

Why China is going to be a world leader

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P R Bhatt

Abstract

An attempt has been made in this paper to study competitiveness of China in relation to Japan, Australia, Korea, Rep and New Zealand. It is found that China is competitive in many fronts such as global competitiveness ranking, labour productivity, in creating a competitive environment for attracting foreign direct investment and international trade. It is also found that a depreciation of Chinese Yuan deteriorates export price competitiveness (REP) but improves cost competitiveness (WPI).

JEL classifications: F10, F13

Key words: Competitiveness, productivity, price index, nominal and real effective exchange rates,

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INTRODUCTION

China is emerging as a global player to compete with USA, Japan and European countries. China's GDP was US \$ 3251 billion and that of Japan was US \$ 4384 billion and its share of GDP in the world was 10.8% (Table 1). Its average annual growth rate of GDP was 9% during 1996-2006. Per capita income of China was US\$ 2461 in 2007.

China followed centralized planning and adopted an approach of communism to implement policies. China adopted a nationalistic and socialistic approach with full state control of the economy in the post 1949 under the leadership of Mao Zedong. China had made every effort to take advantage of their core competency by adopting nationalistic thoughts. In 1958, China has initiated a series of economic programs called "Great Leap Forward" to stimulate efficiency and competitiveness. However the programmes failed to achieve positive results and Mao quietly shifted his strategies towards stabilizing the economy by reversing the "Great Leap Forward" Programme, breaking communes into smaller units, reorganizing economic reporting, bringing back technical experts and forcing peasants to return to farming. Mao later introduced "Cultural Revolution" to rekindle the spirit of the "Long March" to take the economy to a new height which again resulted deterioration of the economy. The control and restriction in China breed rampant corruption in all sectors. As a result, China had realized the shortcomings of its policies and made efforts to rectify some of the mistakes. In 1979, China initiated reform process in agriculture, trade and investment, state-owned enterprises and its government institutions. China carried forward the reform process aggressively in 1980's and 1990's. China became a member of WTO in 2001. China integrated the economy with world economy and offered liberal environment for trade and foreign investment in China. China reduced tariffs, eliminated dual pricing practices, repeal price control which was used to protect domestic industries. It attracted huge foreign direct investment and increased foreign trade in goods and services. By 2006, the general tariff level on imports in China was 9.9%, which resulted in thriving imports.

Annual GDP growth rate of China increased to 13% and that of India to 9%, and Japan 2% while annual GDP growth of New Zealand has come down to 3.0%, Australia to 3% and Korea Rep 5% in 2007 (Exhibit 1). GDP per capita growth rate for was China 9.4% and that of New Zealand 3.1%, Australia 1.8%, India 5.4%, Korea Rep. 4.1%, and Japan 2.5% in 2004 (Exhibit 2). The annual growth of China's exports and imports of goods and services

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have fallen since 2002 (Exhibit 3 & 4). China's exports share in world exports has increased from 3.5% in 2000 to 6.5% in 2005 (Exhibit 5). New Zealand's export share in world export was only 0.22%, Australia 0.95%, India 0.8, Japan 6.2% and Korea, Rep. 2.8% in 2005 (Exhibit 5). The share of exports of China in its GDP was 40 % in 2006. In the case of , Australia it was 20%, India 22%, Japan 16%, Korea, Rep. 43%,and New Zealand 29% in 2006 (Exhibit 6). The share of imports of GDP for China was 32% while that of Australia it was 21.8%, India 25%, Japan 15%, Korea,Rep 42% and New Zealand 30.6% in 2006 ((Exhibit 7).

<< Exhibit 1 to 8 here >>

The structure of output in China has moved in favour of industry from 42.1% of GDP to 48.6% during 1991-2007 (See Table 2 and Exhibit 8). There was 10.3% growth in service sector for China in 2006. The industry growth rate for China was 13.4% in 2007. One of the reasons why China moved forward very fast is strengthening of their manufacturing sector. China introduced sweeping labour reforms in 1978. Under new labour laws, State owned Enterprises (SOEs) were given power to establish their own wage system. Labour contracts were introduced, SOEs were given freedom to evaluate their employees and take corrective actions including dismissal of employees, transfer of surplus employees from one unit to another unit. Clause 27 of the Labour Law (NPC 1994), effective since January 1, 1995 states "Employing units on the average of bankruptcy and undergoing rectification according to the Law, as well as those facing severe business difficulties, can dismiss workers if really necessary"(Lau, 1997). Limited liability or joint-stock companies were given much greater discretion to dismiss redundant workers. During 1998-2002, about 25 million employees of collective and state-owned enterprises have been laid off and herded into reemployment centres where they could stay until they found a job or for three years whichever is less. China has invested 12.6% of its GDP in infrastructure.

The objective of this paper is to analyze competitiveness of China in the global context.

The paper is organized as follows. Section 2 surveys the literature on competitiveness. Section 3 analyses the parameters of competitiveness. Section 4 explores the relationship between international trade competitiveness and exchange rate. Section 5 concludes the discussion.

2. SURVEY OF LITERATURE

Competitiveness is the ability of an economy's GNP and GNP per capita to grow as fast as another major economy (Jones and Teece, 1988). National competitiveness is the ability to produce and distributes products and/or services that can compete in international markets

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and simultaneously increase the real incomes and living standards of the nation's citizens (Blaine 1993). Adam Smith (1776) developed a trade model of absolute advantage in the cost of production to explain trade flows between two countries. Ricardo (1817) proposed a comparative advantage trade model. Heckscher-Ohlin (1919,1933) propounded difference in factor endowments to explain trade flows between countries. Vernon (1966), Krugman (1983,1986), Porter (1990) argued that deployment of factors rather than factors themselves explained competitiveness of a country. Porter (1990) explained competitiveness in terms of quality of demand conditions, nature of competition, quality of factors of production and extent of supporting industries. Bartlett and Ghoshal (1989), Prahalad and Doz (1987) and Prahalad and Hamel (1990) explained competitiveness in terms of strategies for global operations. Porter (1990) explained competitiveness in terms of productivity. "A nation's standard of living is determined by the productivity of its economy, which is measured by the values of goods and services produced per unit of the nation's human, capital, and natural resources" (Porter and Ketels, 2003). Long-run productivity growth, higher saving and investment rates, government's emphasis on quantity and quality of education and investment in infrastructure were responsible for high rate of growth in Japan (Baumol and McLennan 1985). Choudhri and Schembri (2002) found a robust positive link between productivity performance and international competitiveness in U S and Canadian industries. Caves (1974), Globerman (1979), Blomstrom and Persson (1983) found technological spillovers in host country's sector through FDI. Aitken and Harrison (1999) using a panel from Venezuela covering the period between 1976-89 and more than 3000 firms found a " negative spill over effect" on domestic firms which tends to be bigger for smaller firms. Djankov and Hoekman (1999) also found a negative spill over effect of FDI on purely domestic firms in Czech industry. Chung et al (1998) found no positive impact of Japanese FDI in automotive sector on the American components-suppliers. Girma and Wakelin (2001) found for the electronics sector in UK, a positive impact of FDI investments on domestic firms located in the same region. Javorcik and Spatarareanu (2003) found that MNCs were likely to transfer more technology to their wholly owned subsidiaries than to partially owned ones because of fears of technology leakages. Driffield and Love (2005) found that the UK gains substantially only from inward FDI motivated by a strong technology-based ownership advantage. They also found that inward FDI motivated by technology-sourcing consideration leads to no productivity spillovers and same is true of 'efficiency seeking' inward FDI. Price has an important influence on competitiveness. The usual approach to the subject of price competitiveness is by the "relative" method; that is analysing the changes in comparative

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export prices, relative to the changes in the supplier's export performance (McGeehan 1968). Junz and Rhomberg (1964) found that 43% of the variation in export shares can be attributed to relative export prices. Parkinson (1966) found a positive association between price and export performance. Growth in relative unit labour cost is the most popular measure of international competitiveness. Fagerberg (1988) found that the main factors influencing differences in international competitiveness and growth across countries are technological competitiveness and ability to compete on delivery. Cost competitiveness does affect competitiveness and growth to some extent, but less so than many seem to believe (Fagerberg, 1988). Lamfalussy (1963) found that unit labour costs rose more rapidly in the U K over the period 1953-60 than elsewhere because of growth of productivity (output per man-hour).

COMPETITIVENESS OF CHINA

Competitiveness of China can be assessed in terms of the following parameters.

1. Global Competitive index ranking
2. Productivity and unit labour cost
3. Foreign Direct Investment inflows
4. Measures of International Trade Competitiveness

Global Competitive index ranking

World Economic Forum's (2008) global competitive index was constructed by taking into account of many parameters such as institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market sophistication, technological readiness, market size, business sophistication and innovation. Based on the global competitive index (2008), China's ranking was 30 while that of Australia it was 18 (Table 3). Japan has the highest rank of 9 followed by South Korea 13. China had strengthened its competitive position by improving macroeconomic stability (11th rank), health and primary education (50th rank), labour market efficiency (51th rank) and higher education and training (64th rank). India's overall competitive position has been weakened by macroeconomic instability (109th rank), health and primary education (100th rank), labour market efficiency (89th rank) and higher education and training (63rd rank) (Table 5). Japan's high ranking in global competitiveness was because of innovation and sophistication factors (3rd rank), infrastructure (11th rank), labour market efficiency (11th rank), and market size (3rd rank). For South Korea, the favourable factors for global competitiveness were macroeconomic stability (4th rank),

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innovation and sophistication factors (10th rank), technological readiness, market size (13th rank) and infrastructure (15th rank) (See Table 3).

Productivity and Unit Labour cost

Productivity is one of the measures of competitiveness. “ A nation’s standard of living is determined by the productivity of its economy, which is measured by the values of goods and services produced per unit of the nation’s human, capital, and natural resources (Porter and Ketels, 2003). Over a longer period of 1933-2002, the average output growth rate per worker for China was 1.85%, the average capital growth rate per worker was 2.4%, and the average human capital was 1.3% (Table 4). The total factor productivity for China during the same period was only 0.18%. The average annual growth of labour productivity during 1980-2005 was 5.7% while for Japan it was 1.8%, India 3.7% and Korea,Rep (4.7%) (Exhibit 9). It can be seen from the Table 5 that labour productivity of China in relation to USA was 0.137 which was higher than India (0.128) in 2002. Labour productivity has increased dramatically in China from 0.059 in 1995 to 0.137 in 2002. It can be seen that labour productivity in all industries in China except a few was higher than in India in 2002 (Table 6). Total factor productivity growth in China was 12% higher than in India during the period 1998-2003 (Pandey and Dong, 2007).

Foreign Direct Investment inflows

FDI inflows can be considered as one of the competitive measures of a nation. High FDI would contribute high level of investment and employment generation, raising productivity and skill development and sharply improved export performance (Bhatt 2008b). The FDI inflows was highest for China with US \$ 70 billions followed by Australia (US \$ 24 billion), and South Korea (US\$ 5 billion) in 2006 (Table 7 & Exhibit 10). FDI inflows as a percentage of Gross Fixed capital formation was highest for New Zealand (33.7%), followed by Australia (12%), and China (8.8%) in 2006 (Table 8 & Exhibit 11). FDI inflows as a percentage of Gross Domestic Product was also highest for New Zealand (61%), followed by Australia (33%) , and China (11%) in 2006 (Table 9 and Exhibit 12). Sales of mergers and acquisitions for China were US\$ 6.7 billion whereas for Australia it was US \$ 16 billion, and New Zealand US\$ 4.8 billion in 2006 (Table10 and Exhibit 13). The purchase of cross border mergers and acquisitions for China was US \$ 14.9 billion), Japan US\$ 14.5 billion and Australia US \$ 31 billion (Table 11 & Exhibit 14).

<< Exhibit 9-14 here >>

Measures of International Trade Competitiveness

Competitiveness in international trade may be defined as the advantage in price, quality, product design, reliability, salesmanship, delivery times, after sales service, etc. While elements of non-price competitiveness have an important effect on the volume of international trade, this paper concentrated only on price competitiveness. Non-price competitiveness is intangible and difficult to measure. There is no single comprehensive index to measure price competitiveness because of the variety of contributing factors (Doggett and Creswell 1979).

However, there are many indices available to measure the price competitiveness such as:

- (a) relative export prices (REP),
- (b) relative wholesale price (WPI),
- (c) profitability of exports (PEI),
- (d) relative profitability of exports (RPE), and
- (e) Relative import price competitiveness index (IPC).

Relative export price index (REP) of a country is the ratio of the unit value index of exports of that country to a weighted average of unit price index of exports of its competitors.

The index of relative wholesale prices (WPI) is a country's wholesale price index divided by a weighted average of the indices of its competitors' wholesale prices. This index may act as a useful proxy for domestic costs.

The index of profitability of exports (PEI) is the ratio of a country's export unit value to its wholesale price index.

The assumption behind this measure is that higher the export prices relative to wholesale prices, more likely those producers will export rather than sell in the domestic market. The ratio suffers from the drawback that wholesale prices refer to current production while export prices are at the customs post and thus refer to production at some time in the past. The wholesale price index incorporates some indirect taxes and is generally considered a poor proxy for the incentive to produce for the domestic market. Nevertheless, this index of competitiveness is attractive since data are readily available and no information on other countries is needed.

The index of relative profitability (RPE) is profitability index of a country divided by weighted profitability index of her competitors.

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The index of import price competitiveness (IPC) is a country's wholesale price index divided by its unit value index of imports. This index measures the competitiveness of import substitutes.

While constructing the index of relative export prices, we have used the unit value index of overall exports of a country. It would have been more meaningful if it is confined to only exports of manufacturing goods. Since the unit value index of exports of manufacturing goods are not readily available separately for developing countries, we have used the unit value index of overall exports.

The main competitors of New Zealand considered in this paper were Australia, China, Japan, and Korea Rep., and each country is competitor to other countries.

The major export marketing centres considered are: US, Canada, Germany, France, Italy, Netherlands, UK, Indonesia, Singapore, Malaysia, Thailand, Saudi Arabia and UAE.

The weight given to each competitors of a country for averaging purpose was calculated from the formula given by (Bhatt 2008c):

$$W_j = \sum_k X_{ik} Y_{jk}$$

where W_j is the weight of j^{th} country, X_{ik} is the export share of i^{th} country to k^{th} country, Y_{jk} is the export share of j^{th} country to k^{th} country, in the total exports of all countries, i is the country, j is the country's main competitors, and k is the country's major export marketing centres.

The weight given to each competitors of the country reflected the relative importance of that country in a country's overseas markets weighted by the importance of the market to a country.

Data used for the study were taken from IMF, *International Financial Statistics*, Annual.

The five indices of trade competitiveness of all countries are presented in Tables 15-19 and Exhibits 5 to 9.

The relative export price index (REP) of a country below 100 indicates more competitiveness of exports compared to its competitors and above 100 indicates less competitiveness of exports. It can be seen from Table 12 and Exhibit 15 that during the period 1990-2004, China has gained export price competitiveness during 1993-1997 and 2004. Japan was more export price competitive through out the period of study and Korea, Rep had been more competitive since 2001. New Zealand's export was competitive only in 1994, 1995, 1998 and 1999 whereas Australia's exports were more competitive during 1993-1995 and 1999.

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The index of import competitiveness (IPC) below 100 indicates more competitiveness of imports and above 100 indicates less competitiveness of imports. China was competitive in terms of imports during 2003-04 and Japan imports were more competitive during the entire period of study. For Australia and New Zealand, it was non-competitive during the entire period of study. Korea, Rep was competitive in 1998, 1999, 2001, and 2002 (Table 13 and Exhibit 16)

The relative wholesale price index of a country (WPI) below 100 indicates more competitiveness in domestic cost of production of exports and above 100 indicates less competitiveness. Here we have taken wholesale price index as a proxy for domestic cost of production of exports. It is found in Table 14 and Exhibit 17 that domestic cost of production of exports of China was competitive during 1990-1993 and 2001-2004. Japan became competitive during 2001-04 and Korea, Rep during 1990-1999. New Zealand and Australia were more competitive during 1990-1999.

The profitability index (PEI) above 100 indicate more profitability and below 100 less profitability. It is seen from Table 15 and Exhibit 18, that exports remained relatively less profitable for China, Australia, China, Korea, Rep and New Zealand during 1990-1999. For Japan, exports were profitable during 1990-1993 and 1997-2004. China and Korea, Rep had improved their profitability since 2000. Australia and New Zealand had improved their profitability only during 2001-2002.

The relative profitability index (RPE) above 100 indicate that a country's better relative profitability. It can be seen from Table 16 and Exhibit 19 that China had enjoyed relative profitability during 1994-1997, Japan during 1990-2002, and Korea, Rep. during 2001-04. For countries like Australia and New Zealand, relative exports profitability was relatively unfavorable during the entire period.

<< Exhibit 15 to 20 >>

TRADE COMPETITIVENESS AND EXCHANGE RATE

There were some empirical studies analyzing the relationship between real exchange rate depreciation and merchandise export of India. Joshi and Little (1994) and Srinivasan and Wallack (2003) had shown a positive relationship between real exchange rate depreciation and increase of merchandise export of India. However Sarkar (1992) found that the process of depreciation in exchange rate of rupee since 1971 has no favourable effect on the dollar value and volume of Indian exports both at the aggregate and disaggregate level.

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A regression analysis was carried out to examine the impact of exchange rate on trade competitiveness. Each competitive measures mentioned earlier are regressed on real effective exchange rate (REER).

The REER takes into account the effect of relative price changes on the nominal effective exchange rate (NEER). The nominal effective exchange rate (NEER) represents the price of a representative basket of a foreign currencies each weighted by its importance to respective countries in international trade. REER for the period 1990-2004 were presented in Table 17 and Exhibit 20.

All variables have unit roots at level (Table was not given for want of space). Hence the regression analysis was done by taking variables in the first difference. The model also estimated for level variables.

The result of regression analysis is presented in Table 18 through Table 21.

It can be seen in Table 18 that a depreciation of Chinese Yuan deteriorates export price competitiveness (REP) but improves cost competitiveness (WPI). A depreciation of Japanese yen improves export price competitiveness (REP), import price competitiveness (IPC), and profitability index (PEI, RPE) (Table 19). In the case of New Zealand a depreciation of NZ \$ improves export price competitiveness (REP), import price competitiveness (IPC) and profitability (Table 20). A depreciation of Australian dollar improves export price competitiveness (REP) and relative profitability (RPE) (Table 21).

Application of the likelihood ratio (LR) test showed that the null hypothesis of no integrating relationship can be rejected at the 1% level, thereby suggesting that at least one linear combination of the non-stationary variable (in level form) exist which is stationary.

As a result, we estimated error correction models for New Zealand, Australia, China and Japan that capture both the short- and long-run behavior of the relationship between exchange rate and competitive indices estimated above. The estimated error correction model is not given here for want of space. It can be seen that short-term estimates are consistent with long term results.

CONCLUSION

China is emerging as global player. China became competitive in many fronts. It holds 30th position in the ranking of global competitiveness. Its average annual labour productivity growth was 5.7% during 1980-2005. It attracted FDI to the tune of US \$ 69 billion in 2006. China has gained export price competitiveness during 1993-1997 and 2004. China was competitive in terms of imports during 2003-04. Domestic cost of production of exports of China was competitive during 1990-1993 and 2001-2004. China's exports remained

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relatively less profitable during 1990-1999. China had enjoyed relative profitability during 1994-1997. It is found that a depreciation of Chinese Yuan deteriorates export price competitiveness (REP) but improves cost competitiveness (WPI).

<< Tables 1-21 here >>

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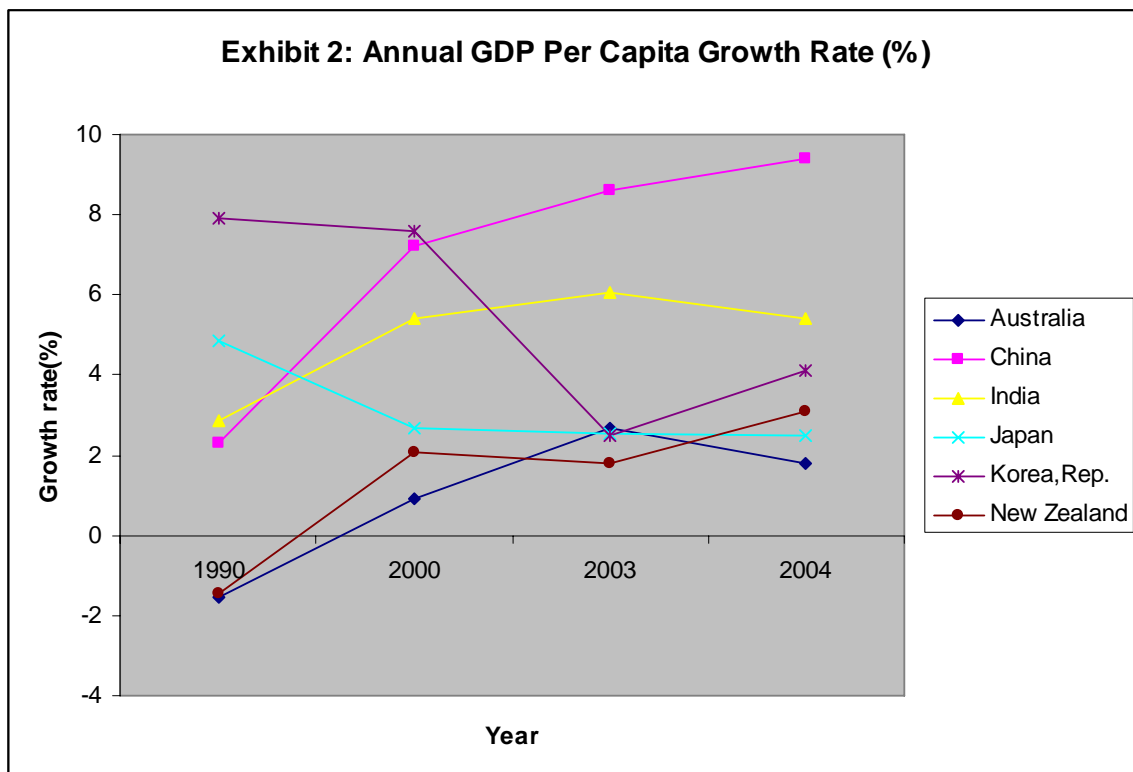
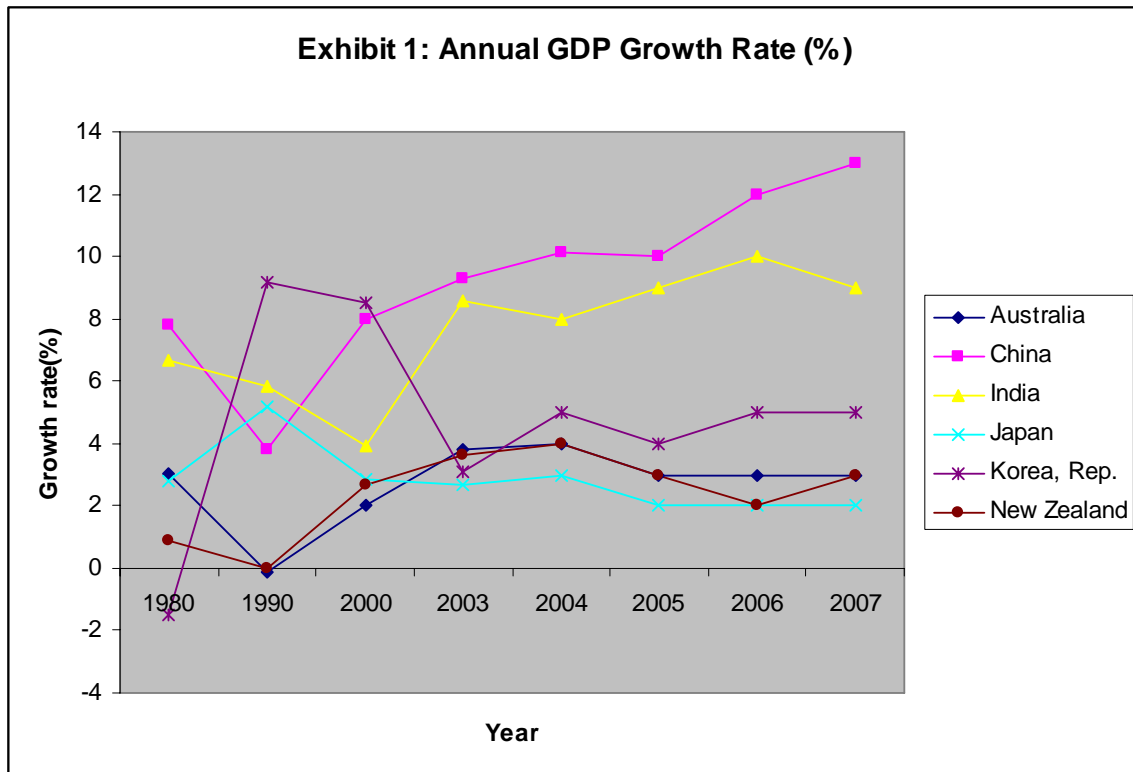
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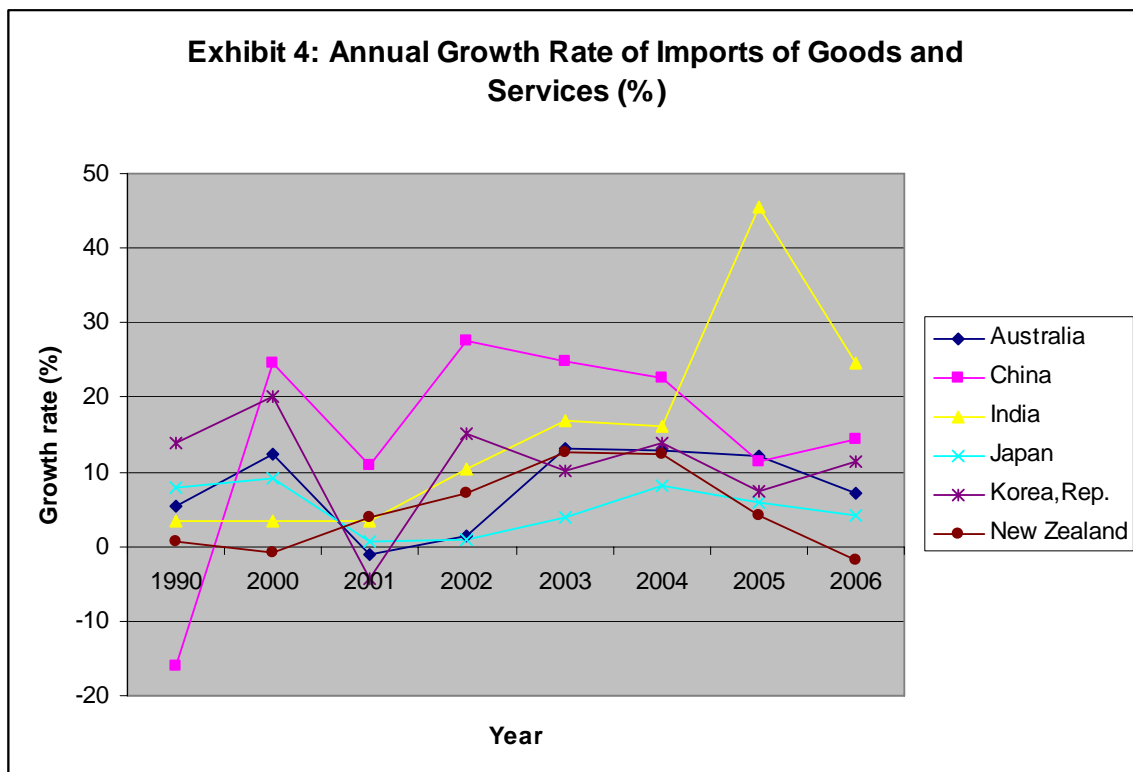
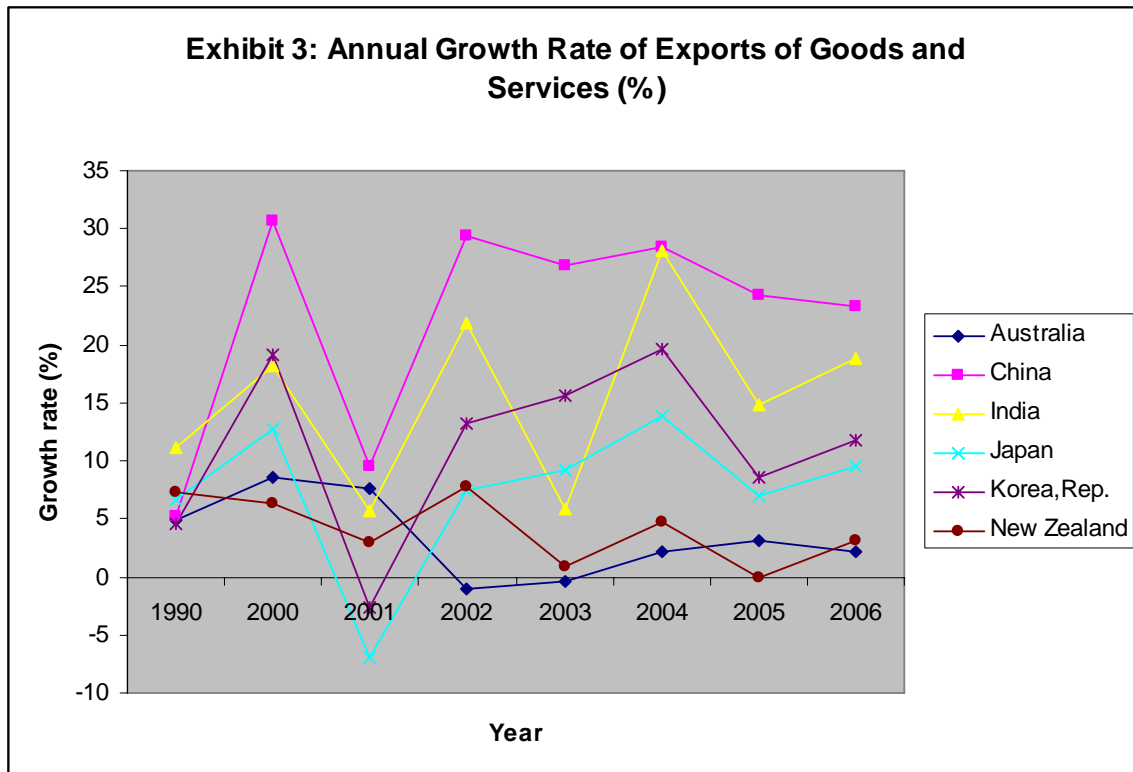
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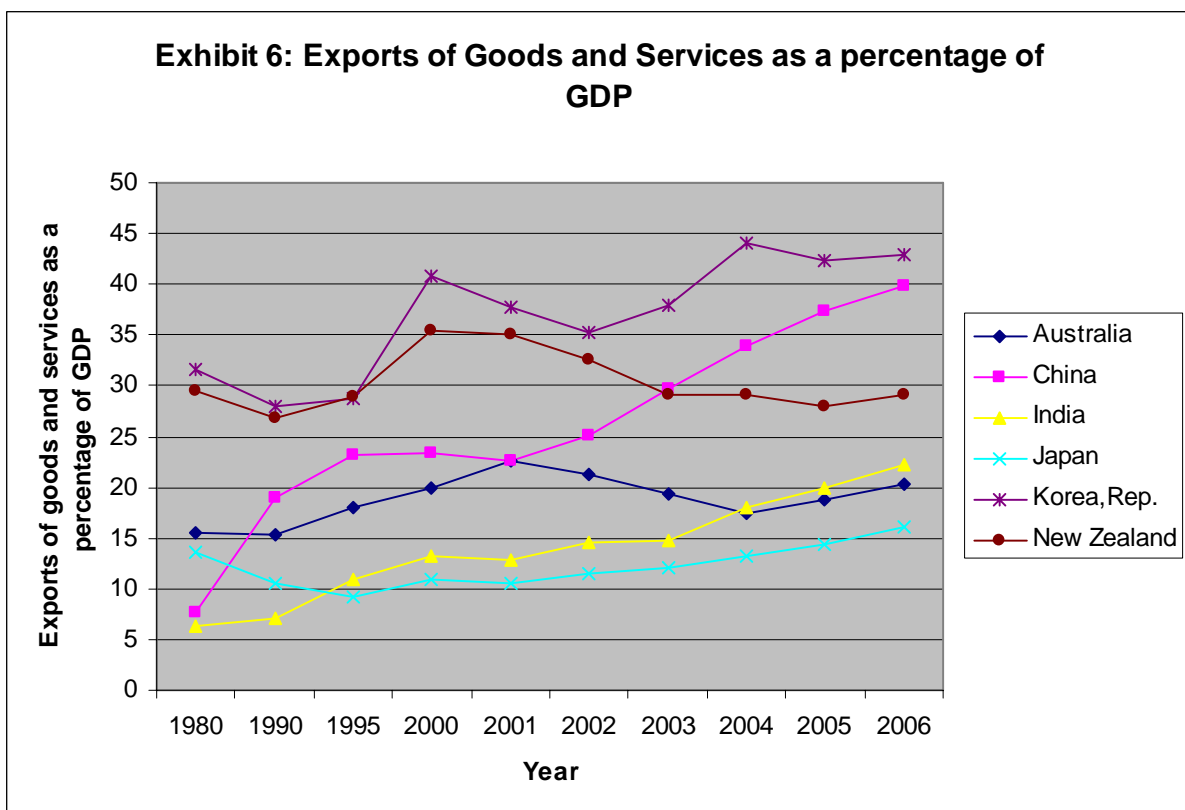
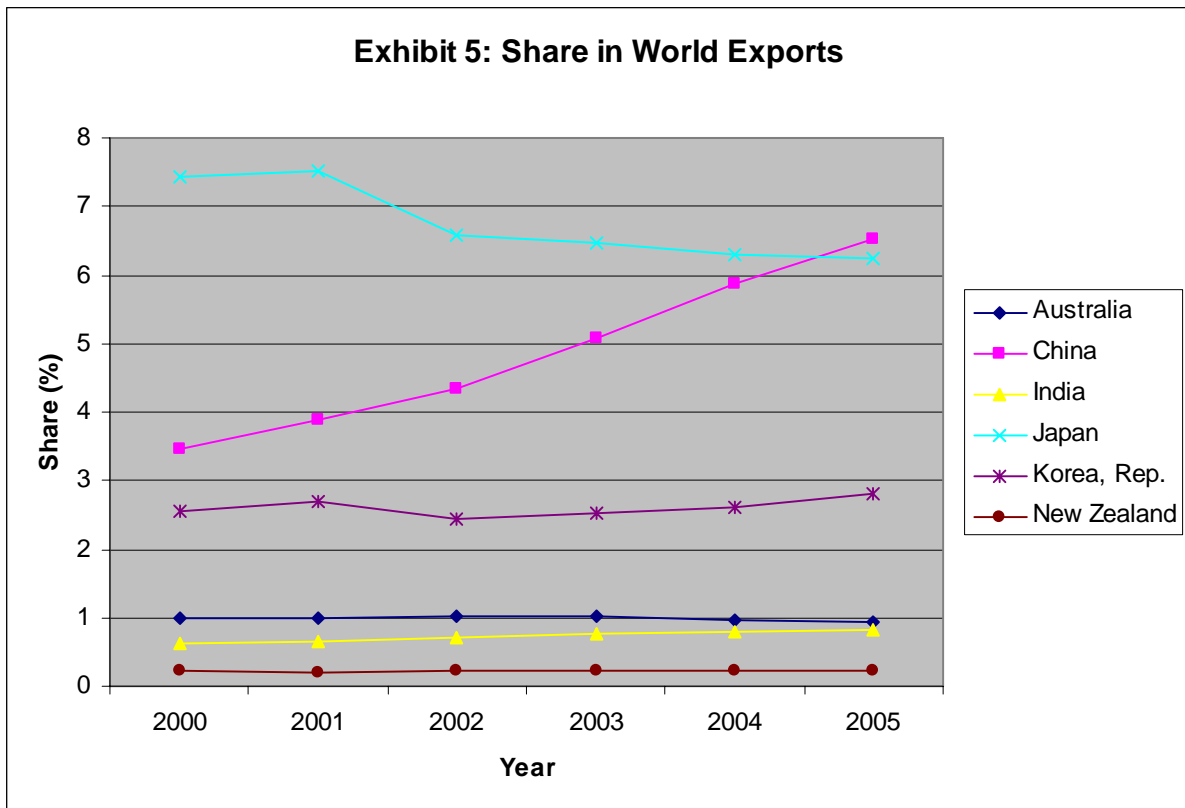
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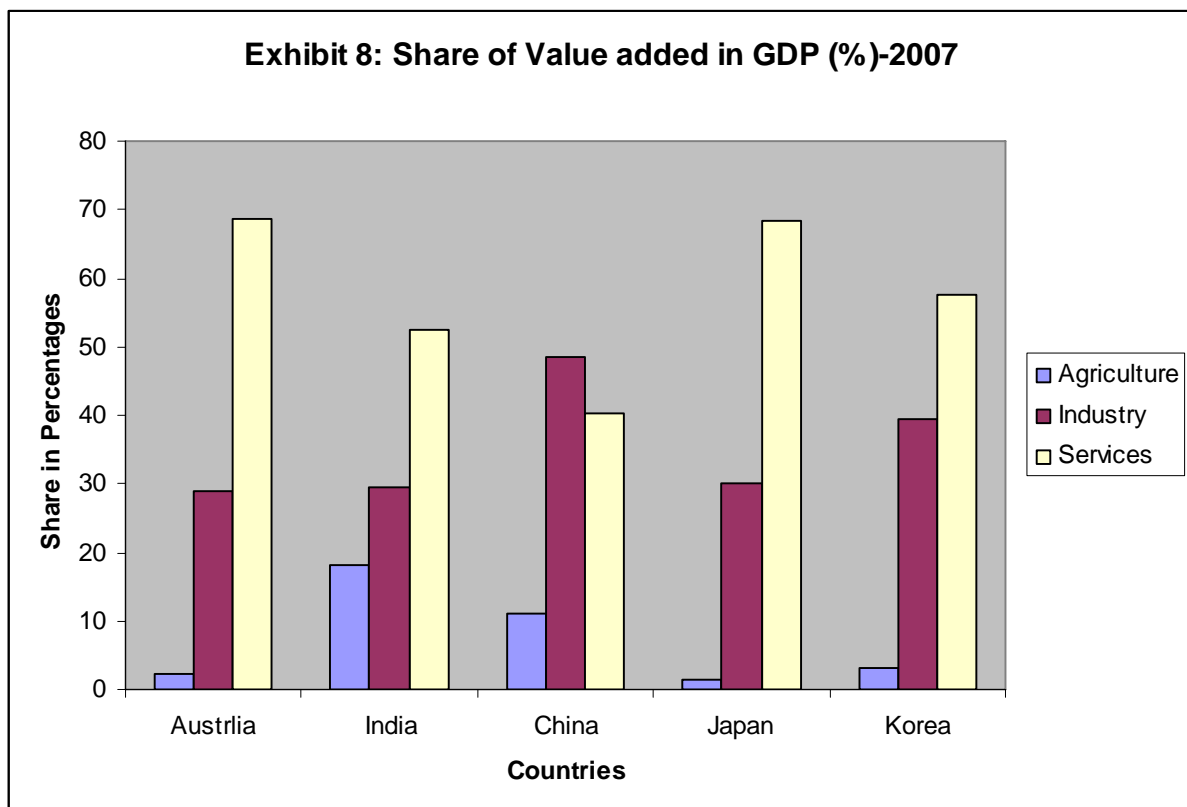
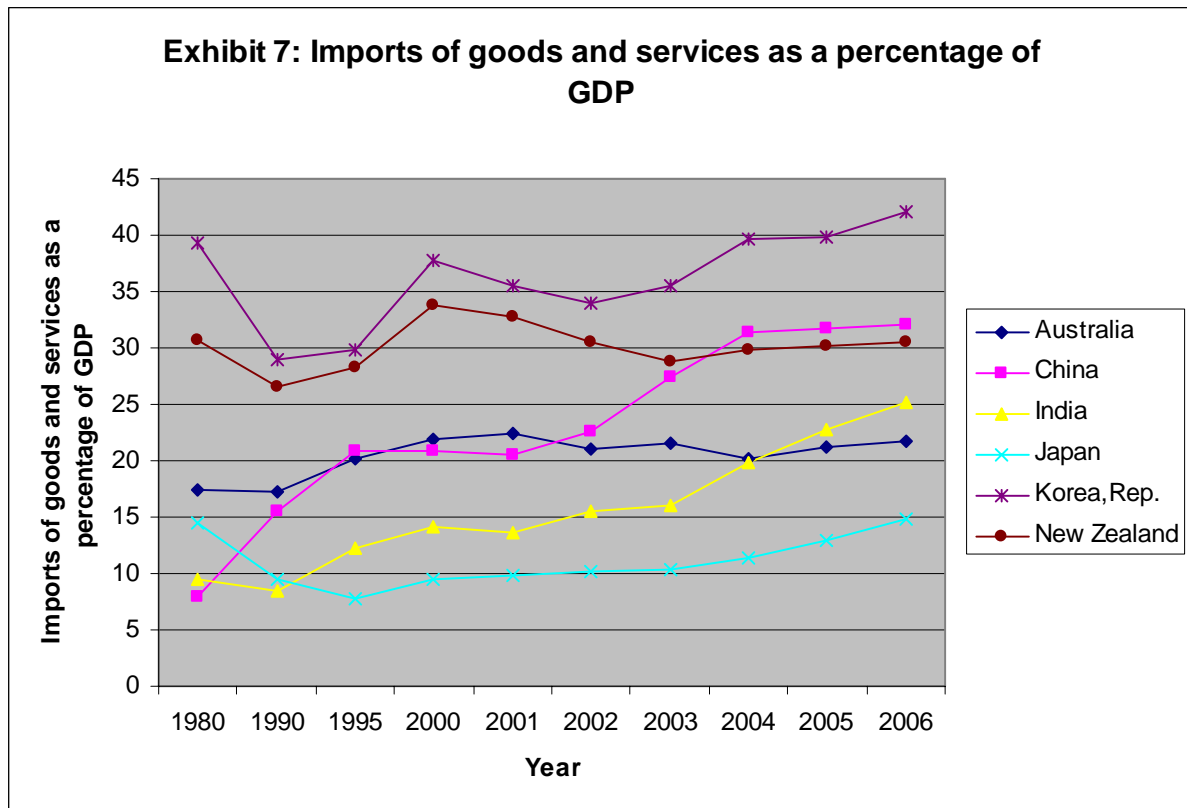


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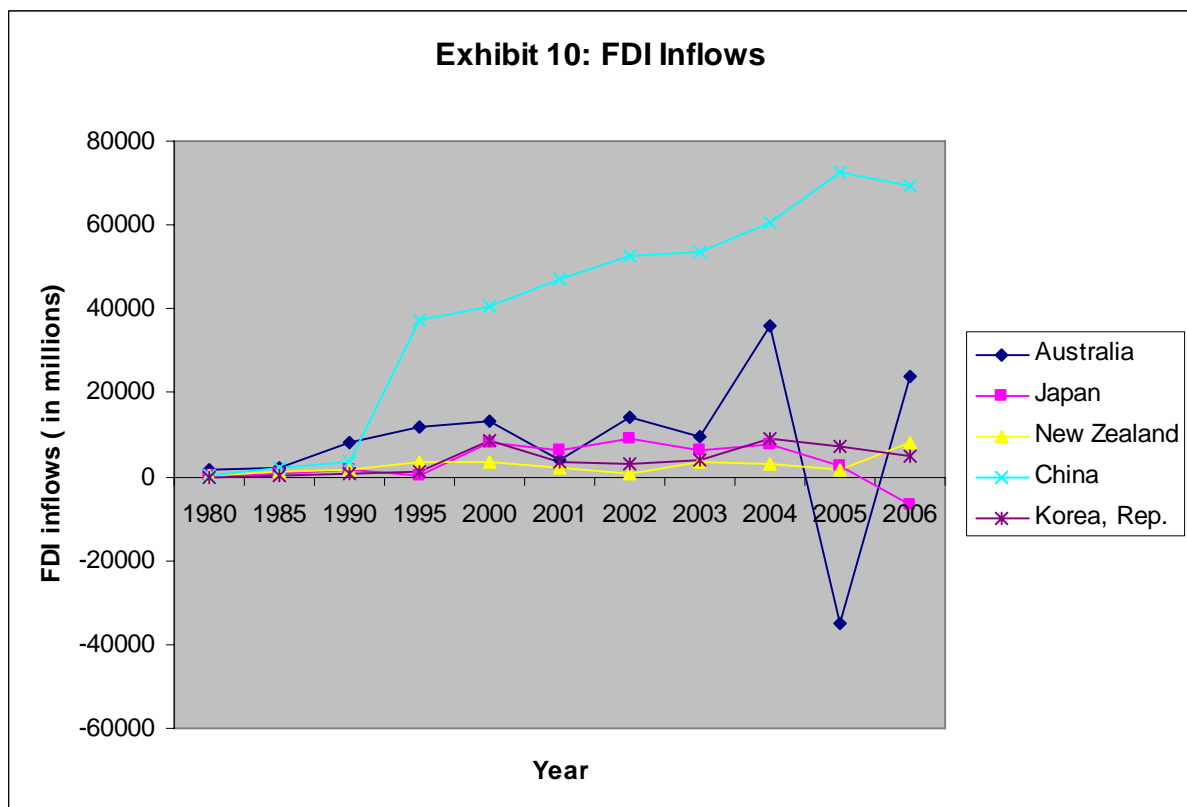
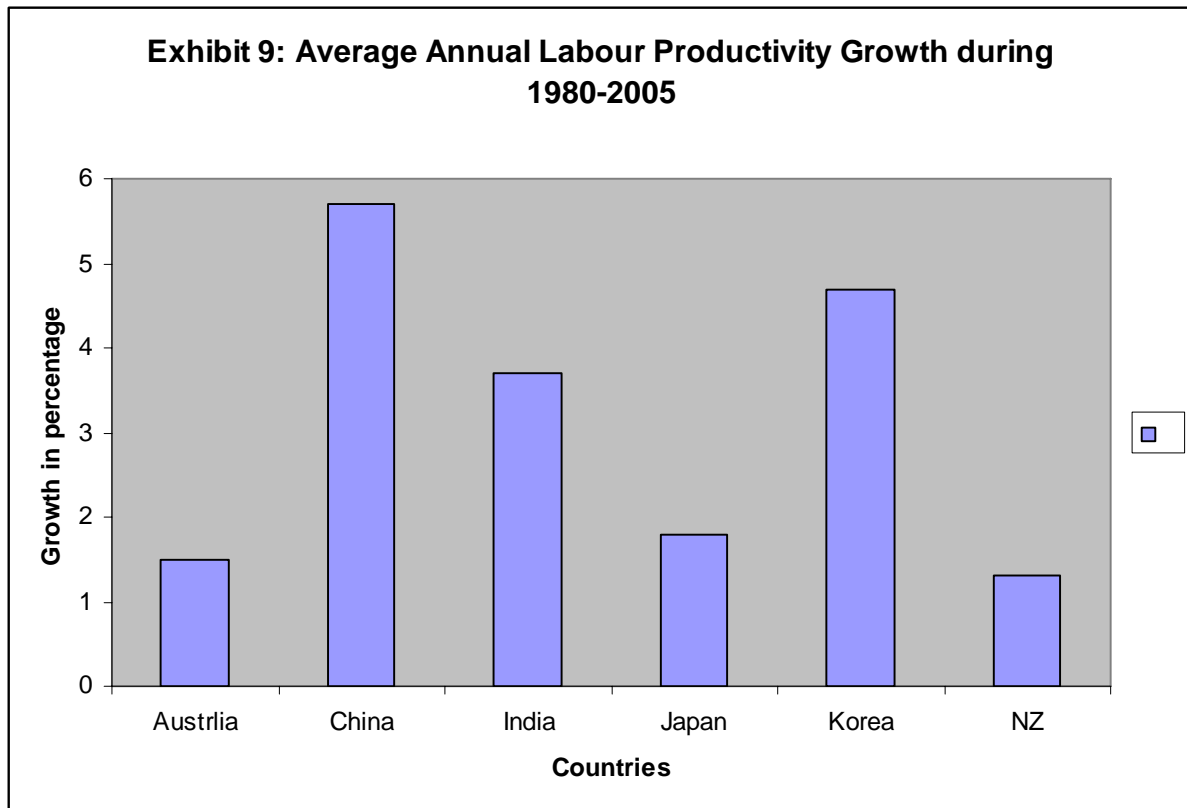


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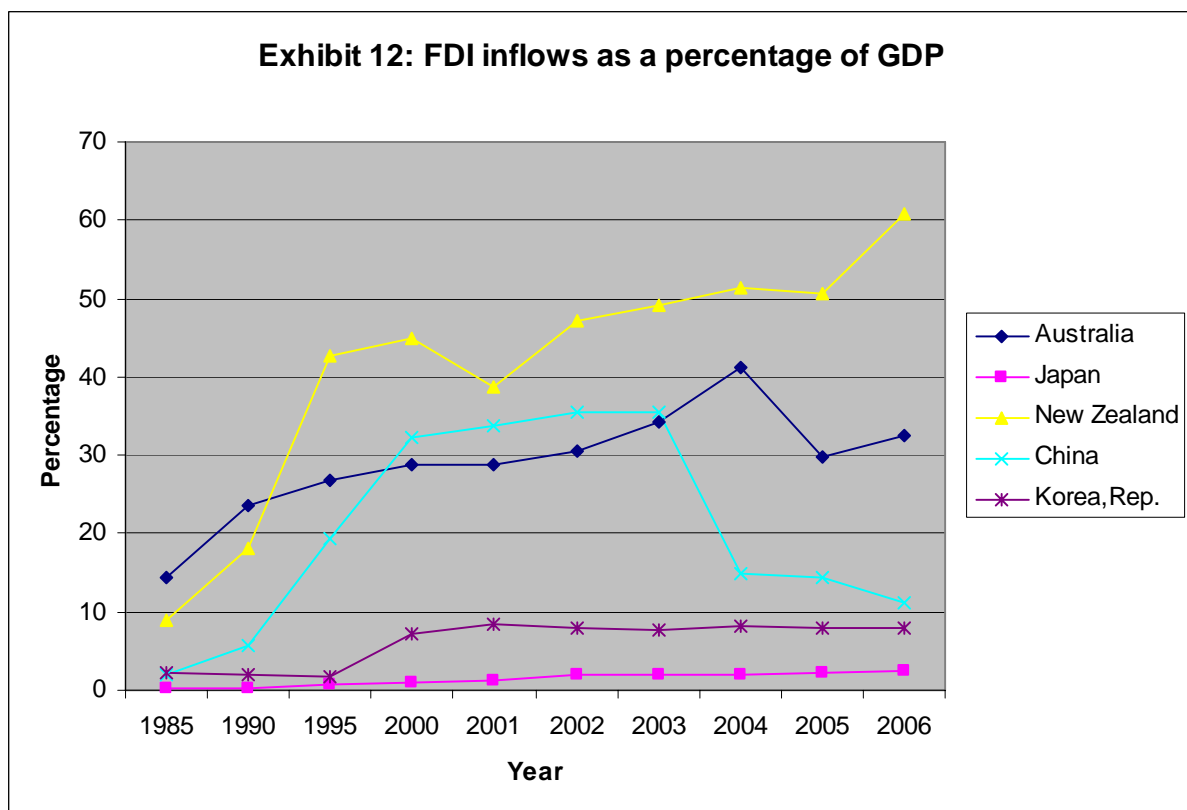
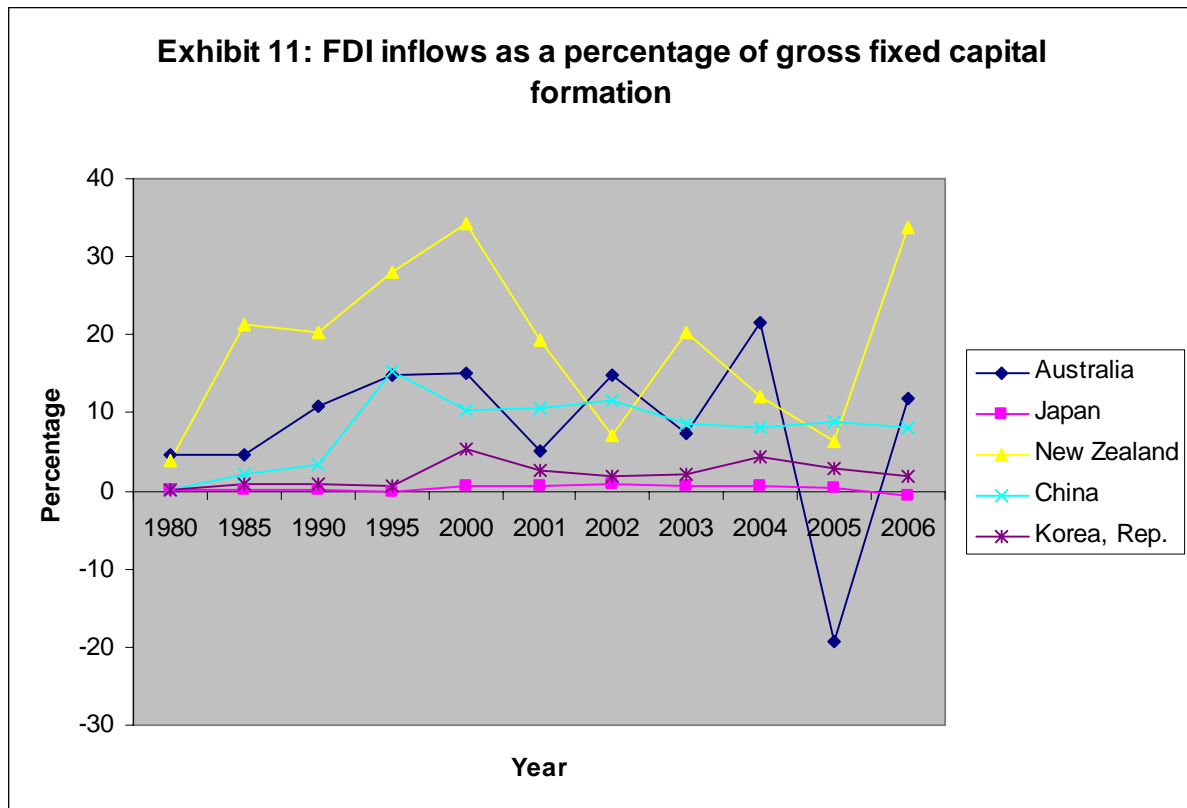




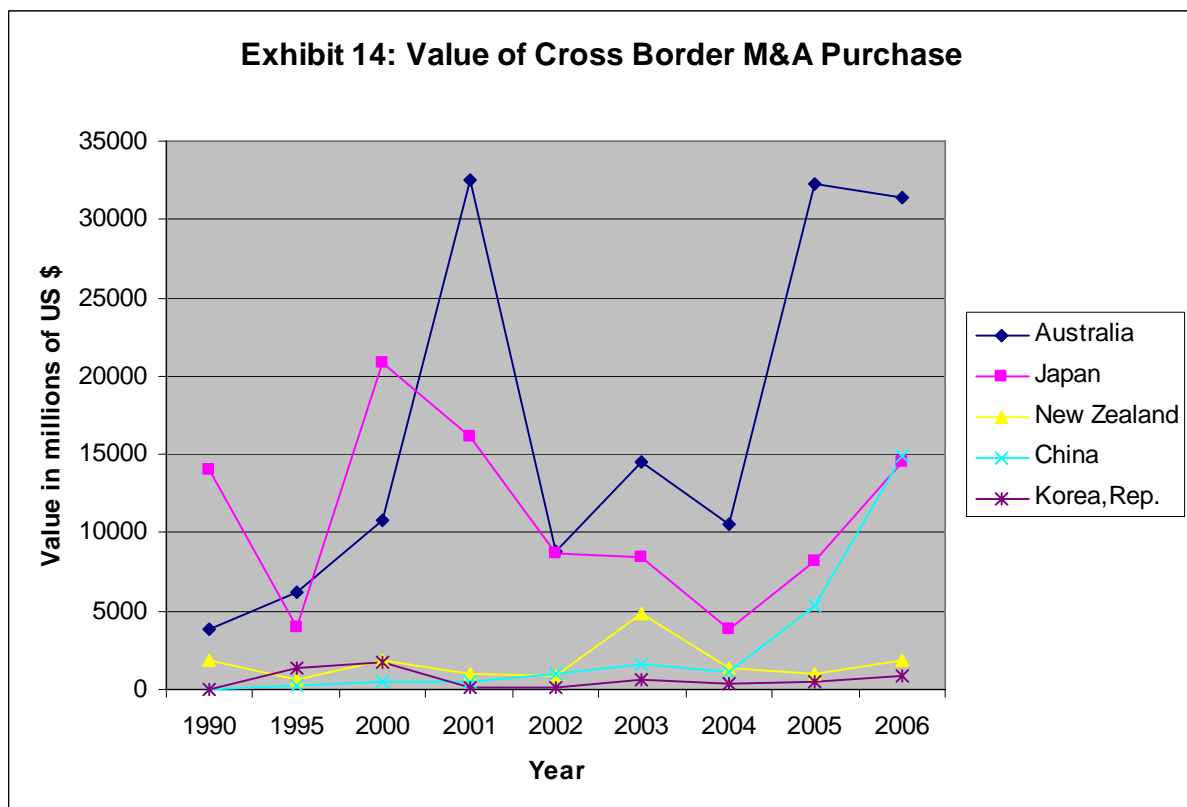
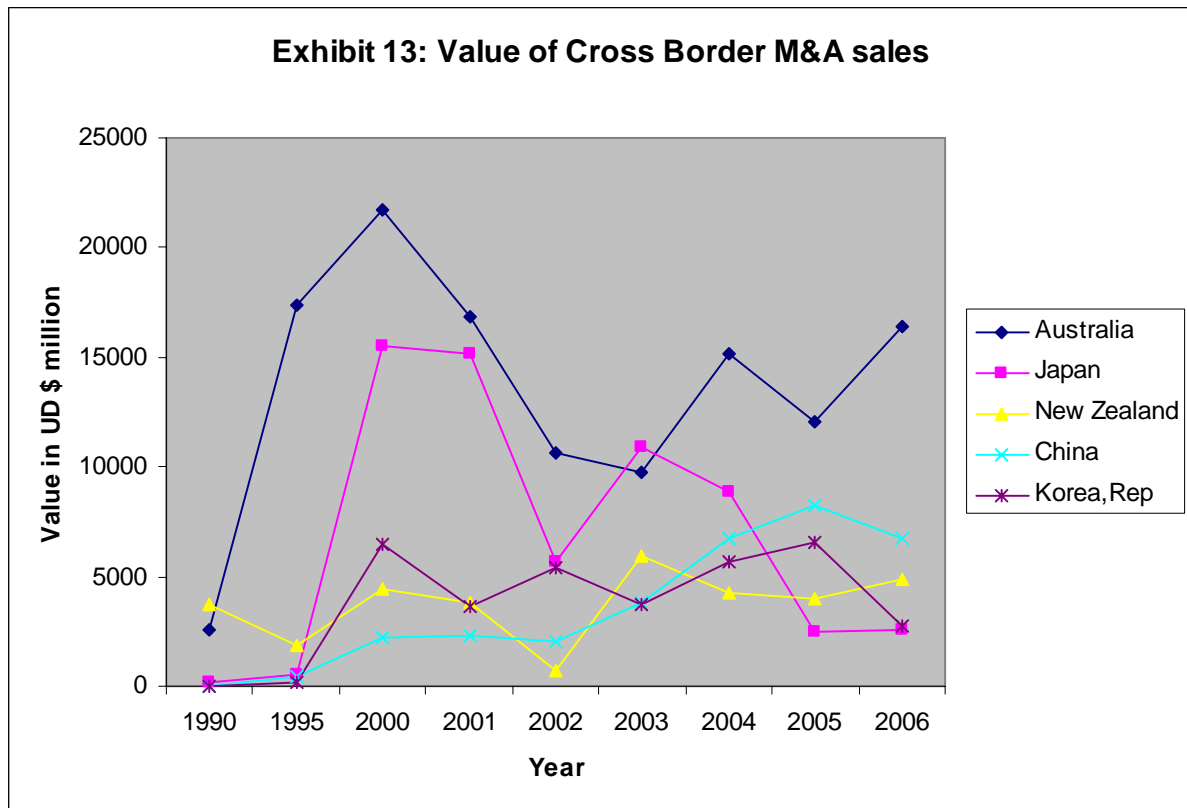
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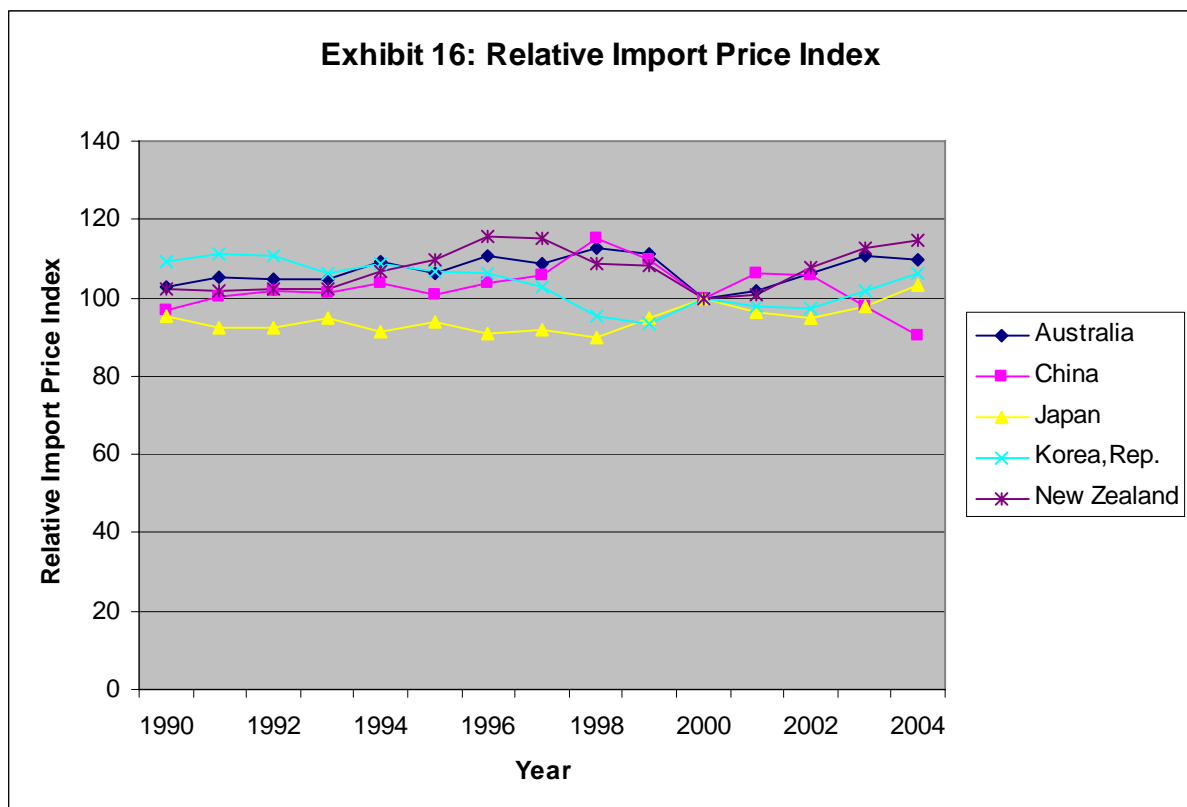
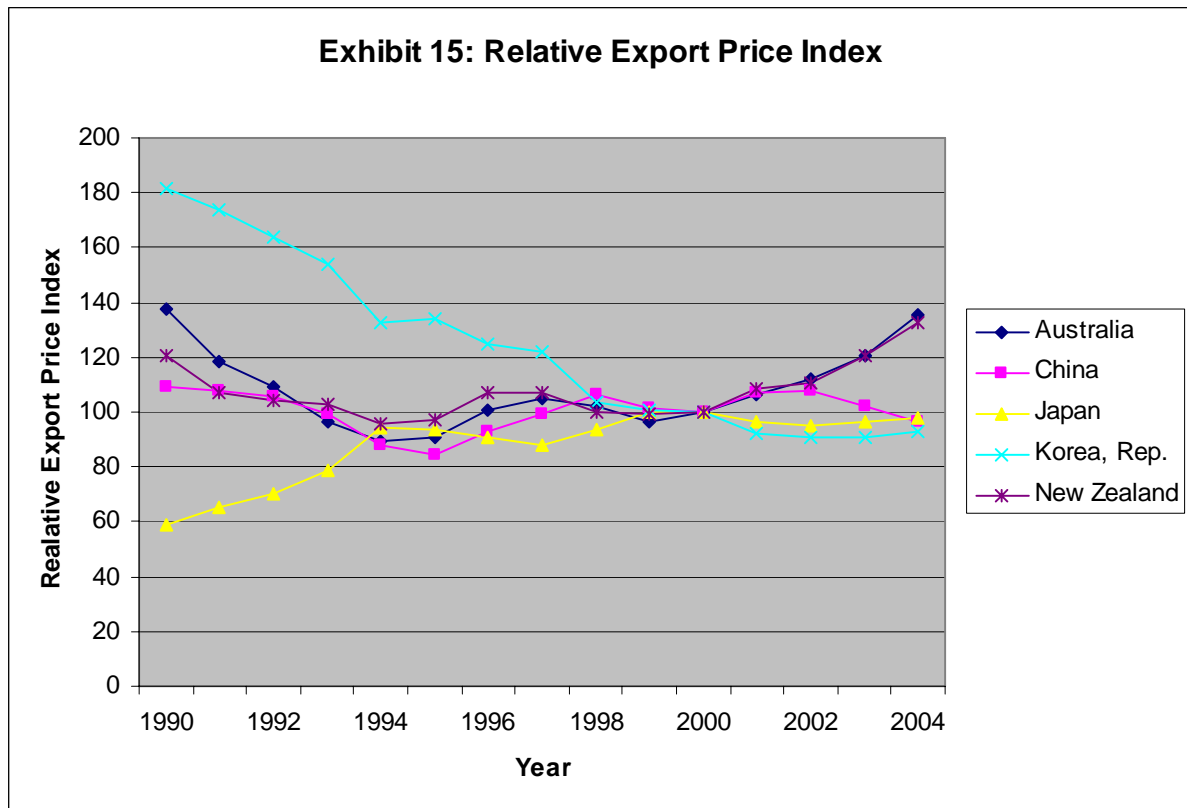


Exhibit 17: Relative Wholesale Price Index

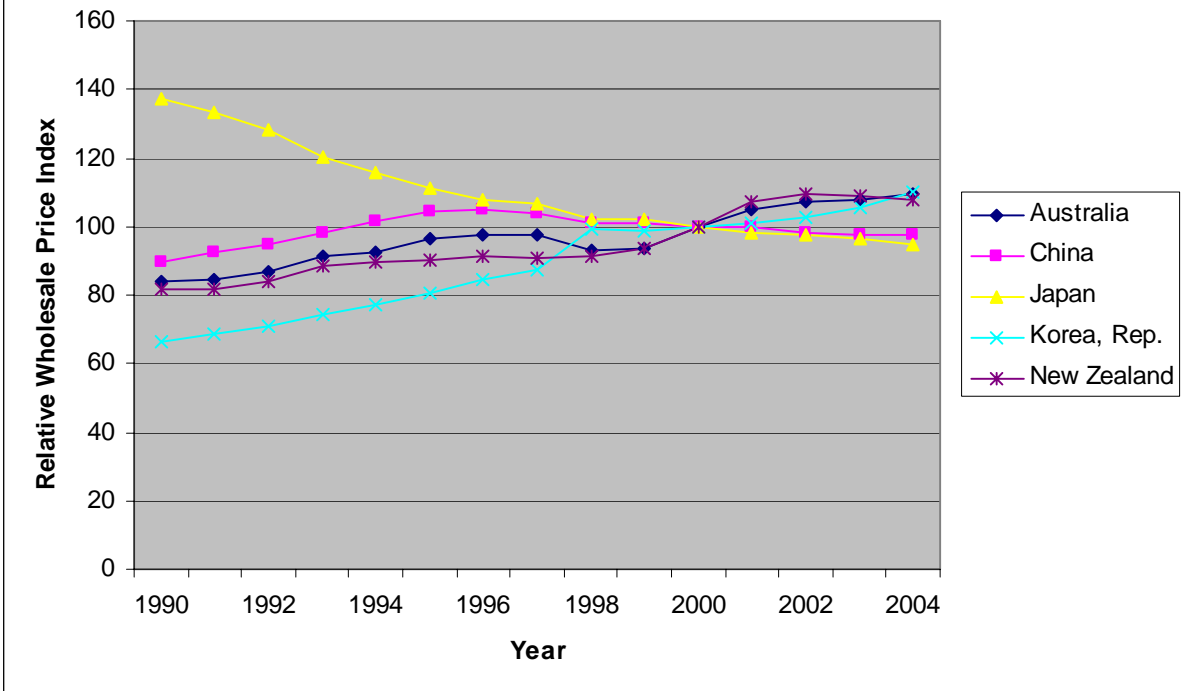
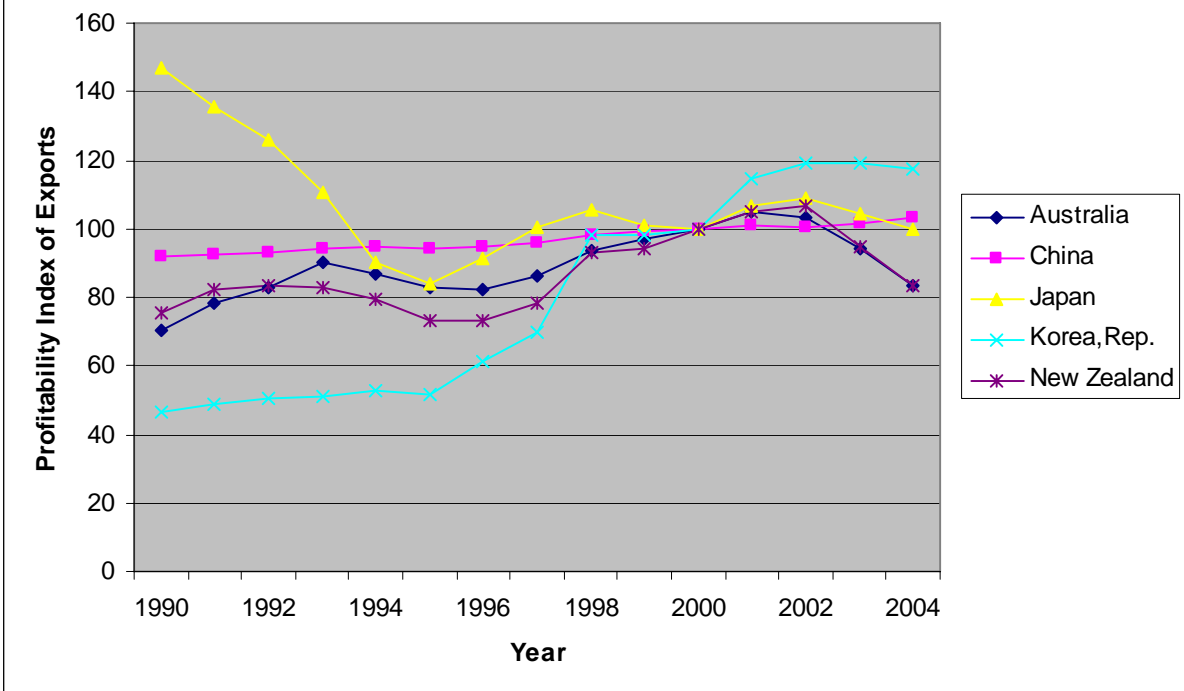


Exhibit 18: Profitability Index of Exports



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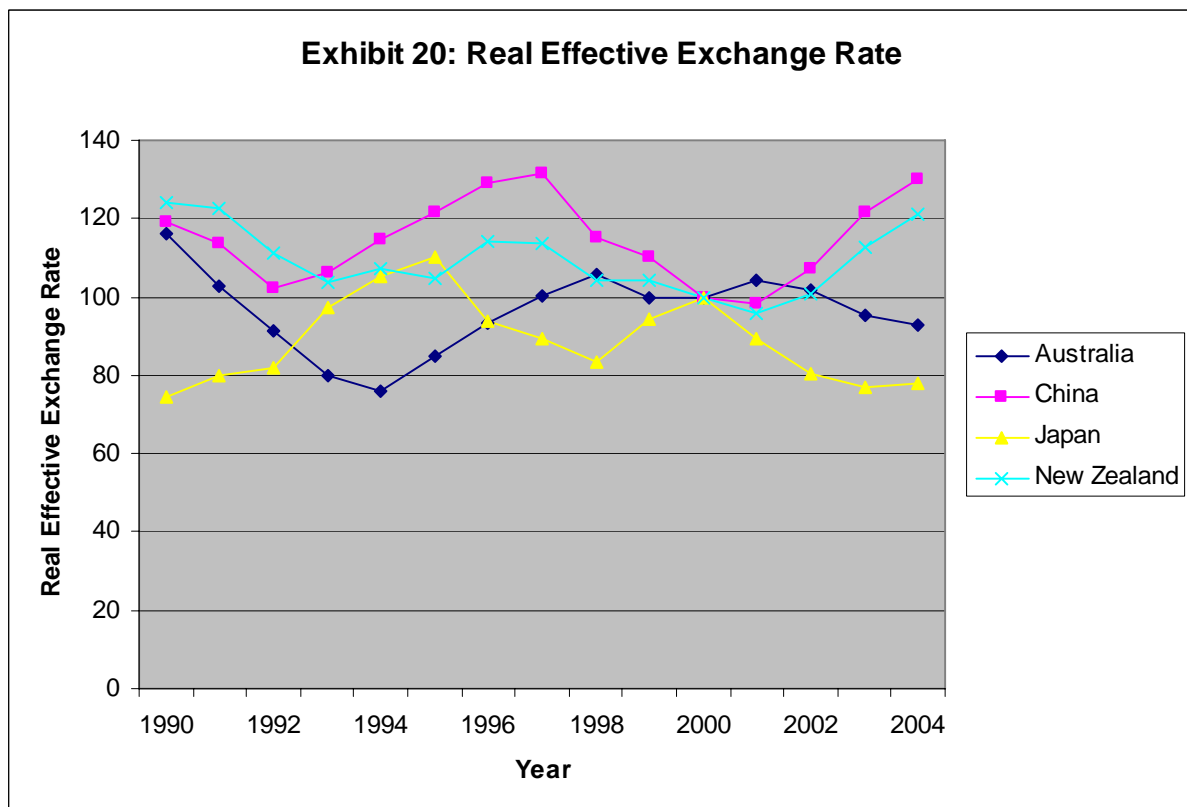
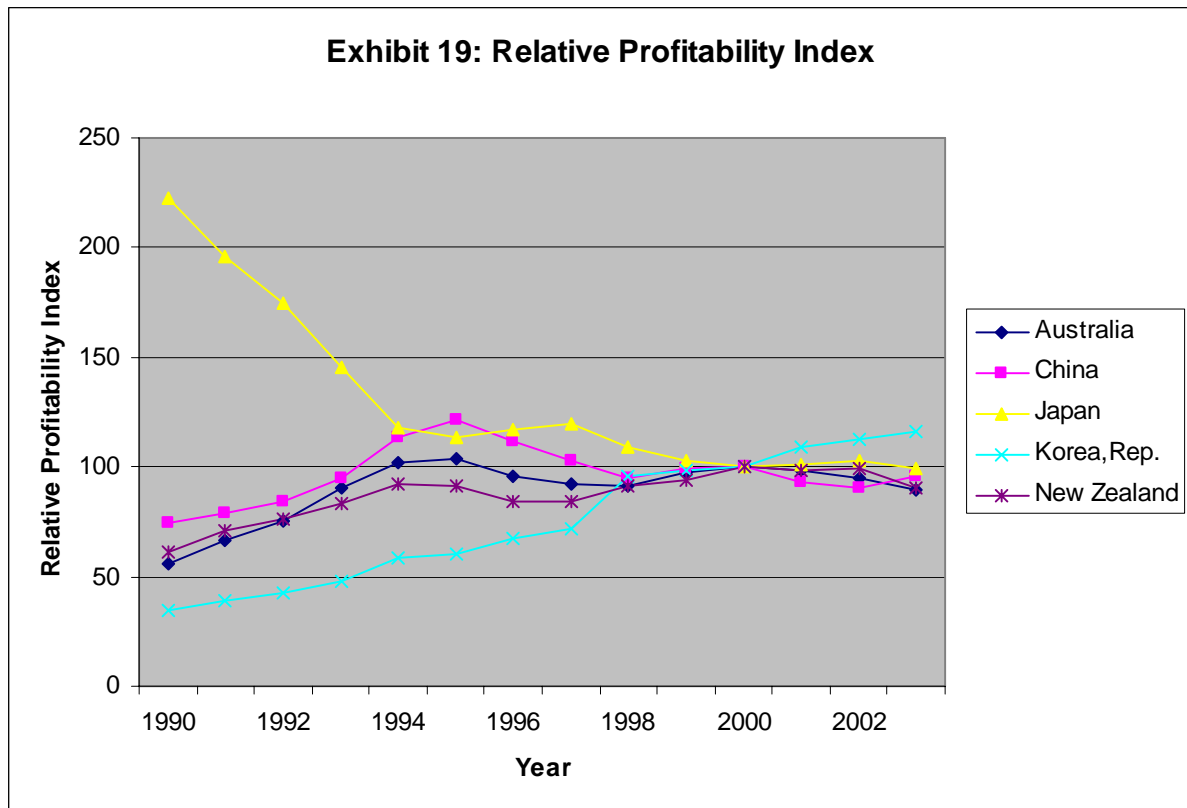


Table 1: Basic indicators of Australia, China, India, Japan, Korea and New Zealand: 2007

	Australia	China	India	Japan	Korea, Rep	New Zealand
Total population (million)	20.6	1331.4	1135.6	128.3	48.1	4.1
GDP (US Billion)	908.8	3250.8	1098.9	4383.8	957.1	128.1
GDP per capita(US\$) at current prices	43312.3	2460.8	977.7	34312.1	19750.8	30255.6
GDP (PPP) as share (%) of world total	1.18	10.8	4.6	6.61	1.85	0.17
Gross Capital Formation/ GDP(2007)	27.1	40.9	34.0	23.5	28.8	23.0
Gross domestic Saving/ GDP (2007)	26.2	52.9	35.6	25.2	30.2	21.4
Current account balance / GDP (2007)	-7.0	11.6	-1.1	4.8	0.6	-7.5
Annual growth of GDP(2007)	3.3	13.0	9.1	2.1	5.0	3.0
Annual growth of export of goods and services (2006)	2.2	23.3	7.5	9.5	11.8	3.1

Source: World development indicators 2006 , World Economic Forum, Report of Global Competitiveness, 2008.

www.worldbank.org/data/.../onlinedatabases.html

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Table 2: Structure and growth of Value added

Countries	Year	Value added (%GDP)			Growth of Value added (annual % growth)			
		Agriculture	Industry	Services	Agriculture	Industry	Services	GDP
Australia	1990	4.9	31.2	63.9	7.9	2.8	4.6	3.9
	2000	3.5	26.9	69.6	5.2	3.6	4.2	4.0
	2001	4.0	26.1	69.9	4.1	0.2	3.2	1.9
	2002	4.4	25.8	69.8	3.2	3.0	4.0	3.8
	2003	3.3	26.4	70.4	...	4.8	3.4	3.2
	2004	3.5	26.1	70.4	28.2	0.9	4.6	4.0
	2005	3.3	26.8	70.0	4.1	2.0	3.2	2.8
	2006	3.1	28.0	68.9	2.9	2.2	3.4	3.0
	2007	2.4	29.0	68.6	...	4.2	4.0	3.3
India	1990	29.3	26.9	43.8	4.0	7.1	5.2	5.5
	2000	23.4	26.2	50.5	-0.2	6.4	5.7	4.0
	2001	23.2	25.3	51.5	6.3	2.7	7.2	5.2
	2002	20.9	26.5	52.7	-7.2	7.1	7.5	3.8
	2003	21.0	26.2	52.8	10.0	7.4	8.5	8.4
	2004	19.2	28.2	52.6	0.0	10.3	9.1	8.3
	2005	19.1	28.8	52.2	5.9	10.2	10.6	9.4
	2006	18.2	29.5	52.4	4.0	11.0	11.2	9.7
	2007	18.1	29.5	52.4	4.9	8.1	10.9	9.1
China	1990	27.1	41.3	31.5	7.3	3.2	2.3	3.8
	2000	15.1	45.9	39.0	2.4	9.4	9.7	8.4
	2001	14.4	45.2	40.5	2.8	8.4	10.3	8.3
	2002	13.7	44.8	41.5	2.9	9.8	10.5	9.1
	2003	12.8	46.0	41.2	2.5	12.7	9.4	10.0
	2004	13.4	46.2	40.4	6.3	11.1	10.1	10.1
	2005	12.6	47.7	39.7	5.2	11.7	10.4	10.4
	2006	11.3	48.7	40.0	5.0	13.0	11.8	11.6
	2007	11.1	48.5	40.4	3.7	14.7	13.4	13.0
Japan	1990	2.6	39.7	57.8	-0.3	8.0	3.8	5.2
	2000	1.8	32.4	65.8	2.1	2.7	3.1	2.9
	2001	1.7	31.0	67.3	-2.4	-4.2	2.4	0.2

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	2002	1.7	30.4	67.9	6.0	-1.8	1.0	0.3
	2003	1.7	30.4	68.0	-5.9	2.4	1.2	1.4
	2004	1.6	30.5	67.9	-7.1	4.8	2.1	2.7
	2005	1.5	30.5	68.0	3.6	3.8	1.1	1.9
	2006	1.5	30.1	68.4	-2.6	3.2	2.2	2.4
	2007	...	...	...	...	...	...	2.1
Korea, Rep.	1990	8.9	41.6	49.5	-6.5	13.4	7.8	9.2
	2000	4.9	40.7	54.4	1.2	11.7	6.1	8.5
	2001	4.5	39.2	56.3	1.1	3.1	4.8	3.8
	2002	4.1	38.4	57.5	-3.5	6.4	7.8	7.0
	2003	3.8	39.0	57.2	-5.3	6.1	1.6	3.1
	2004	3.8	40.7	55.6	9.2	8.8	1.9	4.7
	2005	3.4	40.3	56.3	0.7	5.7	3.4	4.2
	2006	3.3	39.6	57.1	-1.5	6.6	4.2	5.1
	2007	3.0	39.4	57.6	1.1	5.5	4.8	5.0
New Zealand	1990	7.0	27.9	65.1	17.2	-4.3	0.2	0.0
	2000	8.9	25.3	65.8	2.7	0.6	3.1	2.4
	2001	9.2	24.6	66.1	1.7	1.1	5.2	3.8
	2002	6.9	25.3	67.8	-0.3	9.3	4.1	5.1
	2003	6.8	24.9	68.3	4.6	2.9	3.3	3.5
	2004	...	...	...	2.6	3.7	4.2	4.0
	2005	...	...	...	4.7	-1.0	3.8	2.7
	2006	...	...	...	0.4	-1.8	3.0	1.6
	2007	...	...	...	...	...	...	3.0

Source: World development indicator 2006
www.worldbank.org/data/.../onlinedatabases.html

Table 3: Global Competitiveness Index 2008-09

	India (Rank out of 134)	China (Rank out of 134)	Australia (Rank out of 134)	New Zealand (Rank out of 134)	South Korea (Rank out of 134)	Japan (Rank out of 134)
GCI 2008-2009	50	30	18	24	13	9
GCI 2007-2008 (out of 131)	48	34	19	24	11	8
Basic requirements	80	42	15	19	16	26
1 st pillar: instructions	53	56	12	8	28	26
2 nd pillar: Infrastructure	72	47	21	42	15	11
3 rd pillar: Macroeconomic stability	109	11	28	25	4	98
4 th pillar: Health and primary education	100	50	15	5	26	22
Efficiency enhancers	33	40	10	17	15	12
5 th pillar: Higher Education and training	63	64	14	15	12	23
6 th pillar: Good market efficiency	47	51	10	17	22	18
7 th pillar: Labor market efficiency	89	51	9	10	41	11
8 th pillar: Financial market sophistication	34	109	6	3	37	42
9 th pillar: Technological readiness	69	77	19	22	13	21
10 th pillar: Market size	5	2	19	60	13	3
Innovation and sophistication factors	27	32	22	28	10	3
11 th pillar: Business sophistication	27	43	26	37	16	3
12 th pillar: Innovation	32	28	20	26	9	4

Source: World Economic Forum, Report of Global Competitiveness, 2008.

Table 4: Average Growth of Output and Input

Country	Growth Rate per Worker				TFP	TFP Relative to Output
	First Year	Output	Capital	Human Capital		
New Zealand	1911	1.93	2.67	1.06	0.34	0.18
Australia	1961	1.60	2.03	0.94	0.30	0.19
China	1933	1.85	2.41	1.31	0.18	0.10
India	1904	1.24	1.48	0.81	0.21	0.17
Japan	1890	2.54	3.61	1.23	0.52	0.20
South Korea	1910	2.57	4.68	1.49	0.02	0.01

Source: Scott L, Baier, Gerald P Dwyer Jr, and Robert Tamura (2002). How Important are Capital and Total Factor Productivity for Economic growth? Federal Reserve Bank of Atlanta, Working Paper 2002-2

Table 5: Labor Competitiveness in India and China

	India		China	
	1995	2002	1995	2002
1. Labor compensation per person employed USA=1	0.024	0.024	0.021	0.029
2. Labor productivity (manufacturing value added per person employed USA=1)	0.120	0.128	0.059	0.137
3. unit labor cost (labor compensation/ labor productivity USA=1)	0.203	0.185	0.365	0.213

Source: Bart Van Ark, et al 2008

**Table 6: Labor Productivity, Compensation and Unit Labor Cost
2002 PPP converted (US=100.0)**

Industry	China (US=100) Value added/ Employee	India		
		Value Added/ Employee	Compensat ion/ Employee Unit	Unit Labor Cost
		7.1	1.6	23.2
Textiles	25.5	11.0	3.0	27.1
Clothing	12.5	8.6	3.0	34.5
Leather and footwear	30.9	13.8	2.0	14.2
Wood, Products of wood an cork	26.5	4.5	1.8	40.9
Pulp, paper, and paper products	14.8	9.0	2.3	25.3
Coke , petroleum and nuclear fuel	3.6	13.6	3.9	29.0
chemicals	5.8	15.0	2.4	16.3
Rubber and plastics	13.0	16.8	2.9	17.5
Non- metallic mineral products	24.5	12.7	1.9	15.0
Basic metals	15.9	25.6	4.1	16.1
Fabricated metal products	16.8	19.9	2.9	14.7
Machinery and equipment	40.2	15.3	3.6	23.7
Office machinery	5.9	10.3	3.5	34.4
Other elect. machinery	...	16.2	3.8	23.6
Radio, TV & Comm. Equipment	...	31.4	3.4	10.7
Scientific and other instruments	10.3	11.4	2.9	25.4
Motor vehicles*	40.9	13.0	3.2	24.4
Furniture	43.7	21.1	3.4	15.9
Other manufacturing	9.5	...	...	...
Total manufacturing**	13.7	12.6	2.5	19.7

Source: Source: Bart Van Ark, et al 2008

*For China: all transport equipment

** India excludes printing and publishing and other transport manufacturing

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Table 7: FDI Inflows (in millions of \$US)

Year	Australia	Japan	New Zealand	China	Korea,
1980	1869	278	178	57	17
1985	2062	642	1265	1956	218
1990	8127	1753	1735	3487	759
1995	11969	41	3658	37520	1249
2000	13071	8322	3347	40714	8572
2001	4006	6241	1910	46877	3683
2002	13978	9239	823	52742	2941
2003	9722	6324	3695	53505	3892
2004	36007	7816	2827	60630	8980
2005	-35160	2775	1666	72406	7050
2006	24022	-6506	8055	69468	4950

Source :UNCTAD <URL:<http://www.unctad.org/>>

Table 8: FDI inflows as a Percentage of Gross Fixed Capital Formation

Year	Australia	Japan	New Zealand	China	Korea
1980	4.6	0.1	3.8	0.1	0.1
1985	4.7	0.2	21.4	2.2	0.8
1990	10.9	0.2	20.2	3.5	0.8
1995	14.8	0.0	28.0	15.4	0.6
2000	15.1	0.7	34.2	10.3	5.4
2001	5.1	0.6	19.4	10.5	2.6
2002	14.8	1.0	7.0	11.5	1.8
2003	7.4	0.7	20.2	8.6	2.1
2004	21.6	0.7	12.2	8.0	4.5
2005	-19.2	0.3	6.4	8.8	3.0
2006	11.9	-0.6	33.7	8.0	1.9

Source :UNCTAD <URL:<http://www.unctad.org/>>

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Table 9: FDI inflows as a Percentage of Gross Domestic Product(in Millions of \$US)

Year	Australia	Japan	New Zealand	China	Korea
1980	7.9	0.3	10.3	0.5	2.1
1985	14.5	0.3	8.9	2.0	2.3
1990	23.7	0.3	18.2	5.8	2.1
1995	26.7	0.7	42.7	19.3	1.8
2000	28.7	1.1	45.0	32.2	7.3
2001	28.7	1.2	38.7	33.7	8.5
2002	30.5	2.0	47.1	35.4	8.0
2003	34.3	2.1	49.1	35.6	7.8
2004	41.1	2.1	51.5	14.9	8.1
2005	29.8	2.2	50.7	14.3	8.0
2006	32.6	2.5	60.8	11.1	8.0

Source :UNCTAD <URL:<http://www.unctad.org/>>

Table 10: Value of Cross-border M&A Sales (In millions of \$US)

Year	Australia	Japan	New Zealand	China	Korea
1990	2 545	148	3 704	8	-
1995	17 360	541	1 828	403	192
2000	21 699	15 541	4 397	2 247	6 448
2001	16 879	15 183	3 851	2 325	3 648
2002	10 653	5 689	692	2 072	5 375
2003	9 713	10 948	5 979	3 820	3 757
2004	15128	8875	4292	6768	5638
2005	12051	2512	4033	8253	6542
2006	16391	2599	4836	6724	2772

Source :UNCTAD <URL:<http://www.unctad.org/>>

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Table 11: Value of Cross-border M&A Purchases

(In millions of \$US)

Year	Australia	Japan	New Zealand	China	Korea
1990	3806	14048	1854	60	33
1995	6145	3943	573	249	1392
2000	10856	20858	1913	470	1712
2001	32506	16131	976	452	175
2002	8799	8661	840	1047	98
2003	14549	8442	4780	1647	662
2004	10492	3787	1354	1125	409
2005	32261	8131	1041	5279	451
2006	31351	14479	1820	14904	923

Source :UNCTAD <URL:<http://www.unctad.org/>>

Table 12: Relative Export Price Index
(2000=100)

Year	Australia	China	Japan	Korea	New Zealand
1990	137.6	109.3	58.8	181.6	120.7
1991	118.4	107.8	64.9	174.0	107.4
1992	109.3	105.8	70.2	163.6	104.6
1993	96.8	99.6	78.7	154.1	102.6
1994	89.1	87.9	94.3	132.3	95.7
1995	90.9	84.3	93.3	134.3	97.3
1996	100.7	92.8	90.5	125.1	107.0
1997	104.9	99.2	88.0	121.9	107.4
1998	102.3	106.1	93.7	103.8	99.7
1999	96.6	101.6	99.7	100.4	99.6
2000	100.0	100.0	100.0	100.0	100.0
2001	106.3	107.0	96.8	92.3	108.7
2002	112.0	107.9	94.9	90.8	110.4
2003	120.4	102.0	96.8	90.6	120.5
2004	135.5	96.1	97.7	93.1	132.6

Data source: Direction of Trade statistics Year books 1996,2000 and 2005 and IFS Yearbook,2002 and 2005

Table 13: Relative Import Price Index
(2000=100)

Year	Australia	China	Japan	Korea	New Zealand
1990	102.6	96.6	95.2	109.3	102.4
1991	105.3	100.2	92.2	111.4	101.8
1992	104.9	101.8	92.2	110.8	102.2
1993	105.0	101.3	94.9	106.0	102.2
1994	109.3	103.7	91.1	108.5	106.7
1995	106.4	100.8	93.7	106.9	109.8
1996	110.7	103.7	90.7	106.3	115.9
1997	108.9	105.9	91.9	102.7	115.0
1998	112.9	115.2	89.8	95.2	108.5
1999	111.1	109.6	94.7	93.1	108.0
2000	100.0	100.0	100.0	100.0	100.0
2001	101.9	106.0	96.2	97.8	101.0
2002	106.2	105.8	94.7	97.4	107.9
2003	110.9	97.8	97.8	101.6	112.9
2004	109.6	90.4	103.5	106.4	114.5

Data source: Direction of Trade statistics Year books 1996,2000 and 2005 and IFS Yearbook,2002 and 2005

Table 14: Relative Wholesale Price Index
(2000=100)

Year	Australia	China	Japan	Korea	New Zealand
1990	84.2	89.9	137.3	66.1	81.9
1991	84.7	92.3	133.3	68.8	81.7
1992	86.8	94.7	128.5	71.0	84.0
1993	91.1	98.1	120.3	74.4	88.5
1994	92.4	101.5	115.6	77.2	89.8
1995	96.3	104.5	111.2	80.6	90.3
1996	97.4	105.1	107.8	84.3	91.5
1997	97.7	103.6	106.5	87.1	91.0
1998	93.2	101.0	102.1	99.5	91.4
1999	93.8	100.9	102.1	98.8	93.8
2000	100.0	100.0	100.0	100.0	100.0
2001	104.8	99.6	98.1	101.0	107.5
2002	107.1	98.2	97.7	102.8	109.7
2003	107.8	97.8	96.7	105.6	108.8
2004	109.4	97.5	94.9	110.1	108.0

Data source: Direction of Trade statistics Year books 1996,2000 and 2005 and IFS Yearbook,2002 and 2005

Table 15: Profitability of exports
(2000=100)

Year	Australia	China	Japan	Korea	New Zealand
1990	70.6	92.1	147.1	46.8	75.7
1991	78.5	92.7	135.6	48.6	82.4
1992	82.8	93.2	125.7	50.5	83.5
1993	90.1	94.1	110.6	51.1	82.9
1994	86.8	94.8	90.2	52.8	79.3
1995	83.1	94.4	84.2	51.4	73.4
1996	82.3	94.5	91.5	61.1	73.1
1997	86.4	95.9	100.5	69.7	78.5
1998	93.4	97.9	105.7	98.1	93.3
1999	97.0	99.2	100.8	98.4	94.0
2000	100.0	100.0	100.0	100.0	100.0
2001	105.0	100.8	106.9	114.5	105.1
2002	103.3	100.7	109.2	119.4	106.8
2003	94.4	101.7	104.5	119.2	94.5
2004	83.6	103.0	100.1	117.6	83.3

Data source: Direction of Trade statistics Year books 1996,2000 and 2005 and IFS Yearbook,2002 and 2005

Table 16: Relative Profitability of Exports
(2000=100)

Year	Australia	China	Japan	Korea	New Zealand
1990	55.9	74.2	222.8	35.0	61.6
1991	66.6	79.3	195.7	38.8	70.9
1992	75.0	84.5	174.8	42.9	76.2
1993	90.6	94.6	145.4	48.1	83.4
1994	101.9	113.4	117.5	58.3	92.3
1995	103.7	121.6	113.5	59.9	91.0
1996	95.4	111.8	116.7	67.3	84.5
1997	92.1	103.2	119.7	71.4	83.9
1998	91.0	95.1	109.0	95.7	91.6
1999	97.1	99.3	102.4	98.4	94.2
2000	100.0	100.0	100.0	100.0	100.0
2001	98.5	93.1	101.0	109.3	98.7
2002	95.3	90.8	102.4	113.0	99.1
2003	89.3	95.5	99.3	116.3	90.1
2004	80.6	100.5	96.1	117.6	81.1

Data source: Direction of Trade statistics Year books 1996,2000 and 2005 and IFS Yearbook,2002 and 2005

Table 17: Real effective exchange rate

(2000=100)

Year	Australia	China	Japan	New Zealand
1990	116.4	119.0	74.4	124.1
1991	102.6	113.8	79.7	122.5
1992	91.4	102.2	82.0	111.0
1993	79.8	106.0	97.5	104.0
1994	76.0	114.7	105.2	107.3
1995	84.7	121.5	110.3	104.9
1996	93.2	129.1	93.9	114.4
1997	100.4	131.8	89.4	113.8
1998	105.7	115.2	83.4	104.1
1999	100.0	110.2	94.3	104.5
2000	100.0	100.0	100.0	100.0
2001	104.3	98.1	89.4	95.9
2002	101.9	107.2	80.2	100.6
2003	95.2	121.6	77.1	112.6
2004	92.7	130.1	77.9	121.2

Source: IFS yearbook 2000, 2006

Table 18: Real effective exchange rate and trade competitiveness of China 1990-2004
Regression analysis

1. REP	= 154.63 (6.6523)	-0.4807 REER* (-2.3806)		
	R ² =0.80 AIC=5.73	Adj. R ² =0.74 SC=5.90	DW=	N=15
2. ΔREP	= -0.2539 ΔREER (-1.2897)			
	R ² =0.27 AIC=6.45	Adj. R ² =0.20 SC=6.54	DW=1.47	N=14
3. IPC	= 126.54 (6.4527)	-0.2090 REER (-1.2536)		
	R ² =0.31 AIC=6.32	Adj. R ² =0.18 SC=6.46	DW=1.5	N=15
4. ΔIPC	= -0.2027 ΔREER (-1.2945)			
	R ² =0.11 AIC=6.23	SC=6.28	DW=1.80	N=14
5. WPI	= 92.3155 (19.6543)	+0.0622 REER** (1.6305)		
	R ² =0.93 AIC=2.92	Adj. R ² =0.91 SC=3.09	DW=1.88	N=15
6. ΔWPI	= 0.06956 ΔREER** (1.8491)			
	R ² =0.71 AIC=3.21	Adj. R ² =0.69 SC=3.30	DW=1.46	N=14
7. PEI	= 87.41 (7.3122)	-0.0349 REER** (-1.9366)		
	R ² =0.97 AIC=1.99	Adj. R ² =0.97 SC=2.12	DW=1.73	N=15
8. ΔPEI	= -0.0162 ΔREER (-0.6899)			
	R ² =-0.02 AIC=2.33	Adj. R ² =-0.21 SC=2.42	DW=1.85	N=14
9. RPE	= 49.8475 (1.6229)	+0.4338 REER (1.6415)		
	R ² =0.81 AIC=6.37	Adj. R ² =0.74 SC=6.54	DW=1.72	N=15

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$$10. \Delta RPE = 0.2826 \Delta REER$$

(1.1167)

$$R^2 = 0.34 \quad \text{Adj. } R^2 = 0.28 \quad DW = 1.42$$

$$AIC = 6.93 \quad SC = 7.01 \quad N = 14$$

Table 19: Real effective exchange rate and trade competitiveness of Japan 1990-2004: Regression analysis

$$1. REP = 75.1310 + 0.3073 REER^{**}$$

(5.5622) (2.2734)

$$R^2 = 0.90 \quad \text{Adj. } R^2 = 0.88 \quad DW = 2.68$$

$$AIC = 5.69 \quad SC = 5.82 \quad N = 15$$

$$2. \Delta REP = 0.4101 \Delta REER^*$$

(2.7227)

$$R^2 = 0.18 \quad DW = 1.87$$

$$AIC = 6.07 \quad SC = 6.12 \quad N = 14$$

$$3. IPC = 130.8311 + 0.1882 REER^{***}$$

(0.09503) (1.8187)

$$R^2 = 0.37 \quad \text{Adj. } R^2 = 0.25 \quad DW = 1.42$$

$$AIC = 5.42 \quad SC = 5.56 \quad N = 14$$

$$4. \Delta IPC = 0.3271 \Delta REER^*$$

(3.3582)

$$R^2 = 0.3288 \quad \text{Adj. } R^2 = 0.27 \quad DW = 1.72$$

$$AIC = 5.15 \quad SC = 5.24 \quad n = 14$$

$$5. WPI = 87.8819 - 0.0314 REER$$

(10.7948) (-0.5594)

$$R^2 = 0.99 \quad \text{Adj. } R^2 = 0.98 \quad DW = 2.37$$

$$AIC = 3.89 \quad SC = 4.03 \quad N = 15$$

$$6. \Delta WPI = 0.0090 \Delta REER$$

(0.1365)

$$R^2 = 0.08 \quad \text{Adj. } R^2 = -0.003 \quad DW = 2.78$$

$$AIC = 4.64 \quad SC = 4.73 \quad N = 14$$

$$7. PEI = 154.43 - 0.6512 REER^*$$

(9.9451) (-3.8190)

$$R^2 = 0.89 \quad \text{Adj. } R^2 = 0.87 \quad DW = 1.38$$

$$AIC = 6.14 \quad SC = 6.28 \quad N = 15$$

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8. Δ PEI	=	-0.4963 Δ REER*		
		(-3.0828)		
		$R^2=0.69$	Adj. $R^2=0.66$	DW=2.19
		AIC=6.29	SC=6.37	N=14
9. RPE	=	136.69	-0.5398 REER*	
		(7.4269)	(-2.7226)	()
		$R^2=0.97$	Adj. $R^2=0.97$	DW=2.35
		AIC=6.43	SC=6.57	N=15
10. Δ RPE	=	-0.2749 Δ REER		
		(-1.1699)		
		$R^2=0.57$	Adj. $R^2=0.53$	DW=2.29
		AIC=7.08	SC=7.16	N=14

Table 20: Real effective exchange rate and trade competitiveness of New Zealand 1990-2004 -Regression analysis

1. REP	=	43.7995	+0.6438 REER**	
		(0.8524)	(1.9682)	
		$R^2=0.64$	Adj. $R^2=0.57$	DW=1.64
		AIC=6.74	SC=6.88	N=15
2. Δ REP	=	0.6087 Δ REER*		
		(2.5939)		
		$R^2=0.33$	DW=1.74	
		AIC=6.50	SC=6.55	N=14
3. IPC	=	58.8219	0.4714 REER*	
		(3.7724)	(3.4422)	
		$R^2=0.76$	Adj. $R^2=0.72$	DW=1.59
		AIC=5.18	SC=5.32	N=15
4. Δ IPC	=	0.3984 Δ REER*		
		(2.6289)		
		$R^2=0.45$	Adj. $R^2=0.40$	DW=1.70
		AIC=5.45	SC=5.53	N=14
5. WPI	=	-238828.3	-0.1561 REER	
		(-0.00006)	(-1.2358)	
		$R^2=0.94$	Adj. $R^2=0.92$	DW=1.31
		AIC=4.93	SC=5.10	N=15

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6. ΔWPI	=	-0.1152 $\Delta REER$ (-1.2070)			
		$R^2=0.25$ AIC=4.71	Adj. $R^2=0.18$ SC=4.80	DW=1.47 N=14	
7. PEI	=	161.9019 (5.9357)	-0.66595 REER* (-2.7945)		
		$R^2=0.78$ AIC=6.47	Adj. $R^2=0.74$ SC=6.61	DW=1.34 N=15	
8. ΔPEI	=	-0.6795 $\Delta REER^*$ (-3.2696)			
		$R^2=0.44$ AIC=6.28	SC=6.32	DW=1.46 N=14	
9. RPE	=	154.314 (8.6780)	-0.5909 REER* (-3.6528)		
		$R^2=0.85$ AIC=5.60	Adj. $R^2=0.83$ SC=5.74	DW=2.21 N=15	
10. ΔRPE	=	-0.6538 $\Delta REER^*$ (-3.6898)			
		$R^2=0.49$ AIC=5.94	SC=5.99	DW=2.00 N=14	

Table 21: Real effective exchange rate and trade competitiveness of Australia 1990-2004: Regression analysis

1. REP	=	20.646 (0.21698)	+ 0.5469 REER* (2.2394)		
		$R^2=0.87$ AIC=6.36	Adj. $R^2=0.83$ SC=6.54	DW=1.74 N = 15	
2. ΔREP	=	0.6027 $\Delta REER^*$ (2.2921)			
		$R^2=0.63$ AIC=6.28	Adj. $R^2=0.60$ SC=6.36	DW=1.38 N = 14	
3. IPC	=	107.859 (7.5513)	-0.0024 REER (-0.0160)		
		$R^2=0.13$ AIC=5.69	Adj. $R^2=-0.027$ SC=5.82	DW=1.81 N = 15	
4. ΔIPC	=	-0.0635 $\Delta REER$ (-0.4172)			

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		$R^2 = -0.001$		$DW = 2.19$
		$AIC = 5.83$	$SC = 5.87$	$N = 14$
5. WPI	=	140.256		-0.0119 REER
		(1.1548)		(-0.1050)
		$R^2 = 0.89$	$Adj. R^2 = 0.87$	$DW = 1.41$
		$AIC = 5.07$	$SC = 5.20$	$N = 15$
6. Δ WPI	=			-0.0011 Δ REER
				(-0.0068)
		$R^2 = -0.12$	$Adj. R^2 = -0.22$	$DW = 1.74$
		$AIC = 5.14$	$SC = 5.22$	$N = 14$
7. PEI	=	44.112	+	0.476 REER
		(1.3534)		(1.4115)
		$R^2 = 0.79$	$Adj. R^2 = 0.72$	$DW = 1.67$
		$AIC = 5.99$	$SC = 6.16$	$N = 15$
8. Δ PEI	=	0.1358 Δ REER		
		(0.4406)		
		$R^2 = 0.44$	$Adj. R^2 = 0.32$	$DW = 1.88$
		$AIC = 6.24$	$SC = 6.36$	$N = 14$
9. RPE	=	140.220		-0.5375 REER**
		(4.9294)		(-1.8368)
		$R^2 = 0.81$	$Adj. R^2 = 0.74$	$DW = 1.78$
		$AIC = 5.94$	$SC = 6.11$	$N = 15$
10. Δ RPE	=			-0.54396 Δ REER*
				(-2.1252)
		$R^2 = 0.67$	$Adj. R^2 = 0.64$	$DW = 1.57$
		$AIC = 6.00$	$SC = 6.09$	$N = 14$

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