

Understanding China's Long-Run Growth Process and Its Implications for Canada

Michael Francis, François Painchaud, and Sylvie Morin, International Department

- *China's remarkable increase in gross domestic product (GDP) and its integration into the world economy over the past 25 years have had an enormous impact and have stimulated intense discussion within the international community.*
- *An analysis of the determinants of growth in China suggests that this rapid growth should continue and that its importance to the world economy should therefore increase. The four major sources of productivity that will generate growth in China for the foreseeable future are the continued reallocation of labour from the agricultural sector to manufacturing, a more efficient allocation of capital, institutional reforms, and trade reforms.*
- *Although China's integration into the world economy poses challenges for policy-makers, both in China and abroad, and will entail structural changes, the prospect is for substantial net benefits for Canada and the global economy. While China's growth should result in increased competition for some labour-intensive Canadian products, Canada should benefit from China's burgeoning demand for commodities and skill-intensive goods and services.*

The growing economic importance of China has, in recent years, attracted the attention of the international community and stimulated intense debate. In the past year alone, discussions have focused on China's exchange rate regime; its accumulation of significant foreign exchange reserves; and the likelihood of a hard landing for the Chinese economy. More recently, attention has focused on the implications of a sharp slowdown in the country's economic growth. The debates underscore the extent to which China's integration into the global economy has already begun to affect the economies of other countries, including Canada. These discussions can be expected to intensify as the process of incorporating more than 1.3 billion people (about 20 per cent of the world's population) into the world economy gathers momentum and further affects international trade, capital flows, and employment in both China and the rest of the world.

Canada has a particular interest in the economic, social, and political developments in China. In the context of an increasingly globalized economy, China represents an opportunity for Canadian industries in some sectors and a formidable competitor to others. As trade flows become more globalized, Canadians can expect relative prices to be affected. For example, continued growth in China is likely to maintain upward pressure on the price of Canada's commodity exports relative to the price of imported manufactured goods. Similarly, it may affect the relative prices of labour and capital in Canada, with the price of capital rising relative to that of labour. Thus, the Canadian

economy will be affected both directly and indirectly.¹ Naturally, Canadian policy-makers are closely monitoring developments in China.

Between 1979 and 2003, the Chinese economy expanded, on average, by approximately 9.0 per cent per year, 3.0 percentage points higher than the annual rate of economic growth achieved before the economic reforms.

The emergence of China is not a recent phenomenon, however. Indeed, over the past 25 years, as a result of numerous reforms introduced since the end of the 1970s, China has gradually moved from a centrally planned economy towards a “socialist market economy” capable of generating robust and sustainable economic growth. Acknowledging the limits of central planning, Chinese authorities have increasingly relied on market incentives to reallocate resources across sectors and regions.

The results have been remarkable. Between 1979 and 2003, the Chinese economy expanded, on average, by approximately 9.0 per cent per year, 3.0 percentage points higher than the annual rate of economic growth achieved before the economic reforms. This compares with an average of approximately 2.9 per cent for Canada over the same period.² Empirical studies have shown that, to a large extent, the acceleration of economic growth in China reflects a better allocation of resources across the economy, which, in turn, reflects the impact of the reforms. In 1980, China was the

ninth-largest country in the world in terms of gross domestic product (GDP) at purchasing-power-parity (PPP) exchange rates.³ Today, China is in second place, behind the United States. Greater economic activity has translated into significant social and economic benefits, lifting about 400 million Chinese out of poverty.

Despite these significant improvements in the level of real economic activity, China remains, in per capita terms, a low-income country. In 2002, for example, its real income per capita was US\$4,534, or 15 per cent of that for Canada.⁴ Under certain assumptions, economic theory suggests that per capita income levels of poor countries should eventually catch up to the levels of rich countries, implying that China’s economy should continue to grow faster than the Canadian economy. However, to sustain the process of convergence at current rates, continued reforms will be required.

The purpose of this article is to understand the factors that are driving China’s economic growth and to examine its implications for Canada. Research suggests that the factors that have contributed to China’s growth will probably continue to do so for some time, and that new reforms are likely to reinforce the process. In particular, the evidence reviewed here finds that the introduction of market-based incentives has produced a better allocation of resources (including the reallocation of labour from agriculture to manufacturing), resulting in substantial improvements in productivity and growth. As the process of reform and resource reallocation continues, driven by further trade liberalization, the impact will increasingly be felt abroad. For Canada, this may mean greater competition in labour-intensive industries, and hence some downward pressure on the wages of unskilled workers. On the other hand, China’s growth is likely to increase the demand for the skill-intensive goods and commodities in which Canada has a comparative advantage. Canadian consumers will also benefit from lower prices for imported goods and services.

1. This influence will be felt, not only through bilateral trade between the two countries, but also through changes in the prices of goods that Canada trades via other countries, such as the United States. This is true of all trading economies. As a result, central bankers can increasingly be expected to pay close attention to shocks (such as the impact on commodity prices) emanating from China that may affect the domestic economy, especially prices. On the whole, however, inflation targeting in the context of a flexible exchange rate regime has proven capable of ensuring that inflation rates stay close to their desired levels, despite significant fluctuations in relative prices.

2. It is important to note that there is considerable and widespread skepticism concerning the accuracy of China’s official GDP statistics. For example, Young (2000) argues that the use of more appropriate GDP deflators reduces China’s annual manufacturing growth over the period 1978 to 1998 to 6.1 per cent, from official estimates of 7.8 per cent.

3. PPP exchange rates are constructed to permit international comparisons across countries. Using PPP rates, a unit of a given currency (typically the U.S. dollar) could purchase a similar bundle of goods in all countries.

4. Data are measured at PPP exchange rates, using 2000 as the base year (IMF 2004).

The Growth Process

A growth-accounting framework

Neo-classical growth theory offers an intuitive framework⁵ with which to identify the main factors driving China's past growth and to assess its future potential. Using this framework, growth is decomposed into three components: contributions from labour, capital, and technological change (i.e., changes in the efficiency with which capital and labour are combined to generate output). Starting with the neo-classical production function and adopting the standard notation and assumptions, it is a straightforward matter to express growth in output as follows:

$$y = \alpha_K k + \alpha_L l + r$$

where y , k , and l are rates of growth of GDP, capital, and labour. Thus, y is the growth rate of the economy, and the parameters, α_K and α_L , are, respectively, the shares of capital and labour income in GDP. The first two terms on the right-hand side therefore capture the components of GDP growth that result from growth in the stocks of capital and labour. The catch-all term r describes the proportional increase in growth that would have occurred in the absence of any input changes, such as the adoption of a new technology or a better allocation of the existing stocks of capital and labour across industries. This source of growth is referred to as total-factor-productivity (TFP) growth. While the contribution from capital and labour can be directly estimated in empirical studies, TFP growth must be inferred by subtracting from estimates of GDP growth the components that result from the accumulation of factors.

Several studies have attempted to measure the individual contributions of capital, labour, and TFP to China's growth during the past three decades (Table 1). The results suggest that capital accumulation accounted for the lion's share during both the pre-reform and reform periods, while the contribution of the labour force has been modest, owing to its low marginal product. This is a common finding in economies with a surplus of labour. Accounting exercises aimed at assessing the contribution of TFP to output growth in

5. Solow (1956) and Swan (1956) made the seminal contribution to growth theory upon which the growth-accounting framework and the analysis employed here are based.

Table 1

Estimates of the Sources of China's Growth

	Hu and Khan (1996)		World Bank (1997)
	1953-78	1979-94	1978-95
Growth rates (% p.a)			
Output	5.8	9.3	9.4
Contribution to growth (%) ^a			
Physical-capital input	3.8	4.2	3.5
Labour input	1.0	1.2	0.7
Human-capital input			0.8
Total-factor productivity	1.0	3.9	4.3

a. Given that percentages are rounded, it is possible that the numbers do not exactly add up.

China have produced a relatively wide range of estimates, owing to differences in the assumed size of the share of labour in GDP. The use of a lower labour share implies a higher capital share, which magnifies the contribution to growth of capital deepening. As a result, lower estimates of labour's share of GDP lead to lower estimates of TFP growth. Most approaches, however, yield similar conclusions about the relative importance of each component to output growth during the pre-reform and the reform periods. There is general agreement in the literature that capital accumulation and labour force expansion explain almost all of China's growth during the pre-reform period, and that the contribution of TFP growth was either small or negative (Chow 1993; Hu and Khan 1996). In contrast, increases in total TFP growth have been found to play a positive and significant role during the reform period. Empirical estimates of its contribution to output growth vary widely, from 2 to 5 percentage points a year, compared with estimates of 3 to 6 percentage points for capital accumulation and 0.5 to 1.5 percentage points for labour force growth. Thus, given that GDP growth averaged 6 per cent a year before the economic reforms and rose to 9 per cent a year during the reform period, these results suggest that TFP growth can explain most of the acceleration in output growth between the pre-reform and reform periods. Most studies find that the reform-induced migration of labour out of agriculture played a major role in generating this improvement in TFP growth (see, for example, the findings of Heytens and Zebregs [2003], reported in Table 2). To understand how the reforms have contributed to this process, they must be examined in more detail.

Table 2

Estimates of Sources of TFP Growth in China

	Heytens and Zebregs (2003)				
	1971–78	1979–94	1985–89	1990–94	1995–98
Total-factor productivity, of which: ^a					
Structural reform	0.38	0.94	0.76	0.83	0.39
Labour migration out of primary sector	2.34	2.01	1.52	2.15	2.08
Exogenous trend	-3.25	-0.17	-0.17	-0.17	-0.17

a. Given that percentages are rounded, it is possible that the numbers do not exactly add up.

The Reforms

China's economic and institutional reforms were implemented in two successive phases. The main objective of the first phase (1979–93) was to unleash the beneficial impact of market forces by providing greater incentives to economic agents, while protecting existing vested interests. This was achieved through a progressive decentralization of the economic decision-making process. In an effort to further reduce the social impact of the reforms, the Chinese authorities tried some of them out on a regional basis before attempting a wider implementation of those that were successful. The reform process can thus be characterized as gradual and experimental.

The second phase (since 1994) has been characterized by the introduction of measures aimed at strengthening the effectiveness of market forces, which include reducing preferential treatments to certain companies in order to level the playing field; introducing a more transparent accounting framework for governments; creating a central monetary authority; continuing the reform of state-owned enterprises (SOEs); establishing the first stages of a social safety net; addressing the issue of property rights and ownership; and, recently, establishing an independent bank regulator (Qian 1999).

The agricultural sector and labour market reforms

Before the reform process began, the Chinese agricultural sector was communal, with production quotas and prices administered by the central authorities. Not surprisingly, significant inefficiencies were associated with this system. For example, labourers were remunerated according to the average production of the commune, not according to their marginal product. Moreover, there was little incentive for workers to

relocate into other industries where their marginal productivity may have been higher. Recognizing these limitations, the authorities introduced the Household Responsibility System in 1979, which allowed individual farmers to lease land from the commune in exchange for a fixed production quota (effectively, a lump-sum tax). Production above the administered quota could be sold in the market, resulting in a remuneration system based on marginal productivity. This dual-track system introduced market-based incentives.

In a sense, the introduction of the Household Responsibility System can also be interpreted as a major labour market reform because it forced a reassessment of the value of labour. The more highly productive workers increased farm production and income, while their less-productive counterparts pursued employment opportunities outside the agricultural sector.

The reallocation of farmers with a relatively low productivity level to other employment opportunities was pivotal to high TFP growth.

The new measures thus increased labour productivity in the agricultural sector. Furthermore, the reallocation of labourers with a relatively low level of productivity to other sectors where their productivity might be higher should have increased the economy-wide productivity level, or TFP. In theory, this process should eventually result in an equalization of the marginal productivity of labour (MPL) across industries. Chow (1993) estimates that the MPL in the agricultural sector at the beginning of the reform process was 63 yuan, compared with 1,027 yuan in the industrial sector. This figure suggests that the opportunity existed for a sizable reallocation of labour within the Chinese economy. Indeed, Brooks and Ran (2003) (among others) observe that employment in the agricultural sector declined substantially after the reforms were implemented, from around 70 per cent of total employment to about 50 per cent more recently. Heytens and Zebregs (2003) find that the reallocation of farmers with a relatively low productivity level to other employment opportunities was pivotal to high TFP growth (Table 2). Woo (1998) and Young (2000) also note the importance of labour

migration. Moreover, Brooks and Ran (2003) estimate that, with approximately 150 million excess workers in the agricultural sector (about 20 per cent of total employment), there is still considerable scope for further reallocation.

The non-agricultural, non-financial sector

The industrial sector of the Chinese economy was the natural recipient of the excess labour flowing out of the agricultural sector. In an effort to promote a better allocation of labour and capital, the authorities implemented three key market-oriented reforms to influence the non-agricultural sector. First, reforms of the capital-intensive SOEs were introduced to expand their autonomy with regard to production, supply, marketing, retained profits, experimentation with new products, and capital investment (Chow 2002). Under a new Economic Responsibility System, firms were also allowed to remunerate workers based on their productivity. Furthermore, the dual-track system was expanded to include industrial goods. Finally, while maintaining ownership and control of major industries, the central government reduced its intervention in the economy by moving loss-making SOEs to shareholding companies. By weakening the link between the SOEs and the government departments responsible for them, this policy reduced SOE access to government revenues. This hardening of the SOEs' budget constraint, combined with a decentralization of the economic decision-making process, is thought to have resulted in a better internal allocation of resources, thereby improving the marginal productivity of capital and labour and contributing to TFP growth.⁶

Second, the authorities successfully promoted the growth of the non-state sector. As a result, despite fundamental reforms of the SOEs, the non-state sector, which is dominated by township and village enterprises (TVEs), has been the most important contributor to China's outstanding economic performance. While technically government enterprises, TVEs are generally considered to be part of the non-state sector, reflecting the limited ability of local and regional governments to finance losses. TVEs thus function more as private, profit-seeking enterprises. In particular, given their binding budget constraint, TVEs' demand for labour

and capital is based on their marginal productivity. Therefore, shifting existing resources to the non-state sector (where productivity is presumably higher) has led to a better allocation of resources across the economy, and an improvement in TFP growth.

Third, reducing barriers to foreign direct investment (FDI) and developing open economic zones (OEZs) that enjoy a more liberal investment and trade regime than other areas, as well as special tax incentives, created a market for labour-intensive manufactured goods. In addition to contributing to the forces responsible for drawing labour out of agriculture, these policies were also critical for attracting new technologies and managerial know-how through FDI. The surge in FDI has also resulted in a substantial increase in joint ventures with foreigners and wholly foreign-owned enterprises. As well as directly contributing to growth through increased capital formation, the increase in FDI is expected to have led to positive technological spillover effects, resulting in an improvement in TFP growth.⁷ Zebregs (2003) estimates that while FDI directly contributed 0.4 percentage points to annual GDP growth during the 1990s (through capital deepening), its indirect contribution through long-term TFP growth, at 2.5 percentage points, was much higher.

Together, the agricultural and other economic reforms have had a profound impact on the Chinese economy, significantly affecting the structure of both the rural and urban labour markets (Table 3). The share of total

Table 3
Employment in China (millions)

	1980	1990	1995	2002
Urban employment	105.3	170.4	190.4	247.8
State (%)	76.2	60.7	59.1	30.3
Other (%)	23.8	39.3	40.9	69.7
Rural employment	318.4	477.1	490.3	489.6
TVEs ^a (%)	9.4	19.4	26.2	27.2
Other (%)	90.6	80.6	73.8	72.8

a. Township and village enterprises
Source: Brooks and Ran (2003)

6. As long as the marginal products of labour and capital are increased proportionately, the labour and capital shares will remain unchanged, and improvements in productivity from this reform will be reflected in increases in TFP growth. Chow and Li (1999) find evidence that the reforms have not changed factor shares in China and hence provide some support for the argument that the Economic Responsibility System has improved TFP growth.

7. Although this source of technology transfer is a potentially important source of TFP growth, some analysts argue that China's inward FDI is vastly overstated, reflecting a problem of round-tripping. Krugman (1994) argues that domestic investors send financial capital offshore and then reinvest it in China through a business partner in order to take advantage of favourable tax concessions and other benefits that accrue to foreign investors.

urban employment accounted for by the state decreased from 76.2 per cent in 1980 to 30.3 per cent in 2002. During the same period, the share of rural employment accounted for by TVEs increased from 9.4 per cent to 27.2 per cent. As a result of the migration of labour between industries, the importance of the agricultural sector in China has declined, from around 33.3 per cent of GDP in 1981–82 to about 15.2 per cent. In turn, the importance of the non-agricultural sector has increased significantly (Gordon and Gupta 2004).

Future Sources of Growth

Given China's low per capita income, it is quite reasonable to expect that its economic growth will continue at a significant pace (Table 4). The question is, at what rate, and for how long. The evidence presented above suggests that China's growth rate can be attributed to a number of important factors, beginning with a high capital share in income. This, combined with its high savings rate, has produced growth that is largely the result of a process of capital deepening. But, clearly, there are limits to this process. It is unlikely that such a high savings rate can be sustained in the long term. Moreover, as capital is accumulated, the marginal product of capital will fall, resulting in a smaller capital share and reducing the extent to which capital accumulation can contribute to growth. Similarly, labour's contribution to growth will likely be constrained by the impact of China's population-control policies.

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The second important source of growth has been TFP growth, which, evidence suggests, has primarily resulted from the reform process that produced a better allocation of resources. Fortunately, as is discussed below, there is considerable room for further reforms to continue this process. Four major sources of TFP growth are likely to generate ongoing growth over the foreseeable future. The first is the continued reallocation of labour from the agricultural sector to

Table 4

Projected Growth Rates of GDP in China

Estimates of average annual growth rates of GDP	2002–2020	2005–2020	2002–2020
IMF (2004)	7.6		
Goldman Sachs (2003)		6.1	
Heytens and Zebregs (2003)			7.5

manufacturing. Given the substantial supply of excess labour in agriculture, there is still ample opportunity for further growth through this channel alone.

Further reforms within the financial sector are expected to help promote the second two sources of productivity growth: a better reallocation of capital and increased encouragement to invest. Recent institutional legal reforms that granted protection to private property rights have provided the foundation for the financial reforms. Such laws can be expected to enable private firms to use collateral assets as a means to obtain bank financing, thereby providing the opportunity for banks to increase the share of these relatively profitable private firms in their loan portfolios, at the expense SOEs, and producing a more efficient allocation of capital across firms and industries and an additional stimulus to investment.⁸ Through the creation of a modern, commercially oriented banking system, financial reforms can help to reduce the possibility of a debilitating financial crisis that could stall both the growth process and the reform process. An indication of the urgency that the authorities are placing on financial reform is the government's commitment to the World Trade Organization (WTO), which is beyond that undertaken by other WTO members, to open the banking sector to foreign competition by 2006. In addition, the Chinese government recently recapitalized the Chinese banking system (in particular, two of the major banks) with an injection of funds equivalent to US\$45 billion.

Trade reforms, such as further reductions in tariff and non-tariff barriers in the agricultural, textiles and clothing, and service sectors and greater protection of intellectual property rights, are expected to be the fourth source of future TFP growth, through their impact on

8. Private ownership and the rule of law were incorporated into the Chinese Constitution in March 1999. In addition, China recently introduced a constitutional amendment affirming that "private property obtained legally shall not be violated." These reforms represent a tremendous development in a society formerly constituted around the concept of property-less classes. The concepts of property rights and ownership are fundamental to a market-based economy.

resource allocation. The development of the legal and regulatory framework necessary for a market economy is likely to be spurred as China seeks to comply with WTO rules.

Naturally, certain risks, both internal and external, could slow China's growth. There are two main sources of domestic risk. First, the reform process could falter if the adoption of new reforms becomes politically challenging, or if the benefits of reform diminish considerably; and second, given the fragility of the banking system, the potential exists for a financial crisis to significantly interrupt the growth process.⁹ In addition to internal risks, as the world's third-largest trading nation, China now faces a number of external risks to growth. From a purely economic perspective, the benefits of the export-led growth strategy could be partly offset by a worsening of China's terms of trade. From a political perspective, protectionist pressure could mount among China's trading partners if China is not seen to be doing its part to alleviate global imbalances. Despite these risks, however, most analysts agree that China will continue to grow at a reasonable rate over the foreseeable future, with potentially significant implications for the rest of the world.

China's Economic Integration

How China's growth affects the rest of the world depends on the extent of its economic integration and the nature of its economic linkages. The integration process is complex, involving a web of economic, financial, and political linkages. This section focuses on the trade and financial aspects of China's integration; other potentially important channels, such as migration flows and non-economic linkages, are not considered.

According to the WTO, China is now the world's third-largest trading nation (after the United States and Germany). In 2003, at US\$438.4 billion and US\$412.8 billion, its trade accounted for 5.9 per cent and 5.3 per cent of world exports and imports, respec-

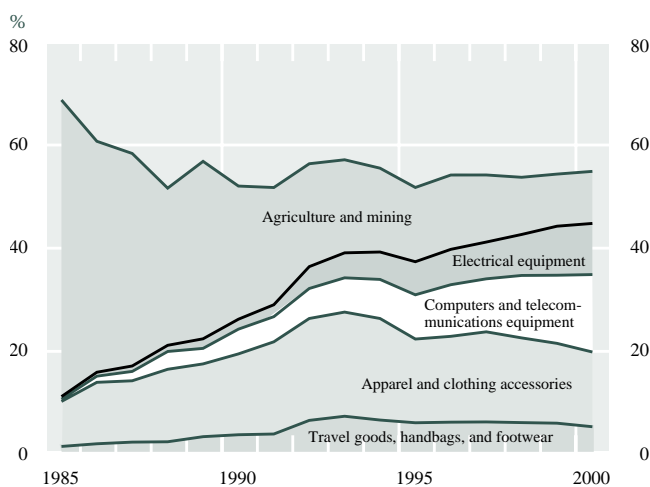
9. According to official estimates, non-performing loans (NPLs) account for over 18 per cent of total assets. However, private sector estimates put the share of NPLs to bank assets at more than double the official figure (Standard & Poor's 2004). Given the precarious financial system, it is possible that depositors could lose confidence in the government's guarantee, leading to a major banking crisis that could seriously damage the economy. The Chinese authorities have recognized the weak capital position of the banking sector and have introduced a number of measures to improve the situation, in particular, the reforms aimed at reducing political interventions in the determination of successful loan applicants. They have also injected considerable sums of money to recapitalize the banking sector.

tively. In comparison, Canada's trade is considerably smaller, with exports and imports of US\$272.1 billion and US\$245.6 billion, respectively. Moreover, while Canada's trade with the rest of the world grew by approximately 8 per cent in 2003, China's trade grew at a rate in excess of 35 per cent (Box 1).¹⁰

China's rise as a major trading nation is a relatively recent phenomenon. Before the reforms, China's trade with the rest of the world was highly restricted, and whatever trade occurred was the outcome of the State Planning Commission's export and import plans. Under these trade plans, China's imports were largely financed from the proceeds of its petroleum exports (Lardy 2002). Thus, in 1985, China accounted for less than 2 per cent of world trade, with petroleum exports accounting for more than 28 per cent of China's exports, and manufacturing exports accounting for less than half.

With the abandonment of the trade plans, China's trade pattern changed to reflect market signals and comparative advantages. As a result, its reliance on primary sector exports fell considerably, and exports of manufactured goods grew (Chart 1). Moreover,

Chart 1
Sectoral Composition of China's Exports
1985–2000



Source: Statistics Canada, World Trade Analyzer (2003)

10. Because of its rapid trade expansion, China has become a relatively open economy; measured as a percentage of merchandise trade (exports plus imports) relative to GDP, China's openness to trade was 60.25 per cent in 2003 (IMF 2004), which is close to the figure for Canada (approximately 59 per cent, by IMF figures).

BOX 1

Understanding Canada's Commercial and Financial Links with China

Trade between Canada and China has grown at a brisk pace over the past decade.¹ Since 1995, Canadian exports to China have grown by roughly 40 per cent, and totalled about Can\$4.8 billion at the end of 2003. Canadian imports from China have expanded at an even faster pace, quadrupling since 1995, and totalling Can\$18.6 billion in 2003. As a result, China is now the second-largest source of imports for Canada, having surpassed Japan and Mexico. Like many countries, Canada is running a sizable trade deficit (Can\$13.8 billion in 2003) with China.

The composition of Canada's exports to China also evolved significantly during the past decade, as they became more diversified. While wheat accounted for 60 per cent of Canada's exports in 1992, this proportion fell to only 10 per cent in 2003, supplanted by industrial materials and forestry products which, in 2003, accounted for 45 per cent and 24 per cent, respectively.² As a large net exporter of resources, Canada has benefited directly from China's growing appetite for Canadian raw materials and indirectly through recent upward pressure on commodity prices owing, in part, to strong Chinese demand. The range of Chinese goods being imported has also expanded

rapidly. While Canadian imports from China during the mid-1990s consisted primarily of toys and trinkets, our demand for capital goods has soared in recent years, and they surpassed consumer goods in Canadian imports in early 2004. Electronic equipment and mechanical machinery now dominate our imports of capital goods from China.

Canadian direct investment in China covers a broad range of key sectors, including aerospace, biotechnology, education, finance, information technology, manufacturing, and natural resources. However, the overall level of direct investment is relatively small, totalling about Can\$542 million in 2003 (or less than 1 per cent of total Canadian FDI). In the financial sector, the exposure of Canadian banks to China is very small (it stood at Can\$865 million in the second quarter of 2004, which represents less than 0.5 per cent of the foreign assets of Canadian banks). Nevertheless, the Bank of Montreal and the Bank of Nova Scotia have established branches in China,³ and the insurance firms Manulife and Sunlife are also operating there. Canadian banks and insurance companies are likely to expand their Chinese operations as China's WTO commitment leads to a further opening of these sectors to foreign firms and to increased demand for sophisticated financial products.

1. This section draws substantially on Roy (2004).

2. The share of our exports to China accounted for by capital goods has remained at a stable 11 per cent over the past decade.

3. In 2002, the Bank of Nova Scotia and the World Bank Financial Corporation acquired a 1 per cent participation in a Chinese bank.

aside from trade liberalization, it is likely that the reform process also changed China's comparative advantage. Reforms that improve property rights tend to encourage capital accumulation and lower the costs of capital-intensive production. Thus, it is not surprising that, while China remains very much a labour-abundant country exporting predominantly labour-intensive goods, the range of goods that it exports has become considerably more sophisticated over time (Desroches, Francis, and Painchaud 2004; henceforth DFP).

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DFP (2004) also found that the changing pattern of comparative advantage is gradually having a significant impact on Canada, as is illustrated in Chart 2. Products are ranked from least sophisticated to most sophisticated along the horizontal axis, and the share of each product in a given country's total exports is plotted against the vertical axis.¹¹ This gives a distribution of each country's total exports ranked by their sophistication. For comparison, we provide two sets of charts. In Chart 2a, we plot the export distributions for China and Canada as of 1985; in Chart 2b, we plot them using 2001 export data. The charts illustrate that while, in 1985, China exported goods that were generally less sophisticated than Canadian goods, by 2001 there had been a significant rightward shift in its distribution, such that its exports now overlapped with Canadian exports, especially in goods of middle levels of sophistication.¹² Thus, while China's exports were once complementary to Canada's, by 2001 there were clearly some areas in which they had become competitors. DFP (2004) provide evidence that increased trade with China is contributing positively to Canada's growth. Moreover, Canada's response to this increased competition in products of middle-level sophistication has been a consolidation of exports in relatively more sophisticated goods. Intra-industry trade, where a country imports and exports goods from within the same industry, is another important aspect of China's trade.¹³ It is generally thought that this trade reflects vertical intra-industry trade effects, with China importing unfinished goods, primarily from other Asian economies such as Hong Kong and Taiwan; engaging in the labour-intensive activity of processing and packaging these goods; and then exporting

11. Following Kwan (2002), the product sophistication index (PSI) for a given good is measured as the average real per capita income of the countries that export this type of good, weighted by their share in the global market for that good. That is, for good j and countries i ,

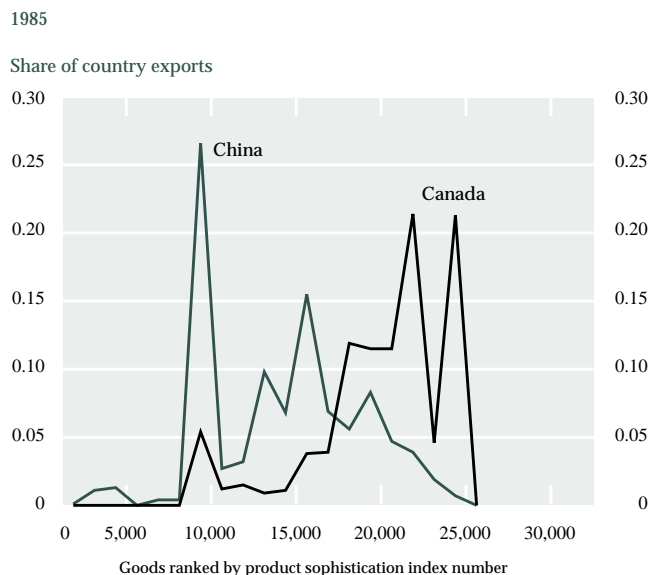
$$PSI_j = \sum_i x_{ij} Y_i,$$

where x_{ij} is country i 's share of global exports of good j , and Y_i is the real per capita GDP of country i .

12. Using the PSI and export data, DFP (2004) calculate a global ladder of comparative advantage that ranks 115 countries in terms of the average level of sophistication of their exports. They find that, between 1985 and 2001, China's ranking rose from 55 to 41. Canada was ranked 16th in 2001, down from 10th in 1985.

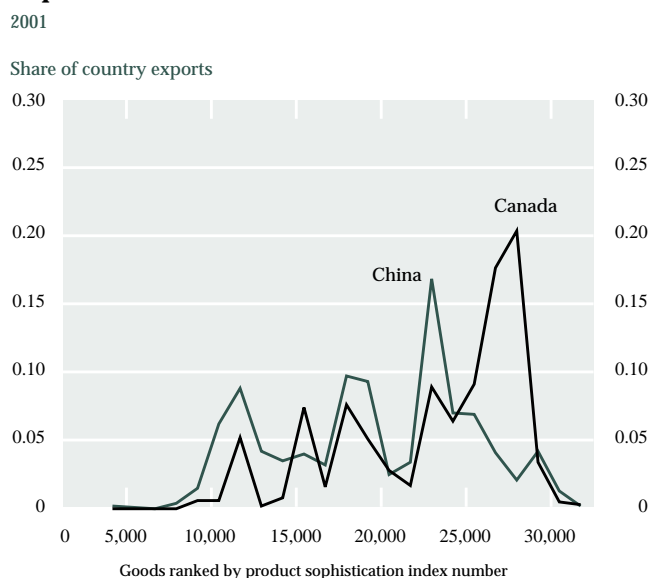
13. This trade is particularly apparent in sectors such as electronics and electrical equipment. For example, in terms of value, electrical machinery, apparatus, and appliances constitute China's most important import sector (accounting for 26 per cent of merchandise imports). However, in 2000, it was also China's second-largest export sector (10 per cent of merchandise exports), with two-way trade equal to approximately 79 per cent of total trade in the sector.

Chart 2a
Canada and China: Share of Exports Ranked by Sophistication



Source: DFP (2004)

Chart 2b
Canada and China: Share of Exports Ranked by Sophistication



Source: DFP (2004)

the final product, often to the United States (Prasad and Rumbaugh 2003).¹⁴

While China is becoming increasingly integrated into the world economy through trade flows, restrictions on capital flows limit both the opportunities for foreigners to invest in Chinese assets and for Chinese residents to invest abroad. Only a limited number of Chinese firms, for example, are permitted to raise equity capital from foreigners by issuing so-called “B-listed” shares on the Shanghai and Shenzhen stock exchanges; and while some issuance of international debt instruments is permitted, it is restricted and small. The main source of international capital is foreign direct investment (FDI) (Chart 3). Restrictions on this form of inward investment are much weaker, so while portfolio investment is relatively small, at US\$62 billion in 2004, China is the second-largest recipient of FDI, after the United States, which attracted US\$121 billion in 2004. This large number reflects, in part, market size. China’s FDI, relative to GDP, has averaged around 4 per cent over the past five years, a figure comparable to other emerging markets, such as Brazil (Chart 4).

Although there has been some financial integration through FDI, China’s integration into world capital markets has principally occurred through the acquisition of foreign assets (mostly U.S. Treasury instruments) by its central bank. The accumulation of international reserves reflects China’s fixed exchange rate policy, which has resulted in persistent current account surpluses since the exchange rate was pegged at its current rate in 1995. Typically, a fixed exchange rate that results in ongoing sizable current account surpluses in developing countries is considered undervalued. Indeed, economists generally argue that countries in their early stages of development need to import capital from the rest of the world to finance their rapid pace of investment growth. As a consequence, most developing countries should run current account deficits if their exchange rates are appropriately aligned with market fundamentals. Thus, China’s exchange rate policy can be thought of as contributing to its export-led growth strategy. It may also reflect a desire to accumulate substantial reserves, which the Chinese authorities may deem necessary to ensure against a

14. This development has contributed to the decline in the share of exports from other Asian countries to the United States. In contrast, consistent with China’s increasing role in the production chain, a rising share of China’s imports comes from within the region, and Chinese exports to the United States have risen at a brisk pace. As a consequence, China’s share of U.S. imports has increased dramatically.

Chart 3
China: Capital Inflows

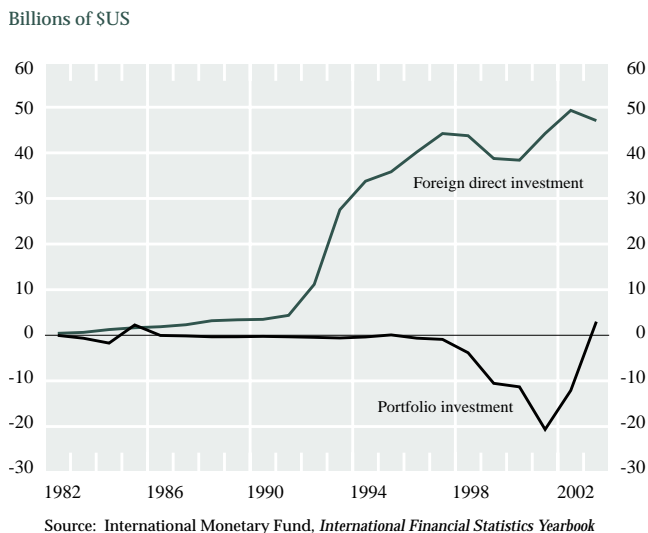
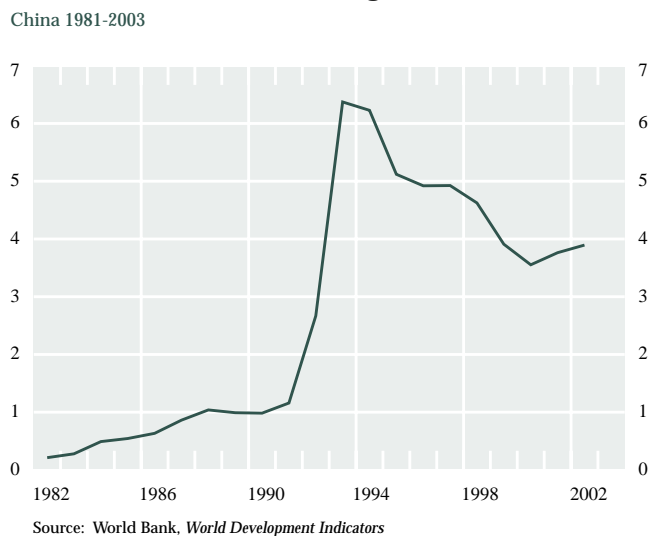


Chart 4
Net Inward FDI as a Percentage of GDP



financial crisis along the lines of the one experienced by other Asian economies in 1997–98.¹⁵

While some benefits flow from the current exchange rate regime, there are also significant costs. An undervalued exchange rate, for example, increases the cost to Chinese households and firms of consumption and

15. Most economists are agreed, however, that at current levels in excess of US\$600 billion, China’s reserves are well beyond that necessary to prevent a balance-of-payments crisis.

investment goods, reducing domestic absorption. Furthermore, the foreign reserves could presumably have been more productively invested within the Chinese economy itself. In addition, the export-led growth strategy could be diverting too much investment towards the export sector, which may turn out to be unprofitable if the real exchange rate is revalued.

While some benefits flow from the current exchange rate regime, there are also significant costs. An undervalued exchange rate, for example, increases the cost to Chinese households and firms of consumption and investment goods, reducing domestic absorption.

China's high savings rate may also be important in explaining China's current account surplus. Since Chinese residents save about 40 per cent of their income, the country's savings could outstrip investment, producing a current account surplus. In order for the balance of payments to balance, an accumulation of foreign assets is therefore required. However, since private agents are generally not permitted to purchase foreign assets, an official agency, such as the central bank, must acquire them. While this process also acts to maintain the pegged exchange rate (whenever the current account is in surplus), it also permits China to use some of its national savings to accumulate claims on foreign assets. As China relaxes the restrictions on capital account transactions and eventually moves its economy towards a more flexible exchange rate system, China is expected to become much more highly integrated with world capital markets. The relaxation of capital controls will provide Chinese firms (especially those engaged in international trade) with better access to foreign capital markets. It will also allow Chinese residents (rather than the central bank) to diversify their considerable savings and invest in foreign markets, including, for example, the equities markets in industrialized countries. Such increased integration will lead to a better diversification of global risks, as well as a better allocation of global capital.

Implications for the World Economy

According to estimates by the International Labour Organization, China has roughly 25 per cent (close to 800 million people) of the world's economically active population. In contrast, in 1980, when the newly industrialized Asian economies were in the early stages of their growth process, their population represented about 1.5 per cent of the global population. The global economy is thus facing a potential adjustment challenge of an entirely different magnitude. Furthermore, the size of the labour force and the low starting point of the capital-to-labour ratio suggest that the shock will be both significant and persistent. Given China's size and already extensive trade links, its significant commitments to further open its trade and investment flows as a member of the WTO will ensure that its growth has important effects on the global economy, the scale of which the world may not have previously experienced.

As the opportunities for trade spread westward from the coastal regions and provinces, millions more Chinese will be integrated into the world economy and will enjoy the benefits of a higher standard of living.

The major beneficiary of further integration and reform will be China itself. As the opportunities for trade spread westward from the coastal regions and provinces, millions more Chinese will be integrated into the world economy and will enjoy the benefits of a higher standard of living. Moreover, the benefits of future reforms are likely to be magnified in a more open economy (DFP 2004).

For the rest of the world, including Canada, China's emergence and integration into the world economy offer the prospect of substantial net benefits. One important benefit, of course, is that it will result in a more efficient allocation of resources on a global scale. China's greater openness to trade and investment imply that production activities will continue to be shifted to sectors in which China has a comparative advantage. Moreover, increased competition from China is likely to enhance global competition, foster-

ing innovation and contributing to greater productivity gains and, hence, higher long-run growth rates, not only in China, but globally. While these effects are difficult to quantify, they could be substantial.

At the same time, China's integration into the world economy will have terms-of-trade effects for other trading nations. For example, the expansion of output in China has been widely cited as contributing to the recent increase in the demand for commodities and putting upward pressure on commodity prices. This process may continue over the near term, producing significant gains for resource-rich economies. The relative price of capital-intensive goods and services is also likely to increase as China's domestic demand increases. By implication, the relative price of manufactured goods will likely fall on world markets as a result of a large increase in their supply from China. Indeed, there is some evidence that China's rapid productivity growth has already led to sharp declines in the prices of some globally traded goods in which China specializes (IMF 2003). While the benefits associated with an increase in global demand from China's growth and integration are generally positive for industrialized and resource-rich countries like Canada, the terms-of-trade and welfare effects for some labour-abundant developing countries like Indonesia and the Philippines may be negative (Table 5).

As a net exporter of commodities and a net importer of labour-intensive manufactured goods, Canada would be expected to experience an improvement in its terms of trade, all else being equal. The total effect on Canada is expected to be positive since, in addition to greater demand for skill- and capital-intensive goods and services, Canada will benefit directly from increased opportunities for exporting primary commodities directly to China, and indirectly through higher prices for these products, owing to China's impact on global demand. Indeed, higher demand could be expected to strengthen demand for the Canadian dollar. In the long run, the integration of China's economy into the world economy implies a better allocation of global resources and, hence, a higher and more sustainable global growth path. However, over the short term, the adjustment phase will present policy-makers both inside and outside of China with some challenges. Some reallocation of labour and capital in response to changing comparative advantage and terms of trade among trading nations may be necessary. For some economies, especially those specialized in low-skilled, labour-intensive exports, such changes may involve considerable adjust-

Table 5

Trade-Related Impact of Faster Chinese Integration, 2020¹

	Welfare ²	Exports	Imports	Terms of Trade
World ³	5.3	7.4	7.2	0.0
China	126.1	86.6	85.7	-7.0
Advanced economies	0.1	2.3	2.7	0.7
NIE (newly industrialized economies)	0.2	2.2	2.9	0.5
ASEAN ⁴	0.0	0.9	0.5	-0.1
South Asia	-0.2	0.1	-2.3	-1.0
Sub-Saharan Africa	0.4	0.2	0.8	1.4
Mexico, Colombia, and Venezuela	0.1	-0.7	-1.2	0.3
Other western hemisphere countries	0.2	2.5	2.8	0.9
Middle East and North Africa	0.7	-0.8	0.4	1.9
Rest of the world	0.1	1.3	0.6	0.4

1. As percentage deviation from the values prevailing in the slow-Chinese-integration scenario

2. Welfare is defined as the equivalent variation, relative to GDP.

3. F.o.b. prices for exports, and c.i.f. prices for imports. The discrepancy between changes in exports and in imports reflects transport costs.

4. Association of South East Asian Nations, including Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

Source: IMF (2004)

ment costs as uncompetitive enterprises are closed and unemployment rises temporarily in the home country (Prasad and Rumbaugh 2003). In addition, during the transition phase, low-skilled workers in the industrialized countries may experience a slower increase in wages, or even a decline, as the increase in the world's effective labour force associated with China's emergence leads to a decline in the world's capital-to-labour ratio and an increase in the returns to capital.

Conclusion

China is the world's most populous economy. It is also the world's fastest growing large economy. If current trends continue, by 2020, China could conceivably account for one-quarter of global GDP. In the interim, China's emergence and integration will require the rest of the global economy to adjust to its rise. For Canada, this is likely to involve, not only increased competition in some of its labour-intensive products, but increased demand for those products in which Canada has a comparative advantage: commodities and human-capital-intensive goods and services, in particular. On balance, Canada can expect to benefit from China's growth and integration. Indeed, if there is any significant risk to the Canadian economy, it is most likely to occur in the form of a sudden halt in the process of Chinese growth.

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