiang	6.8	8.0	6 468
Ningxia	8.9	6.9	3 731
Shanxi	9.6	7.2	4 220
Hainan	12.6	6.6	5 500

Table 31 continued

Shandong	13.6	10.2	6 834
Liaoning	17.0	8.0	7 730
Jiangsu	18.7	10.6	8 447
Zhejiang	19.8	9.4	9 455
Beijing	25.8	9.9	15 044
Fujian	27.4	11.4	8 136
Tianjin	35.0	10.1	12 270
Shanghai	36.3	9.7	22 275
Guangdong	80.9	8.6	9 513
<i>National</i>	<i>19.8</i>	<i>7.0</i>	<i>5 634</i>

Table 32. Consequences of integration into the international economy**Part A: Greater the export orientation leading to higher the growth rates**

Dependent variable: Annual average growth rate of GDP per capita in provinces, 1997-1999 (%)

Independent variable: Log of provincial exports as share of provincial GDP, X/GDP, annual average for 1997-1999 (%)

	<i>Coefficients</i>	<i>Standard error</i>	<i>t stat</i>
Intercept	7.103	0.534	13.294
ln(X/GDP)	0.660	0.237	2.788
Adjusted R square	0.184		
Standard error	1.152		
Observations	31		

Part B: Income divergence in richer, export-oriented provinces

Dependent variable: Annual average growth rate of GDP per capita in provinces, 1997-1999 (%)

Independent Variable: Log of Provincial GDP per capita in 1996, initial GDP, yuan per person

	<i>Coefficients</i>	<i>Standard error</i>	<i>t stat</i>
Intercept	-4.018	3.121	-1.287
ln (initial GDP)	1.458	0.363	4.010
Adjusted R square	0.335		
Standard error	1.041		
Observations	31		

Table 33. Impact on growth from geographical location and preferential policy towards FDI, 1996-99 Period

Geographical location	Average 1996-99 Growth Rate (%)	Geographic	Policy	Counterfactual Annual Growth Rates, %	
		effect (%)	effect (%)	No policies to attract FDI (i.e. policy=0)	Uniform Policy Toward FDI (i.e. policy=2)
North-east	9.19	0.56	2.20	6.99	9.19
Coast	10.72	2.62	2.67	8.04	10.24
Central	10.28	1.84	1.47	8.82	11.02
North-west	9.32	0.00	1.47	7.85	10.05
South-west	8.80	0.12	1.65	7.15	9.35
Average of Regions	9.66	1.03	1.89	7.77	9.97

Source: Demurger et.al. forthcoming.

Geographic variable = proportion of provincial population living within 100 kms of the coast or of navigable rivers that flow to the sea.

Policy variable = index of preferential policy towards FDI

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