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CHINA'S TRADE AND GROWTH: IMPACT ON SELECTED OECD COUNTRIES

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ABSTRACT

This paper examines China's emergence as a global player in international markets over the last few decades. It provides an overview of China's trade policy environment following the country's process of market opening and joining the WTO. The report analyses China's role in international processing activities and moving up the global value chain. It also examines China's impact on world prices and the deterioration of its own terms of trade. The paper looks at China's two-pronged export growth strategy. The first part of the strategy is to capitalise on one of its greatest factor endowments – a surplus of labour – by promoting job-creating, labour-intensive manufactures. The second aspect of this strategy is to further its goal of economic development by upgrading its economy by producing and exporting higher-technology goods. The paper also addresses intellectual property rights (IPR). The preponderance of evidence indicates that there has been significant progress in development of an IPR regime appropriate to the needs of a modern market economy. However, there remain certain deficiencies – particularly with respect to IPR enforcement – that may be damaging to domestic and international interests.

The latter part of the report examines the impact of China's integration into world's goods and services markets on selected OECD countries. In order to quantify China's impact on the world economy, new estimates – based on a general equilibrium model the FTAP – are used. Based on 2001 data, it provides quantitative estimates of the sectoral output and price effects caused by China's integration into global trade. It also quantifies the welfare impact on the selected OECD economies. The report finds substantial gains for China and a rather limited impact on OECD economies as a result of China's implementation of WTO commitments or completes liberalisation in the area of tariffs and services.

Keywords: China, OECD countries, trade policy, trade and growth, investment, impact on global economy, intellectual property rights (IPR), international processing activities, value chain mobility, world prices, terms of trade, computable general equilibrium model, FTAP, trade restrictiveness index, services trade, banking, telecommunications and insurance.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

Tables

Figures

Box

CHINA'S TRADE AND GROWTH: IMPACT ON SELECTED OECD COUNTRIES

Executive Summary

China's economic transformation is one of the most dramatic economic developments of recent decades. Indeed, during the period 1979-2005, China's growth rate has averaged 9.6% per annum, and its integration into the world trading system has been as remarkable: its share in world goods trade has increased from less than 1% in 1979 to 6.4% in 2005. China became the third largest trading nation after the United States and Germany in 2005. China's major trading partners are the European Union followed by the United States and Japan. Together, they provided markets for over 51% of China's total exports in 2005, and made up almost 34% of China's import bill.

The expansion of China's international trade has been the key for its rising prominence in the world economy with average annual growth rates of trade at three times world rates. China's economy has a good potential to become the world's top exporter by the beginning of the next decade (OECD 2005a) owing to attractiveness to FDI, a high domestic saving rate, improvements in productivity spurred by reduced internal and external barriers to trade, and a significant surplus of labour. However, as OECD (2005a and 2006b) finds, a number of structural, institutional and macroeconomic weaknesses need to be addressed before such a potential is realised. Further trade liberalisation will allow China to exchange goods and services at world market prices and thus to realign its economic structure so as to benefit from its genuine comparative advantages and maximise the well being of it citizens. To make the most of these prospects, inward-oriented policies such as price controls, state involvement, explicit and implicit subsidisation and restrictions on movements of factors of production that still significantly influence economic activity in China will need to be addressed.

China's trade expansion reflects in part greater specialisation in production in the Asia region. China has emerged as the final processing and assembly platform for a large volume of exports originating from its Asian OECD neighbours but destined for markets in Europe and North America. Almost half of China's exports are the subject of such "triangular" trade. This has resulted in a shift in China's bilateral trade relationships that now show increasing trade surpluses with Europe and North America, and rising deficits with many Asian countries.

China's processing activities have diversified over time from primarily labour-intensive, low technology goods to also include higher technology products. Although exports are still largely labour-intensive, China has expanded its range of exports over the last 15 years into complex, capital- and technology-intensive goods. In fact, the paper argues that China has been pursuing a two-pronged export growth strategy. The first part of the strategy is to capitalise on one of its greatest factor endowments – a surplus of labour – by promoting job-creating, labour-intensive manufactures. The second aspect of this strategy is to further its goal of economic development by producing and exporting higher-technology goods. It appears that China is also moving up the value chain; in 2004 it became the world's leading exporter of information and communications technology products.

Another way China is making a global impact is on world prices. As China experiences rapid urbanisation, industrialisation and infrastructure construction, it is importing ever increasing amounts of raw materials and primary products leading to upward pressures on world prices of key commodities. At the same time, the lowering of trade barriers and rapid productivity growth in Chinese manufacturing and electronics sectors has led to a sudden surge of exports consequently pushing down China's export prices

in the international market. This trend is likely to endure as China continues to catch up. The extent of this decline in China's terms-of-trade is, however, relatively small compared to the overall growth in per capita GDP. The counterpart has been an improvement in incomes and living standards in the rest of the world. Indeed, the import of low-priced Chinese manufactured goods has increased consumer incomes in the OECD area by almost 0.2% annually. Also, the impact of higher non-oil commodity prices on incomes in OECD countries is likely to be limited insofar as supply-side responses are in the offing.

China's achievements in goods trade contrast with those in services trade reflecting both structural and institutional imbalances. China's services trade account for less than 10% of its total trade and has recorded net deficits throughout the period 1992-2005. Moreover, China's links with OECD countries and other major trading nations in services trade are, with the exception of its Asian neighbours and Australia, very limited. The same is true for FDI in services sectors: investments from OECD countries in China represent very low shares in their total FDI outward stocks. China's main sources of FDI are its Asian neighbours as well as a number of tax havens.

These trends reflect the duality in China's economy: the opening up of trade and FDI in manufactured goods has spurred the emergence of a largely private sector in sharp contrast with the high level of public ownership and important regulatory barriers that continue to dominate the services sectors. Services activities continue to be constrained by high entry barriers, excessive state involvement, opaque regulatory process and overly burdensome licensing and operating requirements. The full implementation of GATS commitments would imply significant reforms and liberalisation measures with important gains for China and many of its trading partners. It is worth noting that the 11th Five Year Plan for the first time emphasises development of the services sector. One official comment notes that underdevelopment of the sector has had "negative impact on the overall structure of industry, job opportunities and comprehensive competitiveness."[1]

One issue area that has attracted much attention is China's protection of intellectual property rights (IPR). The current situation with respect to IPR protection in China remains mixed, a perspective echoed by various stakeholders from government, domestic industry and multinational firms. The preponderance of evidence indicates that there has been significant progress in development of an IPR regime appropriate to the needs of a modern market economy. However, there remain significant deficiencies – particularly with respect to enforcement – that are damaging domestic and international interests. Given the scale of the Chinese economy, such shortfalls can have global repercussions.

The trade reforms that China has embraced as a result of its WTO accession are a continuation of a long standing trend that saw sustained reduction in non-tariff barriers and in levels and dispersion of tariffs. However, in the area of services, China's commitments represent milestones. Plans include the opening of key services sectors to foreign participation, elimination of geographical limitations, forms of establishment, and scope of business activities among others. What are the implications of these reforms for China and OECD countries? Based on 2001 data, the paper provides some estimates on the basis of a multi-country, multi-sector computable general equilibrium model of the world economy that features increasing returns to scale and large-group monopolistic competition. Importantly, the model includes a treatment of foreign direct investment on a bilateral basis which, given the importance of foreign presence in the Chinese economy, is essential for understanding the impacts of its liberalisation.

Our results show that China itself clearly stands to gain substantially from its liberalisation. Implementation of the WTO commitments by China in goods and services sectors is estimated to increase its real income by almost 2%, while a scenario with full liberalisation is expected to yield a 3% increase in

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[1] China Internet Information Center (2006), Key Points of the 11th Five-Year Guidelines, http://www.china.org.cn/english/2006/Mar/160397.htm, March 2006.

its real income. A major part of these gains comes from the improved efficiency with which China uses its resources.

We find a limited impact on OECD economies as a result of China's implementation of WTO commitments and complete liberalisation in the area of tariffs and services barriers. The structure of bilateral trade flows between China and individual OECD economies reflect divergent patterns of comparative advantages as well as differences in structure of trade barriers and geographical location. The most direct impact is expected through improved export performance of OECD countries that are already trading with or investing intensively in China but still face significant market access barriers. The observed trade patterns suggest that the impact through the market access channel is likely to be more important for Korea, Japan, Australia, and New Zealand, while the impact on other OECD economies is likely to be limited.

The second channel through which China's liberalisation may affect OECD economies is increased competitiveness of Chinese exporters who would experience declining costs of intermediate products and services as a result of liberalisation. The non-negligible market shares of China in OECD countries' imports suggest that increased import competition is indeed an important outcome of China's liberalisation. However, these competitiveness effects felt in both domestic OECD markets and third country markets are almost always outweighed by the market access effects (through better access to China's market), resulting in the majority of cases in overall net gains for the OECD countries.

Finally, FDI-related effects are important as they dominate the modest welfare gains of most OECD countries in the services liberalisation scenarios. While China experiences losses from its outward FDI, most OECD countries benefit from increased incomes from their investments in China.

The scenarios in which China is assumed to fully remove its import duties and services barriers result in expansion of global gains by an additional one percentage point as compared to the WTO accession scenario. This suggests that China's WTO commitments in the area of both goods tariffs and services barriers are already quite ambitious and deliver the bulk of the gains that can be had from such reforms. Still, most OECD countries enjoy additional gains in both absolute and per capita terms from the fuller liberalisation scenario.

It is important to note that our results are conditional on production, consumption, trade and investment data reflecting the time of China's WTO accession and may hence be only approximate given the pace of structural changes within the Chinese economy as well as the relationships between China and its OECD commercial partners.

Our results are also broadly in line with the existing literature and, more fundamentally, with the underlying trade data. On a per capita basis the biggest gainers from implementation of WTO commitments by China are Korea, Japan, EU15, Canada and US. All the gaining OECD countries benefit from allocative efficiency, substantial favourable terms of trade effects and increased income from services FDI to China. It should be noted however that our analysis has not accounted for the dynamic effects of China's openness and is therefore likely to provide lower bound estimates.

Introduction

1.   China's opening to world trade over the past quarter of a century is one of the more impressive aspects to its economic reform and structural change. China went from a centrally planned to a more market-based economy through a gradual and highly managed transition. After 15 years of negotiations, China became the 143rd member of the WTO on 11 December 2001. China's accession to the WTO symbolised its ongoing integration into the world economy, providing more secure and predictable market access both for China and its trading partners. Importantly, accession to the WTO can also be seen as an effort to develop reforms behind the border allowing policy makers to ensure that economic policies continue market liberalisation and global integration.

2.   Over the last two decades, China's exports and imports have risen dramatically along with its share in world trade. China is a major driver of growth in the world economy boosting both global supply and demand with many of its industries completely integrated into the world supply chain. As one of the largest global production platform and emerging market, China is contributing to the emergence of a truly globalised economy. With the largest population and one of the world's fastest growing economies, China has the largest potential market of any WTO member. As China has become the third largest trading nation, its links with many OECD member countries have grown. China's top trading partners are the EU 25, US, and Japan. Likewise, China has also become one of the major trading partners for a majority of OECD countries. As China has emerged as a major player in international markets, OECD members and developing countries alike are increasingly interested in China's potential impact on world markets.

3.   This paper examines China's increased trade integration and its impact on selected OECD countries. The first section looks at China's trade policy environment over the past 25 years. It describes the evolution of trade liberalisation, compliance with WTO commitments, and its trade flows and trade composition. The second section analyses China's impact on the global economy. It looks at China-OECD trade in goods and services, its trade and investment policies, China's role in international processing activities and moving up the global value chain and importantly China's impact on world prices. The third section uses a computable general equilibrium model to examine the sectoral output and price effects caused by China's integration into global goods and services trade, and the welfare impact on OECD countries.

Section I.   China's Trade Policy Environment

4.   China initiated gradual and incremental economic reforms just over 25 years ago, facilitating the transition from a centrally planned to a more market-based economy. The government realised that in order to make this transition, it would be necessary to promote access to foreign capital and advanced technology through greater integration into the multilateral trading system. In July 1986 China submitted an official application to join the GATT,[2] but it took 15 years of negotiations before it became the 143rd member of GATT's successor, the WTO, on 11 December 2001. China's accession to the WTO symbolised its ongoing integration into the world economy, providing more secure and predictable market access both for China and its trading partners. But accession to the WTO can also be seen as a positive influence on reforms of domestic institutions and policies. In complying with WTO obligations, both at and behind the border, China must adopt key disciplines and principles that promote sound economic and regulatory

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[2]   China took part in the Geneva Conference that led to the adoption of the GATT and became a contracting party by signing the Protocol of Provisional Application on 21 April 1948. The Nationalist Government which had retreated to Chinese Taipei withdrew from the GATT in March 1950. The validity of this withdrawal was an issue in China's bid to resume its contracting party status. In 1971, China had an opportunity to re-enter GATT but chose not to for various internal and ideological reasons. Y. Wang and G. Wang (2005), "China", *The World Trade Organization: Legal, Economic and Political Analysis*, WTO, Geneva: Springer, 2005, Vol. 111, pp. 49-50.

policies. The emphasis in the WTO agreements on binding and enforceable commitments provides support to domestic reformers, ensuring that economic policies continue market liberalisation and global integration.

5.   Today China is the world's third largest trading nation. With the biggest population and one of the world's fastest growing economies, China has the largest potential market of any WTO member. From 1979 to 2005, economic growth has averaged 9.6% per annum and seems likely to continue at that pace for some time.[3] The OECD's *Economic Survey of China* (2005a) states that this increase in output represents one of the most sustained and rapid economic transformations seen in the world economy in the past 50 years. The size of the Chinese economy, when measured at purchasing power parity, is now the second largest behind the United States.[4]

6.   Much of this rapid economic growth is due to changes in government policies that created a "socialist market economy" – that is a market economy with public ownership of key economic institutions – in which the private sector plays a key role.[5] These reforms started with the transformation of the agricultural sector and extended progressively over the last few decades to manufacturing industries and large parts of the services sectors. Table 1 looks at the composition of GDP over the last two decades. In contrast to its declining share of GDP, agriculture makes the biggest contribution to employment (44% in 2002) suggesting that labour productivity is much lower than elsewhere in the economy. Given the recent revision in GDP figures,[6] the share of manufacturing and services are even larger. Large-scale capital investment financed by large domestic savings, and rapid productivity growth have contributed to the pace of economic growth. However, while these figures show that the trend towards a service-oriented economy is beginning to emerge in China, the proportion of GDP attributable to services and the share of employment in services sectors are generally lower than in other developing economies (even if the recent upward adjustment of services' share in GDP is taken into account.). This suggests that there is considerable scope for expanding the services sector. Further services liberalisation may contribute to implementing structural adjustments and absorbing labour.

Table 1. Origin of GDP, selected years

(Percentage)

Share of main sectors in GDP	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture, forestry and fishing	18.6 (17.3)	17.6 (16.2)	16.4 (14.8)	15.8 (14.1)	15.3 (13.5)	14.4 (12.5)	15.2 (13.1)	na (12.5)
Industry [a]	42.6 (40.3)	42.8 (40.0)	43.6 (40.3)	43.5 (39.8)	43.7 (39.4)	45.2 (40.5)	45.9 (40.8)	(47.3)[b]
Construction	6.7 (5.9)	6.7 (5.8)	6.6 (5.6)	6.6 (5.4)	6.7 (5.4)	7.0 (5.5)	7.0 (5.4)	na
Services	32.1 (36.5)	32.9 (38.0)	33.4 (39.3)	34.1 (40.7)	34.3 (41.7)	33.4 (41.5)	31.9 (40.7)	na (40.3)

a   Including mining and quarrying, manufacturing, and production and supply of electricity, gas, and water.
b   Including construction.
Note: Data in brackets correspond to adjusted GDP figures, as announced on 10 January 2006 by the Chinese National Bureau of Statistics.
Source: WTO (2006) based on National Bureau of Statistics, *Statistical Yearbook (2005);* China Labour Statistical Yearbook 2002; UNDP, *Human Development Report* (various issues); and Chinese authorities.

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[3]   OECD (2005a) *Economic Survey of China*, OECD, Paris, 2005, p. 16. On 10 January 2006, the Chinese revised their GDP growth rates upwards, Chinese National Bureau of Statistics.

[4]   OECD (2005k) OECD Economic Outlook, Volume 2005/2, No. 78, December 2005, p. 1.

[5]   For an in-depth study on the private economy, see S. Dougherty and R. Herd, (2005) "Fast-Falling Barriers and Growing Concentration: The Emergence of a Private Economy in China", Economics Department Working Papers, No. 471, ECO/WKP(2005)58, OECD, Paris, 16 December 2005.

[6]   In January 2006, China has adjusted its GDP upwards due to revision of services to be included, incorporating small businesses that tend to be privately owned. See WTO (2006) Trade Policy Review: Report by the Secretariat People's Republic of China, WTO, 2006.

Box 1. China in the world economic stage

China's growing importance in the world economy is also prompting its more active participation in the international policymaking arena. Chinese officials realise they can have an impact on the development of multilateral economic and trade rules. One way the Chinese government has pursued this leadership role is through its participation in the Group of 20 (G-20), the WTO and in the Asia-Pacific Economic Cooperation (APEC).[7] The G-20, established in 1999, includes major industrial nations and emerging market economies. It accounts for over 90% of global GDP, 80% of international trade, and two-thirds of world population. China assumed the G-20 presidency in 2005.[8] The country is also increasing its participation in the WTO. For example, at China's initiative, it hosted an informal meeting in Dalian on 12-13 July 2005 attended by 30 Trade Ministers from influential WTO Member countries in an effort to bolster negotiations in the framework of the Doha Development Agenda.

APEC was established in 1989 to capitalise on the growing interdependence of Asia-Pacific economies. Since its inception, APEC has grown to become one of the world's most important regional groupings. Its 21 member economies span four continents, are home to more than 2.6 billion people and represent 57% of world GDP (USD 20.7 trillion) and 45.8% (USD 7 trillion) of world trade.[9] A member since 1991, China is actively engaged in this trade-enhancing institution for strategic and economic reasons and has signed on to the Bogor Goals of free and open trade and investment in the Asia-Pacific region.[10] China's growing trade relations and interdependence is nowhere more evident than within Southeast Asia, where China is rapidly emerging as an engine of regional economic growth and integration.[11]

Although China is increasingly an active member of these organisations, it is evident that it plays a modest role relative to its economic and political weight. As it nears the end of its transition period as a new WTO member, there have been calls for the third largest trading nation to take greater responsibility in global trading relationships. The US argues that China has clearly ascended to the ranks of the global trading system powers who like the US, the EU and Japan must assume responsibility not only to fulfil commitments but also go beyond them to ensure the continued health of the global trading system.[12]

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7.   Since 2000, China's contribution to global GDP growth (in purchasing power parity terms) has been more than half as big as the combined contribution of India, Brazil and Russia, the three next largest emerging economies. China's increasing demand for imports (to meet rising domestic demand and exports) has been an important source of growth for the world economy. Its thirst for basic commodities such as aluminium, steel, copper, coal and oil has helped push their world prices to record levels (see Section II). Simultaneously, its ever-increasing export of manufactures is putting downward pressure on their prices. And its entry into the WTO in 2001 has speeded up the opening of one of the biggest potential markets.

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[7]   There is some debate as to the effectiveness of G8 decision-making without China as a member. See J. Garten (2004), "China: The Missing Member at the G-8 Table", *YaleGlobal Online*, 3 June 2004.

[8]   For further information, see www.g20.org/index.htm. For an in-depth examination of the G-20 and China from a Chinese perspective, see Y. Yu (2005), "G-20 and China: A Chinese Perspective", *China & World Economy*, Vol. 13, No. 1, 2005.

[9]   APEC (2005) APEC at a Glance, APEC, 2005, p. 1.

[10]   At its 17th Ministerial Meeting held in Korea in November 2005, Ministers stated they remained fully committed to achieving the Bogor Goals of free and open trade and investment in the Asia-Pacific by 2010 for developed members and 2020 for developing members as stipulated in the Bogor Declaration. See www.apecsec.org.sg/apec/ministerial_statements/annual_ministerial/2005_17th_apec_ministerial.html

[11]   China's "peaceful rise" strategy in Southeast Asia entails using trade, development assistance to Laos, Myanmar and Cambodia as well as confidence building measures to establish itself as an important regional leader. See E. Economy (2005), "China's Rise in Southeast Asia: implications for the US*", Journal of Contemporary China*, 14(44), August 2005.

[12]   See USTR (2006), U.S.-China Trade Relations: Entering a New Phase of Greater Accountability and Enforcement, Top-to-Bottom Review, USTR, Washington, DC, February 2006, p. 11.

China is also playing an increasing role on the world economic scene (see Box 1). Thus, it is evident that China's trajectory over the next decade will carry important implications for the world economy.

8.   Sustaining the recent pace of growth will require the Chinese government to continue reform efforts. The OECD (2005a) identifies several areas where reforms are needed.[13] The first is providing a stable environment for private sector activity. The state-owned enterprise sector needs to be further restructured and reduced. The performance of the business sector could be strengthened through further modernisation of the business framework and better enforcement of laws, especially those for intellectual property rights (see below). The second area is a more flexible exchange rate that would support a stable macroeconomic environment. The change in exchange rate arrangements announced in July 2005 is a step in the right direction.[14] The third area is to reform the financial system. Although about 70% of the banking system has been recapitalised, the domestic banking system remains burdened by a considerable quantity of bad loans held in government-controlled banks.[15] These banks will be encumbered in their capacity to compete with foreign banks that will be allowed to operate in China under the terms of its entry to the WTO. Improving governance and increasing private ownership is needed.

9.   Growth, foreign trade opportunities and investment are taking place in the already prosperous coastal regions and far too little is directed to the interior and the western parts of the country. The fourth area for reform is to reduce regional inequalities by reforming fiscal transfers. Solid public finances could permit tax and expenditure reforms. Expenditure on health and education could be strengthened. Rapid and increased urbanisation is recommended. A fifth long-term challenge to the Chinese economy is the need to address environmental degradation.[16] A recently completed study on Governance in China (OECD 2005c) examines a sixth area of reform. If China's development is to be sustainable, the government will need to undertake a comprehensive programme of far-reaching institutional reforms. Some international observers, however, also voiced concern over China's fast-growing economy, heavy energy consumption and wide gap between rich and poor.

10.   It appears that China recognises the challenges it must address. The 11th Five-Year Plan (2006-2010) constitutes an important policy shift for the Chinese Government. The Plan aims to improve its economic structure, innovation capacity and growth pattern, curb pollution, create more jobs, balance investment and consumption, reduce income gap and bolster public welfare. The Plan stresses that "economic development is the top priority", but development should be "comprehensive, harmonious, and sustainable". This implies "stable and relatively fast economic growth", and the need to "step up the transformation of the economic growth pattern" towards growth that is less energy, resource and capital intensive, more knowledge and innovation-driven, and more equally shared.[17] Importantly, China's

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[13]   For an in-depth study of the Chinese economy and the challenges that lie ahead, see OECD, (2005a), *op. cit*. and OECD (2006b), Challenges for China's Public Spending: Toward greater effectiveness and equity, OECD, Paris 2006.

[14]   China allowed its currency to appreciate 2.1% on 21 July 2005.

[15]   The Standard & Poor's rating agency estimates that China's banks have issued almost USD 650 billion in bad loans or 40% of all outstanding loans. Martin Wolf argues that if China is growing at close to 10% a year and generates bad loans on this scale, the misallocation of capital must be gigantic. See M. Wolf, "Why is China is Growing so Slowly?", *Foreign Policy Special Report*, Carnegie Endowment for International Peace, January/February 2005, p. 51.

[16].   The World Bank states that China's air and water are heavily polluted. Seven of the ten most polluted cities in the world in the late 1990s were in China. One third of China's grasslands, which cover 40% of land area, are seriously degraded. World Bank, (2004), *China: An Evaluation of World Bank Assistance*, 2004, p.3. the OECD has begun work on an *Environmental Performance Review of China* to be completed at the end of 2006.

[17]   See Communiqué of the 5th plenary session of the 16th Central Committee of the CPC, 11 October 2005.

economic and social development plan identifies as crucial building a moderately prosperous society across the country through policy that is environmentally sound and growth and development sustainable.

China's trade policy

11.   China's opening to world trade over the past quarter of a century is one of the more impressive aspects of its economic reform and structural change. China went from autarky (self-sufficiency) to a more open economy through a gradual and highly managed transition. China began its gradual market opening by allowing export processing on a small scale. As early as 1978, China began to allow firms in Hong Kong to offer export processing contracts to workshops in Guangdong province. Initially, export processing was largely restricted to a few authorised special export processing zones (EPZs) along China's southern coast, but by the mid-1980s it became widely available. There was intense competition among localities to attract export processing investments. EPZs allowed China to rapidly exploit its comparative advantage in low-wage labour.

12.   As manufacturers were drawn into world markets, export processing grew substantially, facilitated by currency appreciation in neighbouring Asian newly industrialising economies (NIEs). With greater incentives to fragment production in search of lower wage labour, investments also increased in China. The result was that this previously closed economy was increasingly integrated into East Asia's dynamic production chains. By the mid-1980s, China had a clear, two-tiered export regime: a very open export processing segment and a domestic export sector that was afforded high levels of domestic protection. In particular, the latter could not enjoy duty-free imports. The domestic market was sheltered by high levels of protection through tariffs and multilayered non-tariff barriers.

13.   When China applied to join the GATT in 1986, it was essentially a centrally planned economy with an opaque trading regime with high tariffs and a plethora of non-tariff barriers. Its main trading partners were socialist countries such as the USSR and Yugoslavia. It was not until 1992 when China declared its intention to establish a "socialist market economy" that it began to lower tariffs. At this time China unilaterally began to make substantial tariff cuts. As Table 2 shows, the reduction of tariffs during the 1990s has resulted in China being perhaps one of the most open developing countries to join the WTO in 2001. The simple average Chinese tariff rate was reduced from 42.9% in 1992 to 16.6% in 2001. After accession, the average tariff dropped to 9.8%. Beyond the increase in market access for its trading partners, this reduction has spurred major efficiency and productivity improvements in China.

Table 2. China: Simple and Trade-Weighted Statutory Tariffs, selected years

(Percentage)

	All Products		Primary Products		Manufactures	
	Simple	Weighted	Simple	Weighted	Simple	Weighted
1992	42.9	40.6	36.2	22.3	44.6	46.5
1996	23.6	22.6	25.4	20.0	23.1	23.2
2001	16.6	12.0	21.6	17.7	16.2	13.0
After accession	9.8	6.8	13.2	3.6	9.5	6.9

Source: World Bank and UN Commodity Trade Statistics (COMTRADE) as reported in World Bank (2004), Table 13.2.

14.   As part of the WTO accession process, China agreed to implement a set of sweeping reforms that required it to lower trade barriers in almost all sectors of its economy, provide national treatment and improved market access for goods and services and protect intellectual property rights, improve transparency and eliminate non-tariff barriers. China also agreed to special rules regarding subsidies and

the operation of state-owned enterprises, in light of the state's large role in the Chinese economy.[18] These commitments are likely to greatly broaden and accelerate China's trade liberalisation process, improve economic efficiency and incomes and further China's integration with the world economy.

15.   One of the major reasons for China joining the WTO was to ensure a secure and predictable trading environment and thus a more viable business environment. China's commitment to bind its tariffs has given businesses a clearer view of their future opportunities. China has bound all its import tariffs in goods. Following the implementation of all its market access commitments, China's average bound tariff level will decrease to 15% for agricultural products, ranging from 0 to 65%, with the highest rates applied to cereals. For industrial goods, the average bound tariff level will go down to 8.9%, with a range from 0 to 47%, with the highest rates applied to photographic film and automobiles and related products.[19] China also has committed to a further phased reduction and removal of non-tariff barriers, for the most part by 2005, but no later than 2010. China has also committed to limit its subsidies for agricultural production to 8.5% of the value of farm output.[20]

16.   Trade in services was a key area in China's WTO negotiations that resulted in commitments to substantially open a broad range of services sectors through the elimination of many existing limitations on market access. China agreed to allow foreign services suppliers to engage in the retailing of all products by the end of 2003. By the end of 2004, all firms have the right to import and export all goods except those subject to state trading monopolies (such as oil or fertilizers). Foreign firms are allowed to distribute virtually all goods domestically by the end of 2006. Foreign financial institutions are permitted to provide services without client restrictions for foreign currency business upon accession; local currency services to Chinese companies by December 2003; and services to all Chinese clients by December 2006.

17.   Critical sectors such as telecoms, banking and insurance will now be confronted with greatly increased competition. China has promised to eliminate by end 2006 most restrictions on foreign entry and ownership, as well as most forms of discrimination against foreign firms. Full access will be ultimately guaranteed to foreign providers through transparent and automatic licensing procedures. It will remove restrictions on trading and domestic distribution for many products. The full impact of increased competition in China will not be felt until the liberalisation of the remaining sectors has taken place as per the schedule agreed under the WTO agreement.

18.   The extent to which China has opened to foreign trade can be illustrated by the share of total trade (exports plus imports) in GDP over time. According to the *World Bank Development Indicators*, in 1970, trade contributed 5.3 to GDP climbing to 34.8% in 1990, 44.2% in 2000 and rising sharply after WTO accession to reach a massive 65.4% in 2004 (Table 3).

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[18]   For more information on state-owned enterprises, see OECD(2005c), "Reforming State Asset Management and Improving Corporate Governance: The Two Challenges of Chinese Enterprise Reform", *Governance in China,* OECD, Paris, 2005, pp. 301-321.

[19]   WTO (2001a), "WTO Successfully Concludes Negotiations on China's Entry", *WTO Press Release* (Geneva, 17 September 2001).

[20]   Agriculture accounts for almost 15% of GDP and provides above 40% of employment in China. The declining role of agriculture in total trade is particularly striking. Even if the real values of agro-food imports and exports have been increasing, their shares fell from around 15% in 1990 to just 4% in 2003. See AGR/CA(2005)6, p. 14. For a detailed study of China's agricultural policies, see OECD (2005f) *Review of Agricultural Policies in China*, OECD, Paris, 2005.

Table 3. China: Share of Trade in GDP

(Percentage)

1970	1975	1980	1985	1990	1995	2000	2003	2004
5.3	9.2	21.8	24.1	34.8	43.9	44.2	56.9	65.4

Source: World Bank, World Development Indicators Database

19.   The degree to which China has opened its trade regime cannot be understated, especially since joining the WTO. However, important restrictions still remain in certain sectors. These will be discussed in the next section.

China's compliance with WTO commitments

20.   As part of China's Protocol of Accession, the WTO established under Article 18 the Transitional Review Mechanism (TRM) to monitor China's compliance on an annual basis for 8 years with a final review in year 10.[21] The TRM requires China to provide detailed information on its implementation efforts and gives all WTO members the opportunity to raise questions, in a multilateral setting, about how China is complying with its commitments. This is conducted before a number of subsidiary WTO bodies, which report to the WTO's General Council. The General Council then conducts an overall review each year and may issue recommendations. When the TRM was established, it was expected that the review process would be an important and effective tool to monitor China's progress in meeting its WTO obligations and commitments as well as act as a stimulus to China's trade regime transformation.

21.   Thus far the TRM process has not proved effective as a monitoring and compliance enforcement tool as was envisioned in the protocol.[22] Although most WTO members do not make use of the mechanism, the EU, Japan and the US, among a few others, continued to use it in 2005. After five years, there remain concerns about China's implementation of and compliance with WTO commitments. The WTO completed its first Trade Policy Review of China in April 2006.[23] This review looks at China's trade policies through an essentially peer-group assessment.

22.   Through the TRM process, WTO member countries have identified problematic areas, including industrial assistance programmes, standards, technical regulations and other non-tariff barriers but also specifically market access for services and enforcing intellectual property rights (IPRs).[24] In a recently released USTR report,[25] these areas are overviewed. The first concern is that China is industrial policies that appear to limit market access by non-Chinese origin goods or provide substantial government resources to support increased Chinese production and exports. This is particularly aimed at preferences for state-owned enterprises, including state-owned banks. Another area is the promulgation of standards and other technical regulations that appear to favour locally-produced products, and discriminatory enforcement of standards against non-Chinese products.

23.   The USTR report highlights two particular problems: market access for the services sectors and IPR enforcement. Even though China has until the end of 2006 to implement some of the WTO services

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[21]   See WTO (2001b), Section 18 of the "Protocol on the Accession of the People's Republic of China", WTO, WT/L/432, 23 November 2001.

[22]   For an evaluation of the TRM, see W. Steinberg (2006), Monitor with No Teeth: An Analysis of the WTO China Trade Review Mechanism, 1 January 2006, http://blj.ucdavis.edu/article/578/.

[23]   See WTO (2006), Trade Policy Review: People's Republic of China, WTO, April 2006.

[24]   M. Overmyer (2006), "WTO: Year Five", *China Business Review*, January 2006, pp. 5-6, http://www.chinabusinessreview.com/public/0601/overmyer.html.

[25]   USTR (2006), *op. cit*.

commitments, there are problems with market access for services, especially in telecoms, distribution and construction. The report found that services sectors face barriers in which Chinese regulators continue to frustrate efforts of foreign suppliers through the use of opaque regulatory process, overly burdensome licensing and operating requirements.

24. The OECD Secretariat has also found this to be the case through its examination of services barriers for banking, insurance, telecom (fixed and mobile), professional (engineering) and distribution services.[26] The study assessed services barriers and liberalisation effects in many countries, including China. By using alternative weighting methods and improved econometric specifications that include barriers affecting each mode of services supply and additional sector-specific regulatory variables, the paper drew conclusions as to the trade restrictiveness of China vis-à-vis both developing countries and the OECD. The results show that based on 2004 data, China was quite restrictive in banking, insurance, mobile telecom, engineering and distribution.

25. These results are consistent with general findings which show that before the phasing in of the liberalisation commitments specified in its GATS schedule, the number of sectors with a guarantee of full access was lower for China than for all other country groups (developed, developing and acceding countries)[27]. As noted in Mattoo (2003), the picture could change quite drastically after the implementation of the liberalisation commitments. Overall, both the coverage and depth of market access commitments is much higher than the commitments offered in the Uruguay Round by any other group of countries (including high income countries). Also, China's commitments on national treatment are deeper and wider than those of all other country groups. Annex 1 describes in detail these changes that constitute the basis for defining the subsequent simulation scenarios that correspond to the implementation of China's commitments in the five services sectors.

Intellectual Property Rights in China

26. Over the decades since joining the World Intellectual Property Organisation in 1980, China has made great progress in development of an IPR regime appropriate to the functioning of a market economy. While the evidence points to a need for further improvement in the system – particularly with respect to enforcement, it is clear that the system is already yielding benefits in terms of encouraging domestic innovation and its subsequent dissemination. For example, in 2005 China made 2,452 patent applications under the Patent Cooperation Treaty (PCT) and became the world's 10th largest user of the Treaty.[28] This represented a 44% increase in comparison to the previous year and moved China ahead of such PCT members as Canada, Italy and Australia. Overall, China accounted for nearly 2% of the applications under the treaty. Moreover, the improved environment for IPRs is working to encourage increased international technology transfer to China. Continued progress in the development of China's IPR regime promises to yield further benefits in terms of increasing the stock of available technology.

The environment for IPR protection in China

27. The Chinese Government has indicated that it regards IPR protection as part of its strategy to foster a sound environment for trade, investment and research and development in China, and not simply as "a passive response to fulfil China's accession commitments […]."[29] As part of the proposals for the 11th Five-Year Plan, the State Council published on 9 February 2006 a "National guideline on medium- and

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[26]   See OECD (2005j) "Modal Estimates of Services Barriers", TD/TC/WP(2005)36, 8 November 2005.

[27]   See Mattoo (2003).

[28]   This is according to an article from the Xinhua News Agency dated 6 February. All Xinhua News Agency articles cited in this paper were available via: www.china.org.cn as of 27 February 2006.

[29]   See, WTO (2005), document IP/C/39.

long-term program for science and technology development (2006-2020)", which states that China plans to become a innovative nation in the next 15 years and a world power in science and technology by the middle of the 21st century.[30] The guideline underscores the intention to expedite the implementation of a national IPR system that ensures IPRs are respected and protected, while also guarding against abuse of IPRs that might interfere with "normal" competition and innovation.

28.   On 14 March 2006, the State Intellectual Property Office released "China's Plan on IPR Protection Action 2006".[31] The action plan lays out priorities for strengthening the IPR system with respect to four major areas: trademarks, copyrights, patents and international trade (including customs issues). The plan includes nine types of action: legislative reform, law enforcement (7 dedicated campaigns and a variety of other initiatives and special measures), institution building, advocacy (*e.g.* "IPR protection week", brochures, TV programming), training and education, international exchange and co-operation (*e.g.* with foreign patent agencies), promotion of business "self-discipline" (*e.g.* concerning use of legal software), improved service to rights holders (*e.g.* access to information technology for patent data searches), and expanded research on IPR issues in China.[32] The action plan underscores an intention by the authorities to address a number of concerns raised by foreign rights holders including with respect to enforcement issues. However, it does not provide an indication as to whether additional resources will be made available in each of the nine action areas.

29.   The expanded official attention to IPR issues in the current five-year plan and action plan is associated with recognition by the government of the need to refine the IPR regime and develop an enhanced strategic approach to IPR policy. An official study by the Development Research Center of the State Council (DRC) (2004) considered the state of the Chinese IPR system. The conclusions point to rapid development of the system over 20 years and the "relatively complete" legal aspects of the system. The report underscores the role of the IPR system in encouraging foreign investment and, more importantly, in encouraging innovation by local enterprises. At the same time, the report acknowledges the need to strengthen the implementation of IPR rules. The main obstacles to this include overly rigid application of the rules, the "slack" punishment for IPR offences, and a shortage of resources. The report highlights deficiencies in the administration of the IPR system such as the lack of an effective mechanism to co-ordinate across the various elements of the system, inadequate means of communication among authorities, companies and consumers, inadequate financial and human resources in the system, unsystematic treatment of IPR ownership and incentives for publicly-funded technology, and gaps in some aspects of the legal framework for IPRs. At the same time, the report points to the need to develop anti-trust and competition institutions as complements to the IPR system. The report underscores the need to respect minimum international IPR standards including those of the TRIPS Agreement. Within the policy space available under the international treaties, the authors call for development of a coherent national strategy for the IPR system.

30.   During a high-level workshop organised in 2004 by the OECD and the Chinese authorities, participants acknowledged the progress made by China in the development of a modern IPR system

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[30]   Xinhua Agency News article dated 9 February 2006.

[31]   The action plan is the product of the National IPR Protection Working Group Office, engaging a range of government departments and agencies. The document is available via the Internet site of the State Intellectual Property   Office,   as   of   11   April   2006,   at   the   following   location: http://ipr2.mofcom.gov.cn/aarticle/speechactivity/200603/20060301681736.html.

[32]   According to the People's Daily Online (29 August 2006), as a consequence of the IPR action plan the government set up 50 reporting and complaint centres in cities across China. In addition, a national IPR hot line for reports and complaints was established (http://english.people.com.cn/200608/29/eng20060829_2 97752.html). Also, the government created a bilingual (Chinese/English) web site to provide information on intellectual property rights in China (http://www.ipr.gov.cn/en/index.shtml).

[OECD (2005g)]. At the same time, the challenges to implementation of an effective enforcement mechanism were also underscored. Enforcement relies on a multifaceted approach engaging courts, customs officials and administrative authorities. An inter-ministerial office has been established in order to co-ordinate the efforts of 21 government ministries involved in IPR policy and enforcement. Administrative enforcement is a central feature of the Chinese system, providing for inexpensive, fast and local responses to infringement without recourse to the courts. Chinese authorities consider this an important tool in the face of the limited awareness of IPR issues among some segments of the population. (Chinese authorities regard education as a critical part of their efforts to improve IPR protection and have accordingly redoubled their educational efforts.) At the same time, some participants at the OECD workshop underscored problems in the administrative enforcement of IPRs, with instances of weak or non-transparent penalties for infringement, a lack of co-ordination among enforcement bodies, or "local protectionism" and lax implementation of IPR protection by some local authorities, among other challenges. Beyond the administrative approaches, civil and criminal enforcement mechanisms are available via the judiciary. While these mechanisms offer the prospect for stronger deterrents, they too suffer from some limitations. For example, civil cases may be subject to relatively high costs for the plaintiffs, while yielding low penalties for the guilty parties. Criminal enforcement may be subject to high thresholds or inadequate referral from the administrative enforcement channel. Customs enforcement, while potentially an effective channel for limiting export of counterfeit goods, is subject to practical constraints in the face of the large volume of merchandise trade.

31.   A White Paper on IPR Protection issued by the State Council Information Office (2005) provides an overview of the development of IPR protection in China and an optimistic assessment of the current global effectiveness of the system, while acknowledging that "there are still IPR infringements in certain areas and fields in China, some of which are very serious." Similarly, a report by international industry representatives acknowledges improvements in IPR enforcement in 2005, due mainly to support from the Ministry of Public Security, and sees as positive the establishment in the Ministry of a new IP Crimes Unit on 1 January 2006 staffed with 6 full-time officers [IACC (2006)]. Yet, the report still assesses the enforcement efforts as "grossly inadequate". It points to modest increases in the number of actions against trademark counterfeiters, but almost no actions against copyright abusers and exporters of counterfeit goods. It also notes variation in enforcement across regions, citing Guangdong province as a "hotspot" in need of additional resources to combat counterfeiters.

32.   In the first half of 2005, the Japanese Ministry of Economy, Trade and Industry conducted a survey of Japanese corporations doing business in China during 2003 and 2004.[33] The survey respondents included 134 firms. While acknowledging some positive aspects of the system (*e.g.* appreciation for the efforts of Chinese customs attempting to impede exports of counterfeit goods), the respondents cited, among other issues, damage from abuse of their intellectual property, a lack of transparency on some issues (*e.g.* on outcomes of administrative enforcement), regional variation in the ability to enforce rights, and difficulties in successfully pursuing judicial remedies (civil or criminal) and obtaining an adequate result.

33.   In a 2005 report to the U.S. Congress, USTR acknowledges that "China's efforts to bring its framework of laws, regulations, and implementing rules into compliance with the TRIPS Agreement have been largely satisfactory, although some improvements, particularly in rapidly emerging areas such as Internet copyright protection, are still needed." Rather, the most significant problem areas relate to enforcement. The USTR report points to a trade association submission alleging that "…appropriation of intellectual property in China has occurred on such a massive scale that it has impacted international

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[33]   METI (2005), *Field Survey for Infringement of Intellectual Property Rights in China (Final Report)*, available at: www.meti.go.jp , 23 June 2005.

prices, disrupted supply changes, [and] changed business models […]" among other impacts.[34]

34.   The recent OECD *Economic Survey of China* (2005a) found that IPR reform had become increasingly important for domestic innovators, with Chinese entrepreneurs in some cases facing difficulties in obtaining protection for their IPR when they expand across provisional borders. They too encounter difficulties from a lack of objectivity from local judiciaries. The survey suggests that one measure to improve the situation might be to transfer some of the responsibility for the financing of courts to the central government as well as increasing the specialisation of courts with respect to intellectual property.

China, IPRs and the WTO

35.   Some WTO member countries are using two WTO provisions to seek additional information on the implementation of IPR reforms in China and encourage further progress in development of IPR protection.[35] These exchanges help to shed light on progress and concerns in a structured way, under potential scrutiny by the membership of the WTO. Moreover, the WTO conducts periodic trade policy reviews of member countries and the first such review of China took place April 2006. IPR issues are covered by such reviews and the WTO Secretariat report and the review meeting will provide further opportunities to consider China's progress in implementing its commitments under the TRIPS Agreement.

36.   The first provision considered here is section 18 of China's Protocol on Accession, which requires that the TRIPS Council review implementation by China of the TRIPS Agreement each year for eight years following accession. The TRIPS Council reports the results of each annual review to the General Council.[36] In 2005, for example, Japan, the European Communities and the US used this channel to submit questions and comments concerning China's protection of IPRs.[37] As part of this process, China submitted a communication outlining legislative, administrative and enforcement initiatives over the previous year. The 2005 TRM meeting was held in October and the minutes were subsequently made available to the public. They provide a record of the responses of the representative of China and the ensuing exchange of views with members, much of which concerned enforcement issues.

37.   The second provision considered here is Article 63 of the TRIPS Agreement, which addresses transparency issues. This Article requires each member to publish laws and regulations, certain final

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[34]   The US has raised IPR concerns in the U.S.-China Joint Commission on Commerce and Trade, and acknowledges that progress has been made as a consequence [USTR (2005)]. *E.g.* penalties for IPR violations have been increased and China launched a national IPR education campaign via radio, television and newspapers. China also committed to ratify the World Intellectual Property Organisation Internet-related treaties and banned the use of pirated software in government offices. The WIPO "Internet treaties" include the Copyright Treaty (1996) and the Performances and Phonograms Treaty (1996). The ratification of these two treaties goes beyond the minimum requirements of the TRIPS Agreement. Nevertheless, a USTR "out-of-cycle" review under the Special 301 provisions of US trade law found continued critical deficiencies in China's IPR enforcement regime and as a consequence placed China on the Special 301 Priority "Watch List". In a recent report on U.S.-China Trade Relations, USTR (2006) noted that "IPR enforcement is one of China's greatest shortcomings."

[35]   It should be noted that OECD member countries (*e.g.* the US, EU and Japan) are also engaged in bilateral technical co-operation with China in order to help reinforce the effectiveness of the China's IPR protection system and encourage transparency and mutual exchanges of information.

[36.]   WTO (2005), IP/C/39.

[37]   For reference, see the following WTO documents (2005): IP/C/W/451 (communication from Japan), IP/C/W/450 (communication from the European Communities), and IP/C/W/453 and 453/Add.1 (communications from the US). The short, factual report from China under Section 18 [IP/C/W/460] describes key legislative and enforcement developments over the preceding year.

judicial decisions and administrative rulings, related to IPR protection and to notify these to the TRIPS Council. WTO members have the right to submit written queries with respect to these issues. In 2005, for example, Japan, Switzerland and the US did so for the first time. In its replies to these queries, China underscored the obligation to interpret and apply the agreement in good faith and its willingness to enhance co-operation with all WTO members with respect to IPR protection. It requested clarification of certain points in each of the queries and noted that while Article 63.3 of the TRIPS Agreement refers to the right to request information it makes "no mention of a corresponding obligation of the requested member to actually follow the request. Nor does it provide any formality and time requirement for any possible response." In further correspondence, Japan, Switzerland and the US all pointed to their interest in fruitful co-operation with China on these matters but insisted on the relevance of their queries to their rights under the Agreement and expressed concern that China reply to the queries in good faith.

38. The current situation with respect to IPR protection in China remains mixed, a perspective echoed by various stakeholders from government, domestic industry and multinational firms. The preponderance of evidence indicates that there has been significant progress in development of an IPR regime appropriate to the needs of a modern market economy. However, there remain deficiencies – particularly with respect to enforcement – that are damaging domestic and international interests. Given the scale of the Chinese economy, such shortfalls can have global repercussions. At the same time, there are significant potential benefits available from further enhancement of China's system, including increased technology transfer (an issue that is the subject of possible follow-on research in the Trade Directorate).

China's trade flows

39. China is a major driver of growth in the world economy boosting both global supply and demand with many of its industries completely integrated into global supply chains. China's exports and imports of goods have surged over the past two decades, with a trade surplus reaching USD 102 billion by 2005 (Figure 1). [38]

Figure 1. China: Trend in Foreign Trade, selected years
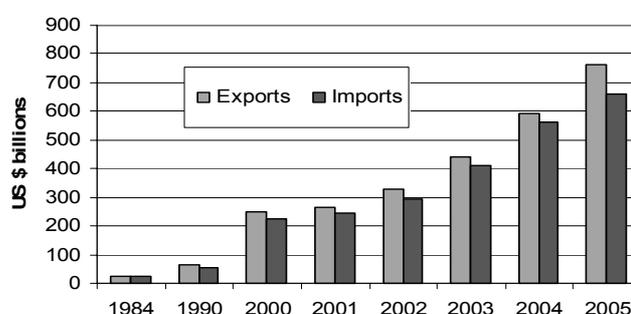
Source: UN Commodity Trade Statistics Database (COMTRADE); Note that 2005 figures are from the Chinese Ministry of Commerce

40. As with trade in goods, the Chinese services sectors registered quite a considerable expansion in recent years. For a sector once considered to be un-tradable, there has been an important increase over the past decade in the proportion of total trade accounted for by services. However, as compared with its goods trade, China's services exports remain at lower levels. In 2004 services exports accounted for only 2.8 % of total world trade (Table 4).

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[38]   Ministry of Commerce, "Imports and Exports 2005", Table 2, 20 February 2006, http://english.mofcom.gov.cn/aarticle/statistic/hkmacaotaiwan/200602/20060201546309.html.

Table 4. Share of China's Services Trade in World Total, selected years

(Percentage)

	1994	2001	2004
Exports	1.54	2.18	2.79
Imports	1.48	2.53	3.25
Total Services Trade	1.46	2.47	3.14

Source: IMF Balance of Payments Statistics (2006)

41.   Chinese goods exports accounted for 90% of its total exports, which was substantively higher than the world average at a little over 80%. Its services exports only account for a little less than 10% compared with a world average of 20% (Table 5). This suggests that China's services exports are still underdeveloped and its integration into the world economy was mainly driven by goods trade.

Table 5. Trade in Goods and Services, World and China

(Percentage)

		Goods		Services	
		World	China	World	China
Exports					
	1994	80	86	20	14
	2001	80	89	20	11
	2004	80	90	20	10
Imports					
	1994	79	85	21	15
	2001	80	85	20	15
	2004	80	88	20	12

Source: IMF Balance of Payments Statistics (2006)

42.   As opposed to trade in goods where growth of exports surpassed the growth of imports, China's services sectors imports grew faster than services exports, contributing to a gradual increase in China's deficit in services trade that appeared from the beginning of the 1990s. This suggests that the degree of specialisation did not change for China throughout the analysed period (*i.e.* China remained a net importer of services). The increasing services trade deficit implies that China's export capability is quite limited (and further restricted by high services barriers in sectors where it has a comparative advantage). This reflects the duality in China's economy: the opening up of trade and FDI in manufactured goods that resulted in the emergence of a largely private sector[39] contrasts with the high level of public ownership and important regulatory barriers in services sectors that explain their weaker trade performance.

China's trade composition

43.   As trade has grown over time, its composition has changed. Table 6 charts the large rise in the value of manufacturing exports and the significant increase over the years in imports of fuel, energy, and capital goods.

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[39]   In terms of sectoral policies, emphasis was placed on investment in export-oriented manufacturing determining a more rapid development of these sectors.

Table 6. China: Main Products in Goods Trade

(USD billion)

	1984	1994	2003	2004
Total Exports (fob), of which:	26.1	121.0	438.2	593.4
Food	3.2	10.0	17.5	18.8
Manufactures	14.2	101.3	403.6	552.8
Total Imports (cif), of which:	27.4	115.6	412.7	561.4
Food	2.3	3.1	5.9	9.1
Fuel and energy	0.14	4.0	29.2	48.0
Capital goods	7.2	51.2	192.9	252.6

Source: World Bank, World Development Indicators Database

44. A closer look at the sectoral composition of services reveals that travel, business and transport services where the main sectors traded during 1990 to 2004 (Table 7). In terms of exports, business services experienced the biggest increase, while financial and insurance services registered a considerable drop between 1990 and 2004. By contrast, on the import side, insurance services and transport services seem to be the most dynamic sectors.

Table 7. China: Services Trade Composition

(USD million and %)

	1990	1994	2001	2004
SERVICES - Total trade	1503	321	-5933	-9699
Services exports	5855	16620	33334	62434
Transportation services	46.2	18.5	13.9	19.3
Travel	29.7	44.1	53.4	41.2
Other services	24.1	37.4	32.7	39.4
Communications	2.7	4.2	0.8	0.7
Construction	na	na	2.5	2.4
Insurance	3.9	10.2	0.7	0.6
Financial	na	na	0.3	0.2
Computer and information	na	na	1.4	2.6
Royalties and licence fees	na	na	0.3	0.4
Other business services	15.7	21.3	25.3	32.0
Personal, cultural, and recreational	na	na	0.1	0.1
Government, n.i.e.	1.8	1.6	1.3	0.6
Services imports	4352	16299	39267	72133
Transportation services	74.6	46.8	28.8	34.0
Travel	10.8	18.6	35.4	26.5
Other services	14.6	34.6	35.7	39.4
Communications	0.3	0.9	0.8	0.7
Construction	na	na	2.2	1.9
Insurance	2.2	11.5	6.9	8.5
Financial	na	na	0.2	0.2
Computer and information	na	na	0.9	1.7
Royalties and licence fees	na	na	4.9	6.2
Other business services	6.7	19.0	19.1	19.3
Personal, cultural, and recreational	na	na	0.1	0.2
Government, n.i.e.	5.5	3.2	0.6	0.7

Source: IMF Balance of Payments Statistics (2006)

Section II.   China's Impact on the Global Economy

45.   China's share of world trade has increased steadily since it began lowering tariffs and opening its economy to trade. Since joining the WTO, China has almost doubled its share in world goods trade from 3.7% in 2000 rising to 6.4% in 2005 (see Figure 2). In 2005 China surpassed Japan to become the third-largest trading economy in the world after Germany and the US.

Figure 2. Total World Goods Trade by Country, 2000-2005
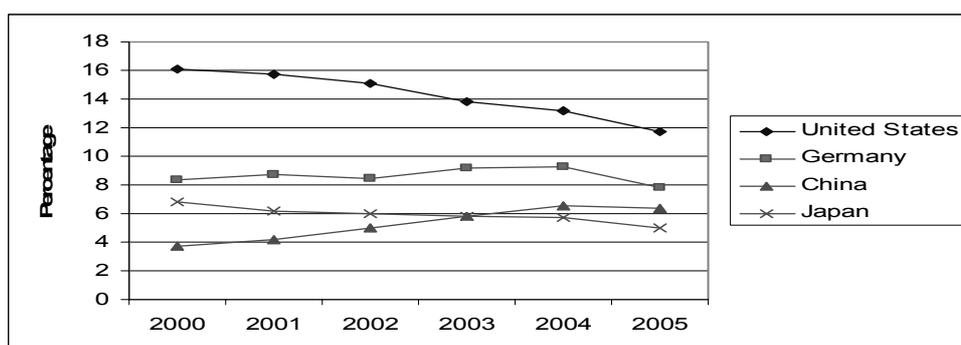
Source: UN Commodity Trade Statistics Database (COMTRADE), 2006

China – OECD goods trade

46.   Especially since China's accession to the WTO, it is evident that there is growing trade interdependence between China and many OECD member countries. In 2005, China's top trading partners were the EU followed closely by the US and Japan (Figure 3). Total trade reached USD 217 billion for the EU 25 representing an increase of almost 23% from the previous year, USD 211 billion with the US up almost 25% and USD 184 billion with Japan amounting to almost a 10% increase from 2004.[40] In 2005, total trade with the 10 new members of the EU amounted to USD 11 billion, led by Poland (USD 3.1 billion), Hungary (USD 2.3 billion), the Czech Republic (USD 2 billion) and the Slovak Republic (USD 0.5 billion).[41]

Figure 3. China's Top Trading Partners, 2005
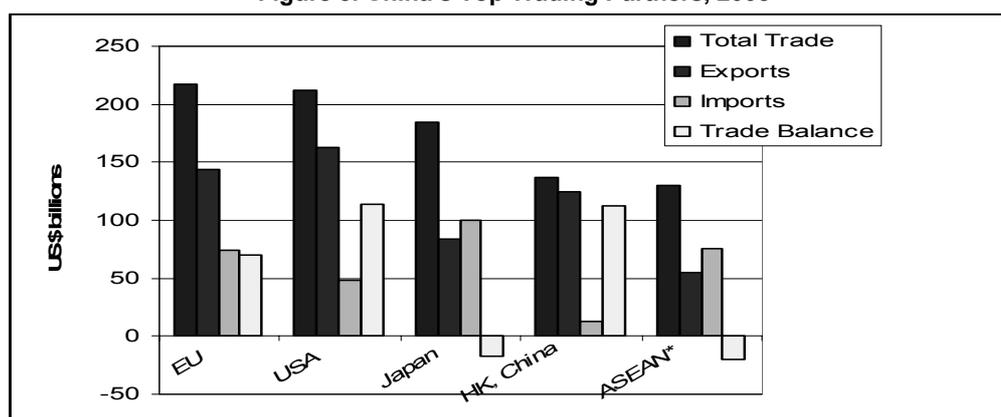
* Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei, Cambodia, Laos, Myanmar, and Vietnam
Source: Chinese Ministry of Commerce

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[40]   Ministry of Commerce, "Imports and Exports 2005", Table 2, 20 February 2006.
http://english.mofcom.gov.cn/column/print.shtml?/statistic/hkmacaotaiwan/200602/20060201546309.

[41]   *Ibid.*, Table 1.

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47.   Since the late 1990s, China and Russia have been working on a strategic partnership which includes strengthening bilateral trade ties.[42] The booming economic co-operation and trade between Russia and China has become an important basis and driving force for bilateral relations. In 2005, the trade volume between China and Russia reached USD 29.1 billion, up 37.1% from the previous year. Recently, President Putin stated that the two countries aimed to boost their bilateral trade volume to USD 60 billion by 2010.[43] China is now Russia's fourth largest trading partner and Russia is China's eighth largest trading partner. Russian exports to China are primarily dominated by energy and raw materials while China sells to Russia higher-technology products.

48.   China has become one of the major trading partners for a majority of OECD countries. With China's efforts to open its trade regime since the early 1990s, its market share in OECD export markets has risen dramatically (Table 8), especially in Japan, US, Korea, Australia, the EU 15 and New Zealand. China is rapidly becoming a regional engine of growth in Asia, with increasing shares of its imports from the region. It could be argued that China is increasingly dependent on the region to sustain its economic growth and hence explains the strategic interest in deepening trade ties in Asia. As China continues to expand regional production chains with Asian economies and markets, it is actively seeking preferential trading arrangements amongst its neighbours. China is currently negotiating bilateral Free Trade Agreements with Australia and New Zealand, and has initiated talks with India, Korea, and Japan. Importantly, China has been actively pushing for an ASEAN regional free trade agreement that will encompass over 10 countries in Southeast Asia by 2015.[44]

Table 8. China's Share in Major Markets

(Percentage of total imports)

Partner	1990	2000	2001	2002	2003	2004
Japan	5.2	14.5	16.6	18.3	19.7	20.8
US	3.1	8.6	9.3	11.1	12.5	13.8
Korea	2.1	8.1	9.5	11.6	12.4	13.4
Australia	2.7	7.9	9.0	10.3	11.3	13.0
EU 15	2.5	6.2	6.8	7.7	9.1	10.7
New Zealand	1.2	6.3	7.0	8.0	9.0	10.2
Canada	1.0	3.2	3.7	4.6	5.5	6.8
Russia*	1.6	2.1	3.9	5.7	5.7	6.3
Mexico	0.8	1.7	2.4	3.7	5.5	na
Turkey	1.1	2.4	2.3	2.7	3.9	4.8

* 1990 refers to 1996
Source: UN Commodity Trade Statistics Database (COMTRADE); EU data derived from OECD *International Trade Statistics*

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[42]   In 2001, then Chinese President Jiang Zemin and Russian President Vladimir Putin signed the Sino-Russian Good-Neighbour Treaty of Friendship and Cooperation. In May, 2003, Chinese President Hu Jintao and Putin signed a joint statement in Moscow, ushering in a new era of development in the China-Russia strategic partnership. In March 2006, the Chinese Ministry of Commerce and the Russian Ministry of Economic Development and Trade will co-host the Sino-Russian Economic Forum s part of "The Year of Russia" in China.

[43]   See S. Blagov (2006) "Russia registers growth in trade with China, but increase due to higher prices, not more turnover", *Eurasia Daily Monitor,* 7 February 2006. http://jamestown.org/edm/article.php?article_id=2370750.

[44]   These include Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Vietnam, Laos, Myanmar and Cambodia. It is expected that once the ASEAN FTA is established, intraregional trade will grow significantly with total trade volume reaching over USD 1 trillion. However, China's expansion in some sectors such as electronics, furniture and motorcycles has been viewed by some countries in the region as supplanting their markets and the effect on their economies. See E. Economy (2005), *op. cit.*, p. 414.

China – OECD services trade

49.   While information on services trade by partner countries is beginning to emerge in OECD countries, few developing countries report such information. In order to identify the essential features of China's services trade with OECD countries, estimates were calculated on the basis of partner country data reported in the OECD database on trade in services by partner country and IMF services export and import data reported by China. Although one should bear in mind that these estimates are subject to a high level of uncertainty, available data show that of China's total services exports 72% went to OECD countries in 1999. This percentage has decreased over time dropping to 50% in 2003. One would have expected that as China develops the quality of its services, exports to OECD countries would have risen. Rather, the data suggest that in terms of China services exports, non-OECD countries are becoming more important trading partners.

50.   In stark contrast to goods trade where China has become a significant trading partner for the majority of OECD economies, services trade shows a very different picture. China's shares in OECD country services exports and imports are, with the exception of its Asian neighbours, extremely low (insignificant) in most cases (Tables 9 and 10).

Table 9. Top 10 Destinations of China's Services Exports

(As a share of individual countries' total services imports)

	2000	2001	2002	2003
Hong Kong, China	30.86	30.71	30.06	28.56
Korea	6.91	7.39	9.61	9.32
Japan	3.58	3.65	4.00	4.34
Russian Federation	na	na	na	2.91
Australia	2.24	2.24	2.66	2.57
Denmark	0.33	2.03	2.33	2.41
Finland	0.21	0.21	0.27	0.97
Canada	0.68	0.81	1.26	0.81
Italy	0.92	0.89	1.46	0.68
Spain	0.58	0.60	0.64	0.66

Source: OECD Statistics on International Trade in Services by Partner Country Database (2006).

Table 10. Top 10 Origins of China's Services Imports

(As a share of individual countries' total services exports)

	2000	2001	2002	2003
Hong Kong, China	21.85	23.84	27.18	28.22
Korea (Republic of)	6.38	7.41	8.86	11.04
Japan	3.40	3.63	4.18	5.34
Finland	0.11	0.14	0.59	3.34
Australia	2.38	2.78	3.00	3.13
Slovak Republic	na	0.04	na	2.92
Denmark	2.22	2.69	2.72	2.82
Russian Federation	na	na	na	2.38
Germany	0.82	1.07	1.33	1.36
France	0.49	0.69	0.86	1.34

Source: OECD Statistics on International Trade in Services by Partner Country Database (2006).

51.   China's trade growth over the past 25 years has been matched by its success in attracting FDI. The next section will address trade and investment issues.

Trade and investment

52.   China's trade and investment liberalisation has created an attractive business environment and therefore has had a significant impact on FDI inflows.[45] FDI grew from essentially zero in 1979 to USD 636 million in 1983, to USD 60.6 billion in 2004.[46] The Ministry of Commerce reported that FDI dropped slightly to USD 60.3 billion in 2005. China has been the largest FDI recipient among all developing countries since 1993 and ranked the first in the world in terms of FDI inflows in 2002. China is currently the third largest recipient of FDI after the US and the UK (UNCTAD, 2005a).

53.   Several factors have contributed to the increase in FDI inflows. China liberalised its FDI regime concurrently with the implementation of its economic reform and open doors policies in the late 1970s and especially since the early 1990s. Implementing a series of laws and regulations governing FDI, China has substantially reduced investment barriers and improved its investment environment by opening more regions and economic sectors to foreign investors. In addition to such policies, it has the world's largest population providing an abundance of cheap labour and a potentially huge market. Recognising the potential since the early 1980s, countries in the region such as Japan and the Asian NIEs have become important capital suppliers. In 2005, FDI inflows to China originated from Hong Kong, China[47] (29.8%), Japan (10.8%); EU (8.6%), US (5.1%) and Chinese Taipei (3.6%).[48]

54.   It is important to note however that China's FDI performance must be viewed in an international perspective. In terms of FDI inflows per capita, China ranks lower than all OECD countries save for one, and even ranks relatively low among developing countries.[49] Additionally, the quantitative leap has not been fully matched by a qualitative leap. Much of China's FDI is short-term, in labour intensive manufacturing, with foreign investment in high-tech and the services sectors lagging behind. China is encouraging FDI in high technology based manufactures as a way to encourage domestically owned firms to move up the value added chain. With WTO accession, it is also eliminating barriers to these sectors. To continue to attract FDI, especially high-quality FDI from OECD countries, China must fully implement its WTO commitments and complementary domestic reforms. These include further reducing trade and investment barriers and liberalisation of domestic markets, reform of the state-owned enterprises, further developing an open and transparent rules-based regulatory framework, and strengthening the rule of law, especially in areas such as the protection of intellectual property rights.

55.   Over the last six years, there has been a concerted effort by the Chinese Government to increase its outward investments. Greater outward FDI became a declared policy goal of the Chinese government in March 2000. Several factors are pushing the outward FDI or "going global" policy.[50] First, a key driver of

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[45]   For a detailed analysis of China's investment policy, see OECD (2003) *China: Progress and Reform Challenges*, OECD, Paris, 2003 and OECD (2006a) *China: Open Policies towards Mergers and Acquisitions*, OECD, Paris, 2006.

[46]   OECD (2005b), *International Investment Perspectives*, OECD, Paris, p. 25 and UNCTAD (2005a) *World Investment Report 2005: Transnational Corporations and the Internationalization of R & D* ,Geneva, p. xix.

[47]   Outward investment from Hong Kong-China, China reached USD 39.7 billion in 2004. The OECD argues that although there is little doubt that Hong Kong, China-based investors account for much of the direct investment into the mainland, it would be too simplistic to ascribe the boom in Chinese FDI simply to "round tripping". OECD (2005b), *Ibid.*, p. 25.

[48]   OECD (2006a), *op. cit.*, statistical annex, Table 5.

[49]   OECD (2003) *op. cit.*, pp. 37-40.

[50]   See UNCTAD (2003), "China: an emerging FDI outward investor", E-Brief, UNCTAD, Geneva, 4 December 2003.

Chinese outward FDI has been its growing demand for natural resources.[51] There has been a concerted effort by the Chinese government to secure future sources of oil, natural gas, iron ore, aluminium, timber and other commodities in Australia, Russia and developing countries in Africa and Latin America. According to the Chinese Ministry of Commerce statistics, mining and extraction accounted for 32.7% of all China's outward investment in 2004.[52]

56.   Second, Chinese corporations are seeking to gain international technology and skills transfer which also takes the form of establishing research and development (R&D) centres in developed countries. In China's 11th Five-Year Plan for 2006-2010, the government is urging large enterprises to set up R&D institutes and welcome enterprises to share the state's R&D tasks.[53] China's PetroChina and China Petroleum & Chemical are among the top 20 firms by R&D expenditure in developing countries (UNCTAD 2005a). Of China's 77 R&D units at the end of 2004, 37 units operated abroad. Of these, 26 are located in developed countries, predominately in the US (11) and Europe (11) with the rest in developing countries.[54]

57.   A third driver of outward investment is the desire of exporting Chinese companies to support their exports, service their markets and expand their market presence abroad. Chinese producers of televisions and household appliances with excess industrial productive capacity are looking for growth opportunities abroad. In 2003 a joint venture was created between TCL the leading Chinese multimedia consumer electronic products manufacturer, and the French company Thomson, the worldwide leader in video technologies. In 2005 Leonovo – one of China's largest companies – bought IBM's personal computing division.

58.   Despite the potential drivers of outward investment, China's outward FDI is relatively small. UNCTAD estimates that China's outward investment flows averaged USD 3 billion per year from 2000-2003.[55] In 2004, outward FDI was USD 1.8 billion[56] – which was only 0.2 % of the global total. While such figures may be underestimated, the Chinese government clearly sees much potential for Chinese firms to expand significantly overseas investment. In 2004, the Chinese government announced new policies on outward investment outlining government support for Chinese firms investing overseas. A document jointly issued by the National Development and Reform Commission (NDRC) and China Import and Export Bank outline policies concerning giving credit support to key projects encouraged by the government.[57]

59.   To understand China's rapid expansion in foreign trade, it is important to acknowledge how vital foreign-invested enterprises (FIEs) have been to its export growth. It should be borne in mind that China's opening to foreign investment occurred simultaneously with an opening to foreign trade. Even without large inflows of FDI, export capacity might still have expanded but perhaps at a less rapid pace. Nevertheless, FIEs account for a large proportion of China's exports and imports. FIEs imports reached in 2005 USD 388 billion accounting for 58.8% of the total imports. Exports climbed to USD 444 billion

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[51]   In 2005, China's CNOOC, a state-owned oil company, made a bid to buy UNOCAL, an American oil company, but withdrew the bid in the face of strong opposition from many members of the US Congress.

[52]   2004 年度中国对外直接投资统计公报（非金融部分）*2004 Statistical Bulletin of China's Outward Foreign Direct Investment* (Non-Finance Part), Ministry of Commerce and National Bureau of Statistics.

[53]   See Communiqué of the 5th plenary session of the 16th Central Committee of the CPC, 11 October 2005.

[54]   UNCTAD (2005a) *op. cit.,* p. 150.

[55]   UNCTAD (2004), *World Investment Report 2004: The Shift towards Services*, UNCTAD, Geneva, 2004, p. 24.

[56]   OECD (2005b), *op. cit.,* p. 32.

[57]   Y. Zhang (2005), *China Goes Global*, Foreign Policy Centre, London, April 2005, pp. 13-14.

making up 58.2% of China's exports in 2005.[58] The FIE percentage of exports is significantly higher than other Asian NIEs during a similar point in development. In the mid-1970s, 20% of manufactured exports in Chinese Taipei were from FIEs while in Korea from 1974-1978 FIEs made up 25%. When one looks at China's advanced industrial goods exports, the dominance of FIEs is even more pronounced, ranging from 70 to 90%.[59] Such a large dominance of FIEs in the Chinese economy also indicates its increasing role in international processing activities. The following section will examine this issue.

China's role in international processing activities

60.   Fuelled by its trade and investment liberalisation, the engine of China's phenomenal growth in foreign trade has been international processing activities. Greater global and regional trade interdependence has given rise to new and more complex trade patterns. One such phenomenon is cross border production networks which are gradually internationalising the production process of many goods and services. Rather than becoming skilled in the manufacture of entire products, Chinese firms focus on a specific part of the production process in which they possess a comparative advantage. China's comparative advantage continues to lie in labour-intensive products. For China, trade liberalisation has facilitated greater participation in international production networks and deeper integration with its trading partners, especially in Asia. It has also helped China to compete in world markets developing its manufacturing and services sectors. Production networks among advanced and emerging economies greatly increase the opportunities for cost-efficient specialisation and welfare-enhancing trade.[60]

61.   Gaulier *et al.* (2005) argue that processing trade is the major driver of China's exports and imports with foreign-invested enterprises as the major players. They have found that instead of exporting finished goods to US and European markets, export firms located in advanced Asian economies are using China as an export base. They export intermediate goods to their affiliates in China where they are assembled or transformed and then re-exported primarily to the EU and the US, creating a triangular trade pattern.[61] Due to this pattern, China's exports to the EU and the US have risen sharply and have displaced Japan and Asian NIEs' exports. According to the Chinese Ministry of Commerce, the ratio of imports for processing to total imports was 41.5% in 2005. At the same time, imports for processing are estimated to make up 36% of China's total exports.[62]

62.   Examining China's growth in exports and imports and the composition of its trade underlines strongly the importance of intra-industry trade in China. Figure 4 shows a strong similarity in patterns between growth of exports and imports in recent years. Further evidence of the prevalence of international processing activities can be seen in Tables 11 and 12 that list China's main exports and imports in 2004 – it exports and imports similar products. China's main exports include electrical machinery and transport equipment, power generation equipment, optics and medical equipment as well as apparel, iron and steel. The largest changes are in iron and steel, optics and medical equipment, electrical machinery and equipment and power generation equipment. Top imports include machinery and transport equipment,

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[58]   See OECD (2006a) *China: Open Policies towards Mergers and Acquisitions*, *op. cit.*, Annex, Table 9.

[59]   G. J. Gilboy (2004), "The Myth behind China's Miracle", *Foreign Affairs*, July/August 2004. The article discusses further China's industrial strategic culture.

[60]   See S. Arndt (2004), Trade Integration and Production Networks in Asia: The Role of China, Claremont McKenna College, June 2004.

[61]   G. Gaulier, F. Lemoine, and D. Unal-Kesenci (2005), *China's Integration in East Asia: Production Sharing, FDI & High-Tech Trade*, Centre d'Études Prospectives et d' Informations Internationales (CEPII), 9 June 2005.

[62]   See Ministry of Commerce, http://gcs.mofcom.gov.cn/aarticle/Nocategory/200602/20060201484560.html and http://gcs.mofcom.gov.cn/aarticle/Nocategory/200602/20060201484556.html.

power generation equipment, optics and medical equipment as well as mineral fuel and oil, iron and steel, plastics, and chemicals.

Figure 4. Growth of Exports and Imports
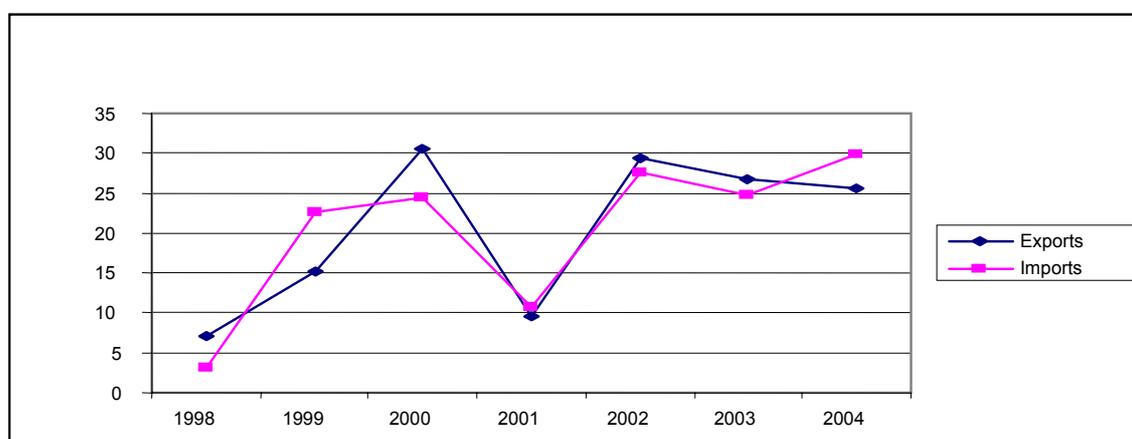
(Percentage)

| Table 11. China's Top Exports | | | | Table 12. China's Top Imports | | | |

(USD billion)   (USD billion)

Commodity	2003	2004	% change	Commodity	2003	2004	% change
Electrical machinery & equipment	88.97	129.66	45.8	Electrical machinery & equipment	103.93	142.10	36.7
Power generation equipment	83.47	118.15	41.7	Power generation equipment	71.50	91.63	28.2
Apparel	45.76	54.78	19.7	Mineral fuel and oil	29.27	48.03	64.2
Iron and steel	12.86	25.22	96.0	Optics &medical equipment	25.14	40.15	59.8
Furniture and bedding	12.90	17.32	29.1	Iron and steel	25.60	28.39	10.9
Optics & medical equipment	10.56	16.22	53.6	Plastics and articles thereof	21.03	28.06	33.4
Footwear and parts thereof	12.96	15.20	17.4	Inorganic and organic chemicals	18.74	27.81	48.4
Toys and games	13.28	15.10	13.6	Ore, slag and ash	7.17	17.29	141.0
Mineral fuel and oil	11.11	14.48	30.2	Vehicle -other than rail	11.81	13.10	11.2
Inorganic and organic chemicals	10.73	13.94	29.8	Copper	7.17	10.48	46.3

63.   As China has emerged as a major player in international markets, OECD members are increasingly interested in China's potential impact on world markets and on their bilateral trade balances. Because of the large role processing trade plays in China, its bilateral trade balances could be misleading. Arndt (2004) argues that standard procedures of balance-of-payments accounting may be deceptive in cross border production sharing. Gaulier *et al.* (2005) put forth that processing activities are responsible for most of China's trade surplus. If processing trade is excluded, China's trade with the EU records a deficit and is almost balanced with the US. The same study argues that there is an integrated asymmetry in China's trade with the EU and the US because of China's integration in Asian production networks. The US and EU

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trade deficits are correlated to the activities of FIEs – many times their own multinational corporations – that derive large profits and strong competitiveness from low production costs in China.[63]

64.   As such a large part of China's trade is devoted to processing trade, it is necessary to examine both gross and net changes in exports and imports in order to identify the role and extent of imported foreign value-added. Arndt argues that the need to distinguish between imports and imported value-added and exports and exported value-added becomes more important. There are indications that a rise in the share of domestic value added in China's processing trade is occurring especially in the electronics sector. Almost 20% of China's imports are electrical machinery and semiconductors, while close to 15% of its exports are computers; 11.5% are telecommunications equipment and 10% are electrical machinery and semiconductors.[64] The OECD Directorate for Science Technology and Industry (STI) is currently working on a globalisation project that will analyse global interactions with input-output tables, thus hoping to derive the value-added in its exports.[65] The project has gathered Chinese data for 1997 and 2000 and will look at changes during this time period and beyond.

65.   Evidence suggest that China's processing activities have evolved over time from primarily labour-intensive, low technology goods to also exporting higher technology goods. The composition of China's trade with its major export markets supports this. For Japan, significant increases were observed in 2004 from 2003 figures in finished products, such as personal computers, printers and other office equipment (31.2%), DVD players and other audio-visual equipment (32.8%), and mobile phones and other telecommunication equipment (58.2%). Semiconductors and other electronic parts also rose sharply (82.1%).[66] The US Department of Commerce statistics show that the value of China's computer equipment exports to the US, for example, increased from USD 8.1 billion in 2001 to USD 29.5 billion in 2004.[67] This has also been the case for audio and video equipment, communications equipment, semi-conductors and other electronic components.

66.   The EC's *European Competitiveness Report* (2004) examined China's exports to the EU 15, noting a marked improvement in the quality of labour input. The report confirms that during the period from 1995 to 2002, the composition of Chinese exports changed from primarily low-skill labour intensive products to a mix that increasingly includes higher-skill, human-capital intensive products. There is remarkable growth in the technology sectors which include computers and telecommunications equipment as well as science products, measurement equipment and transport equipment.[68] China's exports to the EU 15 in technology driven industries rose from less than 20% in 1995 to 30% in 2002, the highest share of exports. Labour intensive products dropped from 25% to less than 22%. While China is viewed as having an abundance of cheap labour, these figures show that it not only is a supplier of industrial goods manufactured with inexpensive and low skilled labour but also is becoming competitive in technology-driven and knowledge-based products.

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[63]   G. Gaulier, et al. *op. cit.* p.19.

[64]   OECD (2005a) *op. cit.,* p. 9.

[65]   See OECD, "Analysing Global Interactions with Input-Output Tables", DSTI/EAS/IND/SWP(2005)8, OECD, Paris, 8 November 2005.

[66]   JETRO (2005) "Japan's Trade with China Sets Sixth Straight Year Record in 2004", 21 February, 2005 http://www.jetro.go.jp/en/news/releases/20050221305-news.

[67]   Office of Trade and Industry (OTII), Manufacturing and Services, International Trade Administration, US Department of Commerce.

[68]   The European Commission (2004), "The Challenge to the EU of a Rising Chinese Economy", *European Competitiveness Report 2004*, SEC, 2004, 1397, p. 255-256 .

67.   China's growing share of high technology and industrial goods exports in many OECD countries merits further clarification. China's imports of intermediate products have been an important channel of technology transfer and have helped it to improve the high-tech content of its foreign trade. The following section will examine these issues in more detail.

China's mobility in the value chain

68.   In the early 1990s, textiles and other light manufacturing accounted for more than 40% of China's exports. The growth of more sophisticated electronics, furniture and transport goods grew from 17.3% of total exports in 1990 to 41.7% in 2004.[69] Although exports are still largely labour-intensive, China has been increasingly diversifying its exports over the last 15 years into complex, capital- and technology-intensive goods. Rather than pursuing an export-growth strategy predicated on specialisation according to its comparative advantage in an abundance of low-skilled labour, evidence presented here suggests that China has been following a two-pronged strategy. The first part of the strategy is to capitalise on one of its greatest factor endowments – a surplus of labour – by promoting job-creating, labour-intensive manufactures. The second aspect of this strategy is to further its goal of economic development by upgrading its economy by producing and exporting higher-technology goods.

69.   China is a producer and exporter of essentially low-cost, low-technology manufactures on the one hand and is increasingly competing with OECD countries in sophisticated, technology-embedded products on the other. A large portion of China's exports is in low-skilled, labour-intensive manufactures such as toys, textiles, footwear and electronics assembly. As Figure 5 shows, exports of low-technology goods still occupy the largest share of total exports to OECD, comprising 36%. However, exports of high technology goods to OECD countries have grown more dynamically than any other category of goods over the past decade, by 47% per annum from 1992 to 2003.

Figure 5. Composition of China's Exports to OECD Countries, selected years
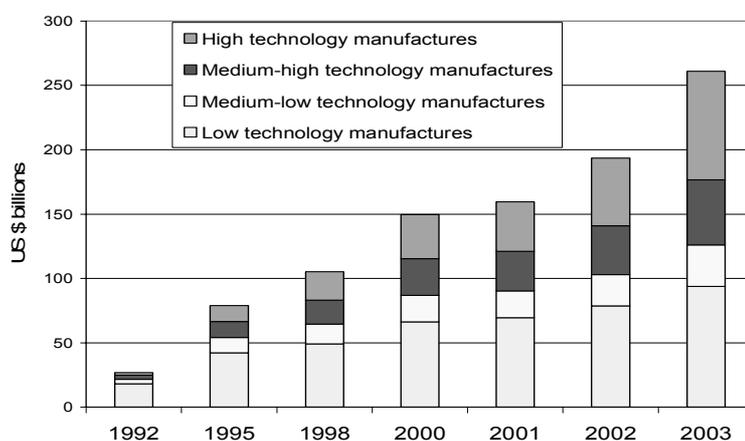
Sources: OECD, STAN Bilateral Trade Database (BTD); International Trade by Commodity Statistics (ITCS), 2005.

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[69]   UN Commodity Trade Statistics Database (COMTRADE).

Figure 6. Composition of China's Imports from OECD countries, selected years
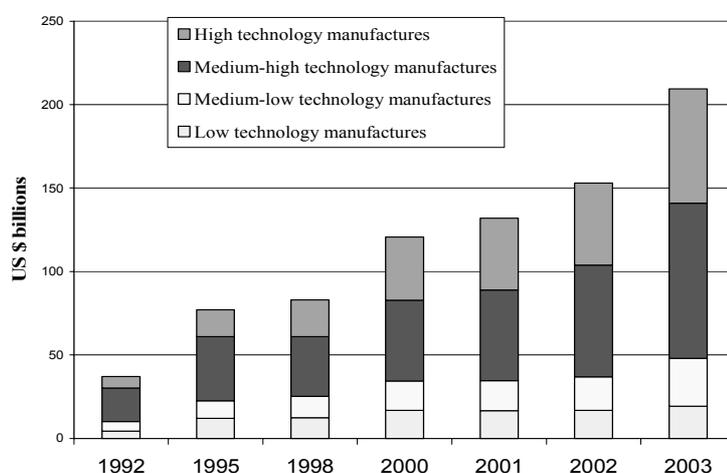
Sources: OECD, STAN Bilateral Trade Database (BTD); International Trade by Commodity Statistics (ITCS), 2005.

70.   As Figure 6 shows, high technology goods were also the fastest-growing category of imports, increasing by 24% per year on average during the period 1992-2003. Growth in high-technology imports, however, although very dynamic, largely lags growth in high-technology exports at 47%. This may suggest that exports in high-technology goods indeed include domestic value added and are not merely re-exports that have undergone slight improvements or assembly.

Figure 7. China's Trade in ICT Manufactures with OECD countries
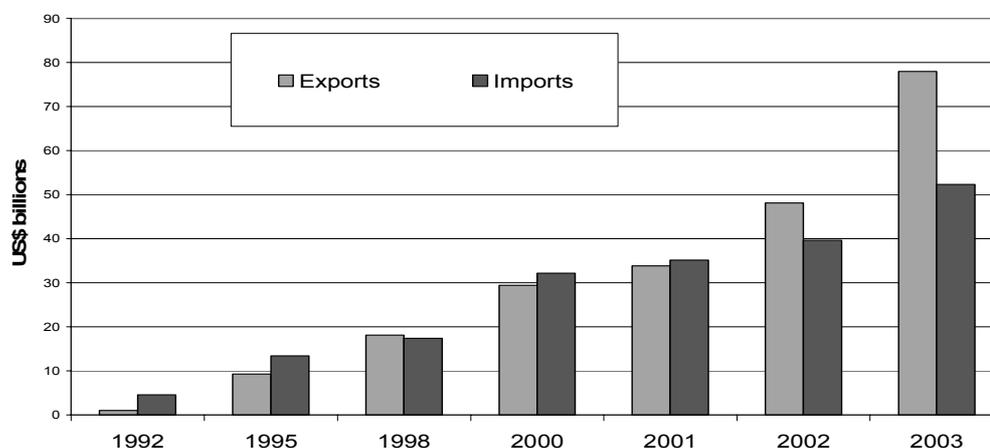
Sources: OECD, STAN Bilateral Trade Database (BTD); International Trade by Commodity Statistics (ITCS), 2005.

71.   Most of these high technology exports are in the information and communication technologies (ICTs) sectors. China has become one of the most important global locations for the production and the assembly of ICTs goods. China's share of world total trade in ICT goods was worth less than USD 35 billion in 1996. By 2004, China's ICT goods trade reached almost USD 329 billion, growing at almost 38% per year since 1996. As of 2004, China became the largest exporter of ICT goods, surpassing

Japan and the EU in 2003 and taking the lead over from the US in 2004.[70] Since 2002, China is a net exporter of high technology goods to OECD countries (Figure 7).

72. An important question is whether China is merely assembling component parts or whether there are indications that it has increased value-added in higher value-added ICT goods. A study by the OECD found that China ICT firms are not merely assembling and re-exporting to OECD countries, but are also increasingly competing in aspects of the production process that use skilled labour and demand higher technology inputs. Some examples include semiconductor companies (*e.g.* Semiconductor Manufacturing International) and internet portals (*e.g.* Baidu, Alibaba-Ebay partnership). Finally, there are recent purchases by Chinese firms of OECD ICT or consumer electronics and household equipment firms (*e.g.* Lenovo acquiring the PC business of IBM).[71]

73. The importance of high-technology goods in electronics in China's export structure is confirmed by analysis at the product level. Eight of the top ten export products (at the 6-digit HS level) are electronics or communications goods (Figure 8). Although some goods are both imported and exported in large quantities, suggesting that some of the trade could be assembly or low value-added processing, some goods are almost exclusively exported. Examples of this are: input and output units for computers, mobile telephone transmitters and video recorders. Many of these products were not exported 10 or even five years ago.

Figure 8. Exports of China's Top 10 Products and Corresponding Inputs 2004
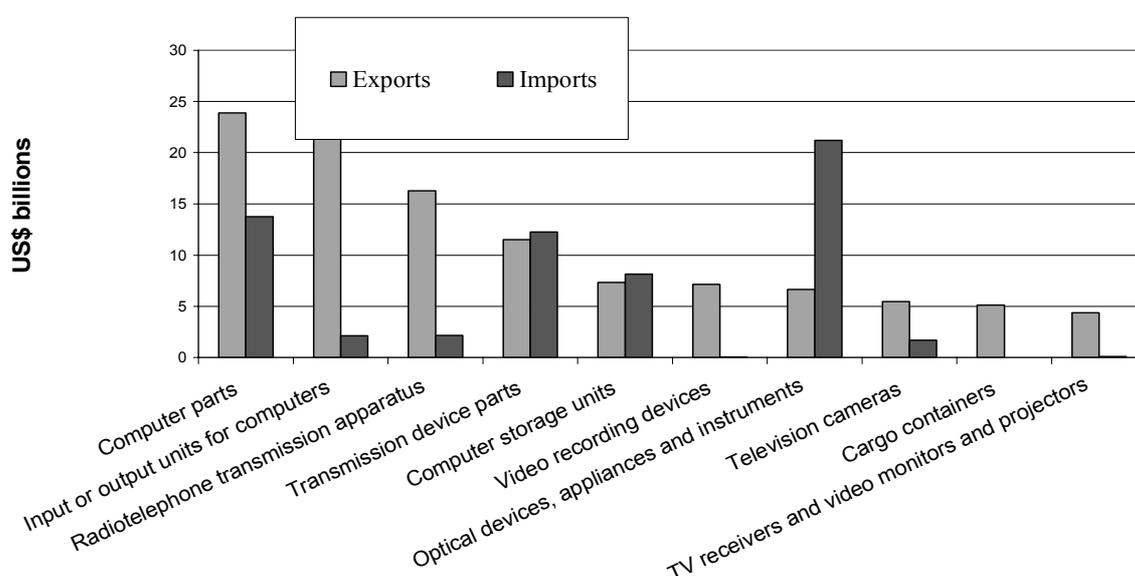
Source: OECD, International Trade by Commodity Statistics (ITCS), 2006

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[70] See OECD (2005h) Information Technology Outlook 2006: China – ICT Supply, Demand and ICT Policy DSTI/ICCP/IE(2005)12/Chap4, 8-9 December 2005, p. 1.

[71] *Ibid.*, p. 2.

Figure 9. Top 10 Chinese Products Imported by the US
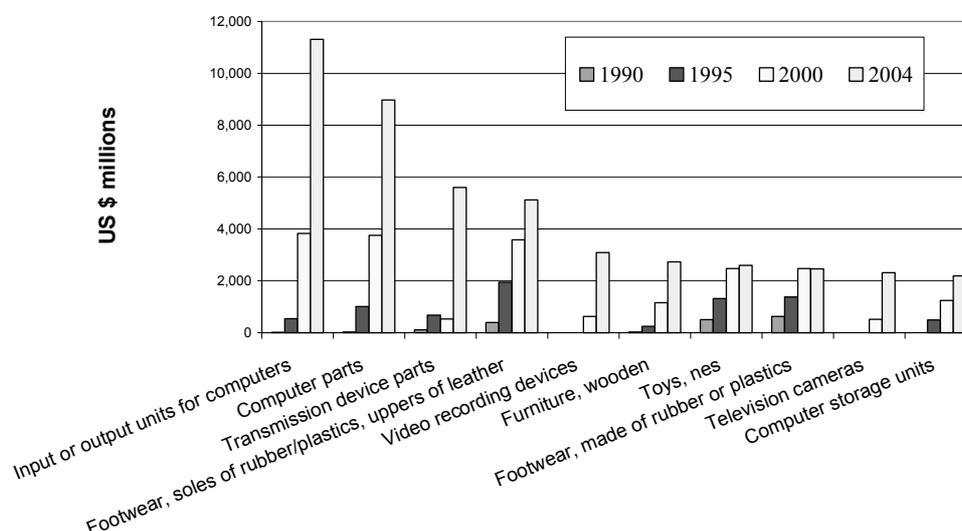
Source: OECD, International Trade by Commodity Statistics (ITCS), 2006.

74.   None of the top 10 Chinese products imported by the US in 2004 were significant imports in 1990 (Figure 9). In 1995, only imports of some Chinese footwear products show a significant share of imports by the US in 2004. All imports in electronics and information technology goods have expanded heavily since 2000.

Is China becoming more competitive?

75.   As the previous section has shown, since the early 1990s China has been gradually moving up the value-added chain from a focus on textiles, clothing and toys to a greater emphasis on exports of transport and machinery and electronics. Is China now becoming more competitive in world markets? Molnar (2005) looks at China's competitiveness by comparing its higher technology products vis-à-vis Japanese products on a third market, the United States.[72] She found that for most products, the Japanese unit prices are at least four times higher than Chinese ones. The share of such products has declined from around 80% in 2000 to 70% in 2004. At the same time, the share of products where Chinese unit price is close to the Japanese price is relatively small but it is increasing from about 7% in 2000 to 10% in 2004. Molnar argues that the decreasing share of products with large unit-price differentials and increasing share of products with small unit-price differentials can be explained in two ways. Japanese companies may be lowering prices to remain competitive. But importantly, Chinese firms may be increasingly exporting goods of similar quality to Japanese goods and thus moving up the value chain and becoming more competitive.

76.   Some argue that China's competitiveness in world markets is determined by its favourable exchange rate. The 1994 devaluation of the Chinese currency from 5.8 to 8.3 RMB/Yuan per US dollar is often cited as a critical factor responsible for the extraordinary growth of Chinese exports and its increasing competitiveness. Arndt (2004) found that production sharing changes the nature of trade balance accounting and tends to reduce the sensitivity of trade flows to movements in exchange rates.[73] These

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[72]   See M. Molnar (2005), China Embraces Globalisation: Strengthening Integration in Trade and Investment, presented at the LACEA 2005 conference at the American University of Paris, 29 October 2005.

[73]   Arndt (2004), *op. cit*., and also see analysis by D. Rodrik, (2006), "What's so special about China's exports?" *NBER Working Paper* 11947, Cambridge, MA, January 2006.

considerations are relevant to the debate over valuation of the Chinese currency and the likely effects of a revaluation of the RMB/Yuan. Arndt concludes that as the share of trade related to production sharing rises on the side of both exports and imports, the sensitivity of trade flows to movements in exchange rates is expected to decline.

77.   Although they find the Chinese currency is seriously undervalued, Adams *et al.* (2006) argue that other factors are also contributing to China's increasing competitiveness.[74] First are the large inflows of FDI and foreign management. FDI may be the most important contribution to competitiveness through the introduction of new production methods, world market product specifications and advanced management procedures. Also at play are China's low wages and available supplies of unskilled labour as well as reduced cost of communication and transportation.[75]

China's exports more closely resemble those of Korea than India

78.   In a recent study, Rodrik (2006) compares different countries' export bundles with their per capita income level and found that China's export bundle is that of a country with an income-per-capita level three times higher than its own. Since the early 1990s, China's export bundle has evolved from being closer to one exported by countries such as India, to those exported by Korea and the economy of Hong Kong, China.[76] One would not usually expect a large, poor, labour-abundant country like China to produce, let alone export, a wide range of advanced high-technology products. Rodrik emphasises that what is so striking about China's exports is not the volume of exports or its large pool of labour that allows the country a huge labour cost advantage, but the fact that it produces and sells products that are associated with a productivity level that is much higher than a country at China's level of income. He ascribes this to government policies that have helped develop domestic capabilities in consumer electronics and other advanced products.

79.   Rodrik argues that there is some question about the sustainability of China's export-oriented growth model. The most dynamic export sectors in China, fuelling its high export growth, have been in high technology products. With so high and rising exports to GDP ratios, Rodrik examines the extent to which the Chinese growth model is running out of steam. Rodrik posits that what is relevant for China's sustainability of its export-growth strategy is whether it will manage to move up the value chain into higher-income products in order to fuel and sustain its high rates of growth.[77] It appears that what matters for China's future growth is not the volume of exports or its relation to GDP, but the "quality" of its exports. It is argued here that China does indeed realise this and thus has been pursuing its two-pronged export-growth strategy: on the one hand, labour-intensive manufactures to take advance of its abundance of labour and on the other hand, government directed policies that support moving into high-technology goods to sustain its economic development strategy.

80.   In the 11th Five-Year Plan, China aims to protect IPRs in order to promote innovation as the key to improving competitiveness.[78] The next section explains why IPR protection is important for China's economic development.

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[74]   F. G. Adams, B. Ganges and Y. Shachmurove, "Why is China so Competitive? Measuring and Explaining China's Competitiveness", *World Economy*, Vol. 29, No. 2, February 2006.

[75]   *Ibid.,* p. 120.

[76]   Rodrik (2006), *op. cit*., p. 11.

[77]   *Ibid*., p. 24.

[78]   See "IPR Protection to Encourage Innovation", *China Daily*, 16 February 2006 http://www.china.org.cn/english/China/158156.htm.

IPR and technology transfer

81.   The economic well-being of a nation is linked closely to the availability of resources and the productivity with which they are employed. Technological progress plays a central role in boosting output per worker and is an important determinant of income levels.[79] Hu and Khan (1997) examined China's rapid economic development and found that productivity increases played a significant role in growth, accounting for over 50% of output growth in the early 1990s. They note that, in addition to domestic innovation, one factor in the increased productivity was the open-door policy permitting access to international markets and investment leading to "important transfers of technology". Improvements in intellectual property protection in China provide strengthened economic incentives to make new technology available from both domestic and international sources.

82.   Moves to assure adequate protection of intellectual property can have strong effects on an economy due, in part, to the particular characteristics of these assets. Unlike a material resource, the same bit of intellectual property can be made available simultaneously and repeatedly on a non-exclusive basis to multiple users, generally at a low marginal cost. New ideas embodied in intellectual property, being "non-rivalrous", not only can contribute to technical progress but can also have "disproportionate" impacts on economic growth due to big returns to scale when one idea is applied many times [Jones (2004)]. Given this economic potential, policy makers in China have appropriately sought to improve their regime for IPR and thereby encourage access to an expanded stock of intellectual property and the technology that it embodies.

83.   The returns to China from an effective policy to encourage technology transfer, including compliance with obligations under the WTO's TRIPS Agreement, can be quite large due to gaps between the technology in use in some sectors in China and the state of the art technology available in the global markets. Thus, as Mu and Lee (2005) and others have pointed out, China is in a unique position to benefit with respect to technological catch-up. The large size of the domestic market gives the Chinese side tremendous bargaining power in negotiating technology transfer in the context of international deal-making (*e.g.* by "trading market for technology" in the case of joint ventures). At the same time, there is a large technological distance to be covered (with correspondingly large potential economic gains); given that China is a technological late-comer in some respects. In some cases, it is in a position to skip entire generations of older technology. For example, in telecommunications, China largely skipped development of a system based on analogue telephone switches and leapfrogged directly to use of digital-based telephone switches.

84.   Research focused on developing countries provides confirmation that sound IPR policy has the potential to expand access to technology. Where a developing country is lagging in application of technology due to limitations with respect to domestic sources, foreign holders of intellectual property may play an important role in closing the gap [Park and Lippoldt (2003)]. Inflows of goods, direct investment and licenses embody various types of intellectual property and represent potential channels for technology transfer. Moreover, these flows can be influenced by the environment for IPRs in an economy. Park and Lippoldt (2005) have underscored the importance of international licensing as a channel for technology transfer. Indeed, they found that there are already significant flows of technology licensed into China (especially from the US and Canada). Given further improvement in China's IPR system, it may be possible to enhance these flows. Across developing countries, Park and Lippoldt found that such transfers appear to be influenced by IPR reform. Patent rights and effective enforcement, in particular, can be instrumental in enabling firms in developing nations to access and exploit technologies and know-how through licensing agreements with parties in developed nations. Overall, the analysis indicates that where

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[79]   For a discussion of this issue and further bibliographic references, see: WTO (2002), *Trade and Transfer of Technology*, WT/WGTTT/W/1, World Trade Organisation, Geneva, 2 April 2002.

developing countries have moved to address weaknesses in these areas in recent years, they have tended to experience enhanced access to technology through licensing.

China's effect on world prices

85.   China's growing engagement in international trade has had a significant impact on relative prices.[80] When a large country like China supplies additional quantities of a product on world markets, it will cause the world price to fall. Likewise, when such a large country increases imports, it drives world prices up. This is precisely what has happened over the past few years. China is a net importer of raw materials, a net exporter of manufactured goods, and is large enough to exert pressure on the prices of those goods. On the one hand, China's rapidly rising imports account for a large share of key commodities and has contributed to the recent strength in world commodity prices. On the other hand, fast rising Chinese exports of a wide and sophisticated range of finished goods are driving down global prices for such goods as textiles and clothing, steel, household consumer products, and auto parts. There have been concerns that China may be exporting deflation to other countries by driving market prices down.[81]

Figure 10. World Primary Commodity Prices

Index, 2003=100
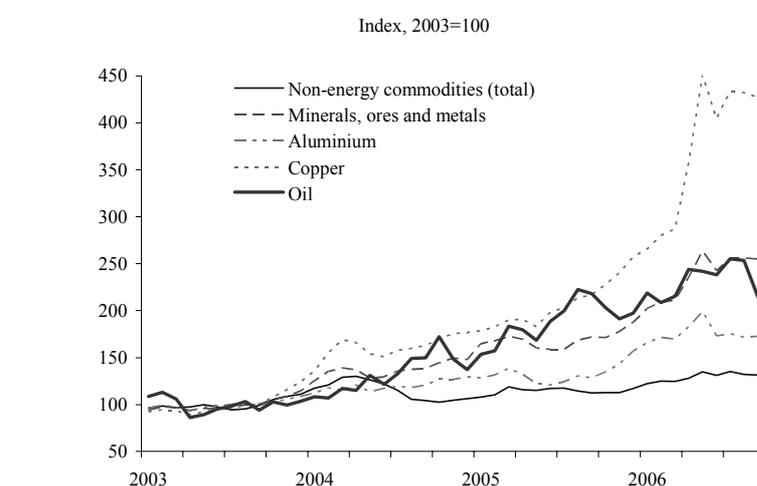
Source: OECD, Datastream

86.   With rapid urbanisation, industrialisation and infrastructure construction, China is importing ever greater amounts of raw materials and primary products, pushing up world prices of key commodities (Figure 10). The recent upward movement in commodity prices has been driven by very strong demand in China but also in India and emerging supply constraints (UNCTAD 2005b). There has been a concerted effort by the Chinese government to secure future sources of oil, natural gas, iron ore, aluminium, timber and other commodities in Australia, Russia and developing countries in Africa and Latin America.[82]

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[80]   See also Box I.5 on globalisation and inflation in the *OECD Economic Outlook No. 79*, 2006.

[81]   Feyzioglu and Willard assess the extent of the link between inflation rates between China and the US and Japan. It finds only limited empirical evidence at the aggregate level for consumer price inflation in China leading to price changes in the US and Japan. However, they find some evidence that inflation in the US has an impact on Chinese inflation. They argue that the impact is short lived. See T. Feyzioglu and L. Willard (2006), "Does Inflation in China Affect the US and Japan", *IMF Working Paper*, WP/06/36, IMF, Washington, DC, February 2006.

[82]   China is now the third largest importer after the US and EU of developing country exports. In 2003, Chinese imports increased by 81% from Latin America and 51% from Africa.

87.   China's demand for steel merits more discussion and serves as a good example for growing demand and effects on world prices. China became the world's leading consumer and producer of steel in 1996. Chinese demand for steel developed fairly regularly between 1970 and 1992, averaging an annual rise of 7.7%. Domestic demand for steel grew by an average of only 1.6% per year until 2000, when it totalled 121.2 million tonnes. [83] OECD (2005i) found that from beginning in 2001, "the demand for steel took off, and it has risen ceaselessly at a very brisk pace, growing by 26.2% in 2001, 21.4% in 2002, 25.6% in 2003 and 10% in 2004 – a year when steel consumption amounted to 256.6 million tonnes." They argue that it is likely that in 2005 Chinese steel consumption will be nearly 300 million tonnes. Over the same period, crude steel production in China rose from 46.8 million tonnes in 1985 to 272.5 million tonnes in 2004. In 2005, steel production may reach 340 million tonnes, and China should in 2005 become a net exporter of steel, for the first time.[84]

88.   China is concerned about "overheating" and has launched a vast restructuring programme for its steel industry.[85] Under the government plan, smaller steel plants are set to merge in order to raise efficiency levels and thus profitability. The Chinese government seems to want to limit the development of new additional capacity, having for some time relied on quality enhancement and product diversification, and it is currently closing down a large number of obsolete facilities. The Chinese government is concentrating its efforts on developing new product fabrication plants in order to step up its production of steel products with high value added. The EIU notes that government officials were forced to take more short-term measures following a dramatic fall in Chinese steel prices in September 2005, when prices for hot-rolled steel dropped by 50% from their 2005 peak. At an October 2005 meeting of the China Iron and Steel Industry Association, 45 leading steel producers urged swifter consolidation within the industry and the formation of an industrial group to ensure the more effective matching of supply and demand.[86]

89.   However UNCTAD (2005b) notes that even with China's soaring demand, it is unlikely that it will bring about a permanent reversal of the declining trend in real commodity prices. In real terms, commodity prices are still more than one third below their 1960-1985 average.[87] Nevertheless, this increase in Chinese demand for raw materials and primary commodities has both positive and negative effects on the world economy. The increased demand is good for producers of such goods due to increased export volumes and world prices. However, the increase in prices has a negative effect globally for importers for raw materials and primary products.

90.   On the export side, the further lowering of trade barriers and rapid productivity growth in the Chinese manufacturing and electronics sector has led to a sudden surge of exports in various types of goods and consequently has pushed down their prices in the international market. Evidence shows that export prices of textile and clothing from developing countries have declined since the mid-1990s by more than 7%.[88] There has been an even sharper decline in prices of electronic products, including computers and telecommunications equipment since the early 1990s. Much of the decline is due to the abundance of low-skilled labour in exporting countries, especially China.

91.   Kaplinski (2005) tracked the extent to which prices of EU imports of products at the 8-digit HS level have fallen in the period 1988-2000 (the EU is large enough to use as a surrogate for the behaviour of

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[83]   See OECD (2005i), "Developments in World Steelmaking Capacity", [DSTI/SU/SC(2005)15], OECD, Paris, 21 October 2005.

[84]   *Ibid.*, p. 15.

[85]   EIU (2006) *China Country Profile 2006*, p. 36.

[86]   *Ibid.*

[87]   UNCTAD (2005b), *op. cit.,* p. iii.

[88]   *Ibid.,* p. 88.

global product prices).[89] Figure 11 reports Kaplinski's findings: in almost one-third of the sectors, the price of Chinese-origin products fell. Kaplinski concluded that the greater China's participation in global product markets, the more likely prices will fall.

Figure 11. Percentage of Sectors with Declining Price Trends in the EU, by country groupings

(1988 – 2000)
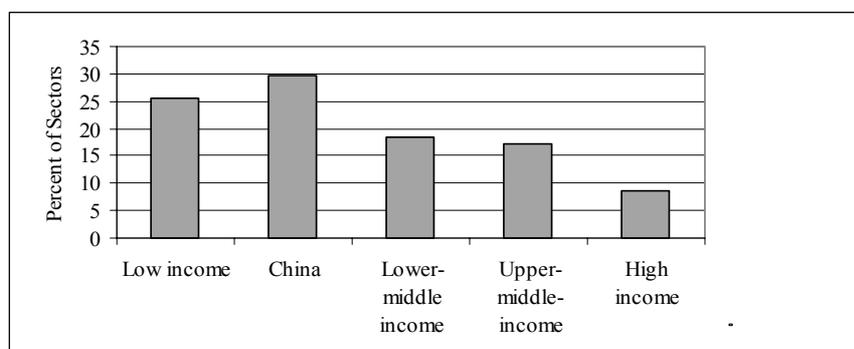
Source: Kaplinski (2005)

Figure 12. Export Sectors Facing Declining Prices in the US

(Percentage)
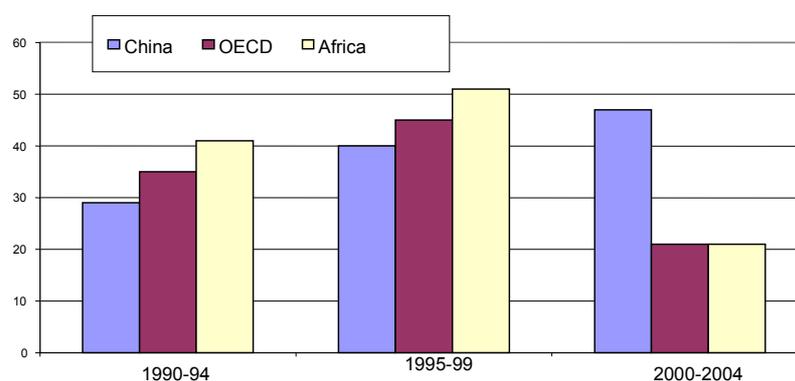
Source: OECD Foreign Trade Statistics

92.   To further demonstrate the effects of declining prices of China's exports, Figure 12 compares Chinese, OECD and African exports to the US over the past 15 years at the 6-digit HS level. From 1990 to 1994, 29% of Chinese exports to the US faced declining prices. This compared to 35% for OECD and 41% for Africa. From 1995 to 1999, the rates are higher by around 10% but follow the same pattern. However, there is a serious deviation from 2000 to 2004. Interestingly, both OECD's and Africa's percentage of exports face declining prices drops to 21% while China's continue to rise to 47%.

93.   China has experienced a fall in prices of the goods it exports and a rise in prices of the goods it imports. The impact of the deterioration of the terms of trade increases with the relative importance of external trade to GDP as is the case with China. The key challenge for China will be how it manages the

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[89]   R. Kaplinski (2005), *Globalisation, Poverty and Inequality: Between a Rock and a Hard Place*, Cambridge: Polity Press, 2005.

deterioration in its terms of trade while it continues its trade expansion and growth further affecting international prices of its imports and exports.

China's terms of trade and their effect on the world economy

94.   The preceding discussion has identified two trends – rising prices of goods China imports and declining prices of its exports – which are likely to continue to accompany it as it pursues the "catch-up" process of development. Taken together, the two trends point to deterioration in China's terms of trade (see Table 13). However, for a country like China these terms of trade deterioration may not carry the same risks as in the case of smaller developing countries or those countries that have a higher share of primary commodities in their trade. Some argue that China's deteriorating terms of trade can be compensated by the structure and rise in the volumes of its exports as well as the international competitiveness of its producers. Looking at the income terms of trade or purchasing power of exports (defined as the value of index of exports deflated by the unit value of imports) might best explain China's capacity to import essential goods for its development. China could compensate for the fall in its terms of trade by a rise in the volume of its exports. Growing international demand and an increase in China's world market share increases the volume of its exports. China could then experience a rise in the purchasing power of its exports indicating it would be able to increase real imports without adversely affecting its trade balance.[90]

Table 13. Trend in China's Terms of Trade

(2000=100)

	1984	1994	2003	2004
Export price index	50	103	96	102
Import price index	74	96	102	112
Terms of trade	68	107	95	91

Source: World Development Indicators, the World Bank.

95.   But China's impact on global prices needs also to distinguish between its demand and supply conditions. While analysts disagree on the extent to which China can sustain such impressive growth rates into the future, there is widespread agreement that it will continue to grow rapidly, and at a faster rate than the world economy as a whole. And since China accounts for close to one-fifth of global population, this suggests that global demand will likely remain robust in the near to medium term.

96.   On the supply side, the question is whether China will begin to experience capacity constraints that will diminish its potential for forcing global product prices down in manufacturing. The answer depends to a large extent on whether one believes that China will eventually experience labour shortages that would exert an upward pressure on wages, and may thus slow down growth in manufacturing exports. The literature indicates "that wages are unlikely to grow in China in the medium term, at least in the export-oriented manufacturing industries which have the capacity to move into the interior and be served by the mass of rural unemployed and underemployed" (Kaplinski 2005). The issue then turns to whether there will be deflationary pressure on the global economy.

97.   China's growth and trade policy directly affects its terms of trade but also those of other countries. From 2002, those economies with a high share of oil, minerals and mining exports have gained the most from recent developments in international product markets due to the increase in international prices. At the same time, fuel-importing developing countries have suffered worsening terms of trade.

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[90]   UNCTAD (2005b), *op. cit.*, p. 90.

Section III. Impact of China's integration on selected OECD economies, a quantitative assessment

98.   This section aims to quantify the welfare impacts of China's integration into global goods and services trade. Given the investment-dominated profile of China's recent growth, it places special emphasis on China's foreign direct investment policies and inflows. It analyses in detail the impact of China's liberalisation strategies on the terms of trade, trade flows and welfare of the selected countries. The welfare effects and the decomposition of the contributing factors such as allocative effects, terms of trade effects, net capital endowment effects, product variety effects, and net FDI income effects, are explored at both the sectoral and economy-wide level.

99.   Annex 2 provides a review of the literature that examined the impact of China's integration on the global economy with a view to providing an overview of available estimates and the underlying models employed. The review shows that China's WTO accession or unilateral liberalisation generates overall welfare gains under all modelling assumptions. The results are difficult to compare given differences in the model structures, policy shocks and protection data employed in these simulations. Nonetheless some conclusions can be drawn.

100.   An important finding to emerge is that China is the major winner under all modelling assumptions – China experiences substantive welfare gains ranging from 0.4 to 22.5% of its GDP. Larger gains are indicated in dynamic studies that take into account the additional investment-related effects as well as studies that consider the productivity improvements associated with China's liberalisation. By contrast, the impact on the rest of the world in general and on OECD countries in particular is limited in all analysed studies (almost always under 1% change in GDP).

Modelling the impact of China's integration on OECD economies

101.   It is important to note at the outset that, while many general equilibrium studies on the quantification of economic impacts of policies affecting goods trade in China are available, relatively little work has been done to assess the potential gains from alternative liberalisation scenarios in services.[91] The difficulties arise from poor information on international services transactions and on prevailing barriers to trade in services, as well as from the need to develop a different modelling structure from that used for goods trade in order to incorporate the various modes of services supply (*i.e.* to account for the movement of factors of production).

102.   Given the investment-dominated profile of China's recent growth, the model employed in this paper places special emphasis on China's foreign direct investment policies and inflows and puts a special emphasis on the examination of the additional implications of China's opening of services trade and lifting of obstacles to foreign investment. The model attempts to analyse in detail the services and investment-specific effects as well as their interactions with the impacts of goods trade liberalisation.

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[91]   A number of studies which assess the impact of services liberalisation include China in the sample of analysed countries. For example, using the FTAP, Dee and Hanslow (2000) Hanslow analyse various multilateral services liberalisation scenarios. They find welfare gains of about USD 130 billion (or 0.46% of world real income) from liberalising trade in services, with more than 90 billions going to China (representing about 14.6% of real its GDP). Building on the same model structure and using the same estimates for barriers to trade in services as Dee and Hanslow, Verikios and Zhang (2000) extend the analysis by providing greater sectoral detail. This study simulates separately complete multilateral liberalisation of trade in communication services and financial services in a post-Uruguay Round environment and finds positive welfare effects for the world as a whole in both cases. When liberalising trade in communication services, the world as a whole is projected to gain about USD 13 billion or 0.05% in terms of real income with China capturing 4.4 billion; when liberalising trade in finance, insurance and business services, the expected gains are about USD 3.5 billion or a 0.01% rise in real income, with more than 2 billion going to China.

103.   A brief description of the FTAP model employed in this exercise is presented below. It provides the underling data and outlines the analytical framework for the liberalisation scenarios. The results of the analysis are then discussed. Annex 3 and 4 present in more detail the structure of China's trade with the OECD countries and the theoretical structure of the FTAP model.

104.   In order to include the services and investment-related dimensions into the analysis and increase the reliability of results concerning the impact of China's integration on the world economy, this paper presents new estimates based on a multi-country, multi-sector computable general equilibrium model of the world economy that features increasing returns to scale and large-group monopolistic competition in all sectors, and includes a treatment of foreign direct investment on a bilateral basis (the Foreign Direct Investment and Trade Analysis Project (FTAP) model). As foreign direct investment is such an important element to the Chinese economy, accounting for FDI in a CGE model is vital for understanding the Chinese economy and impact of its liberalisation on the global economy. The FTAP model employed in this exercise was developed in stages from the GTAP model, with the addition of the structure necessary to support the analysis of services liberalisation and in particular the removal of barriers to FDI in the tertiary sector.[92] The modelling framework employed in this paper in presented in more detail in Annex 4.

Data

105.   For the purpose of this study the FTAP model was adapted in several ways. Firstly, the current analysis is based on a more disaggregated sectoral database than existing studies employing FTAP, permitting a more detailed analysis of both goods and services trade liberalisation. The GTAP 6.1 Interim Release database and a new bilateral capital stocks database assembled in the context of this project are employed in this analysis.

106.   The GTAP 6.1 database covers 57 broad economic sectors and 92 countries and fully integrates the information on bilateral *ad valorem* tariffs (both MFN and preferential), *ad valorem* equivalents of specific tariffs (MFN and preferential), as well as tariff rate quotas from CEPII/ITC Market Access Maps (MacMaps) database.[93]

107.   To enable the analysis of services liberalisation through commercial presence, a bilateral capital stock matrix for 2001 was developed. Bilateral FDI stocks at the GTAP sectoral level were estimated from the new OECD FDI database, UNCTAD World Investment Directory, local government sources for China, Hong Kong, China, Russia, Singapore, Chile, Peru, and Brazil, and ASEAN (2004) for Malaysia, Philippines, Thailand and Vietnam. This information allowed construction of a consistent database of bilateral FDI stocks by region and sector following the methodology employed for the construction of previous FTAP databases.[94]

108.   The following investigation uses information from the GTAP-6 database and the new FTAP FDI database to include in the analysis 13 regions and 23 sectors. Ten of the thirteen regions refer to OECD country groupings. Of the 23 sectors, two represent agro-food product groups, seven sectors refer to manufacturing and eleven to services. The correspondence of the regions and sectors modelled and their

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[92]   For more information, see K. Hanslow, T. Phamduc, and G. Verikios (1999) *The Structure of the FTAP Model, Research Memorandum MC-58, Productivity Commission,* Canberra, 1999. The FTAP model and its documentation are available at the Australian Productivity Commission web site at http://www.pc.gov.au.

[93]   The dataset is documented in detail in A. Bouët, et al. (2002), *Market Access for GTAP: A Bilateral Measure of Merchandise Trade Protection* by GTAP Resource #1045, available at (confirmed on 8 January 2005): http://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=1045.

[94]   See Phamduc (2000).

GTAP-6 components is given in Tables A5.1 and A5.2. Annex 3 describes the patterns of China-OECD trade and FDI that underlie the simulation results discussed below.

Simulation scenarios

China's tariff profiles and the impact of WTO accession

109. The bilateral tariff data are from the GTAP version 6.1 database which is itself derived from the CEPII/ITC Market Access Maps (MacMaps) database[95] that includes bilateral *ad valorem* tariffs (both MFN and preferential), *ad valorem* equivalents of specific tariffs (MFN and preferential), as well as tariff rate quotas.[96] The resulting ad-valorem equivalent measures of applied protection are thus a comprehensive measure of protection that exhaustively cover tariff preferences in 2001 and are consistent across all bilateral trade flows. Data on impact of China's WTO commitments on applied rates come from a related version of GTAP database containing data on a variety of scenarios for tariff cuts including China's WTO commitments. The included tariff reduction scenarios were constructed by CEPII from the MAcMap-HS6 tariff Data Base (CEPII/ITC) and from bound tariffs from the WTO's Consolidated Tariff Schedules (CTS).

110. Upon accession to the WTO, China agreed to bind all its import tariffs. After implementing all commitments China's average bound tariff on agricultural products will decrease to 15% and for industrial goods this average will decrease to 8.9% (WTO, 2001). The two panels of Tables A5.3 present bilateral trade-weighted tariffs imposed by China in the baseline year 2001 and after implementation of its WTO commitments which were scheduled mostly for 2004 but in no case later than 2010 (WTO, 2001). Far right columns and bottom rows in each panel present respectively trade-weighted averages by product category and by partner country and the same information is presented graphically in Charts A5.1 and A5.2. In the baseline, the pattern of China's tariffs indicates absolutely and relatively high protection levels in agriculture and fishing (50% trade-weighted average tariff), motor vehicles and part (38%), textiles, clothing and leather (19%), food products and beverages (18%); chemicals and chemical products (13%) and machinery and equipment and other manufacturing (approximately 12%). Low average tariffs are imposed on imports of natural resources, oil and coal and a moderately low average tariff of 7.5% on imports of metal products.

111. While the level of commodity aggregation that is necessary for the CGE simulations certainly obscures any detailed analysis of tariff structure it is still quite clear that the portrayed China's tariff profile in 2001 reflected a deliberate policy of protection of the manufacturing sector especially in final consumption goods and capital-intensive manufactures while at the same time imposing relatively low duties on inputs necessary for the development of the exports sectors. Gaulier *et al.* (2005) point out that China's tariff policy is not essentially different from those seen in the economic history of other East Asian countries where protection of the domestic industries was achieved through relatively high customs tariffs, and export promotion, through tariff exemptions on imported inputs for export production. More generally, the duties reported in Table A5.3 are likely to somewhat overstate China's protection in certain sectors because of the widespread incidence of differences between the nominal and collected tariff rates arising as a result of extensive import duty exemptions associated with processing trade (World Bank, 1994; Bach *et al.*, 1996). Based on 1997 data, Li and Zhai (2002) report that these differences were highest in the textile sector and relatively low in the medical and automobile products, with the general rule being that this discrepancy increased with the export orientation of the given sector.

112. The implementation of China's WTO commitments studied in this modelling exercise results in, on

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[95] See A. Bouët, et al. *op. cit*.

[96] *Ibid*.

average, 40% reduction of tariff protection. Above-average percentage tariff reductions are expected in electronic equipment (approximately 81% reduction in average trade-weighted tariffs); agriculture and fishing (80%), motor vehicles and parts (60%), textiles, clothing and leather (50%) and machinery and equipment (45%). It is also clear that, because of variations in the composition of their trade with China as well as the pattern of negotiated concessions, implementation of the WTO accession commitments will not result in equally deep market access concessions for all OECD members. Based on average trade-weighted tariffs, above-average reductions in average trade weighted tariffs will benefit Mexico (73%), US (70%), Japan (54%), EU15 (51%), and New Zealand (45%).

113. Our scenarios include in addition to the lowering of China's imports tariffs the WTO accession scenario, the removal of ATC quotas on imports of textiles, clothing and leather by the US, EU15 and Canada. Following the current practice and the availability of relevant data, such a policy shift is implemented as a reduction in export tax equivalents on Chinese shipments of these products to the indicated economies (Walmsley and Hertel, 2000 and Ianchovichina and Walmsley, 2003).[97] Ad-valorem tax equivalents on exports of textiles, clothing and leather to the EU15, US and Canada in 2001 have been estimated at respectively 18, 11 and 10%.

China's WTO commitments in services

Initial barriers

114. In contrast to the majority of existing studies, this paper simulates the liberalisation of services according to China's actual commitments, rather than on the basis of various assumptions. For that purpose, the analysis employs a set of new estimates of services trade barriers that are based on improved restrictiveness indexes that are calculated separately for each mode of services supply and include additional regulatory aspects such as transparency of existing regulations and the status of national regulatory agencies. The methodology for estimating these tax equivalents is presented in detail in OECD (2005j). The tax equivalents for barriers in telecommunication, banking, insurance, distribution, professional services (engineering), for China and the selected OECD countries that are employed in this exercise are presented in Table A5.4. It is important to note that these tax equivalents are estimated on the basis of statistical techniques and are therefore characterised by inherent uncertainties.

115. Simulation results are conditioned not only by the quality of the estimates of barriers, but also by the modelling of their removal. The approach to the modelling of protection has a strong influence on the overall results of liberalisation through income effects (when barriers are modelled as rent-creating measures) or through allocative efficiency effects (when barriers are modelled as cost-raising elements). In all studies, the decision as to how to model these barriers is to some extent arbitrary and often determined by the way in which the estimates of barriers are measured. Because the barriers to services trade appear to be significant, their impact on the simulation results will also be significant. Given the uncertainties related to the interpretation of the nature if services barriers,[98] no differentiation between rent-creating and cost-increasing barriers were considered in the incorporation of services barriers into the database given the difficulties related to the differentiation of the nature of services barrier. The services barriers were introduced into the database as taxes on outputs and import taxes.[99]

116. The services tax equivalents presented in Table A5.4 were introduced into GTAP using the "Altertax" option, which makes it possible to change various tax rates in the model database. This procedure is designed to incorporate additional information on policy variables into existing GTAP data

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[97] In such a framework the rents from quotas are assumed to accrue to exporters.

[98] See OECD (2005j) for a detailed discussion concerning this issue.

[99] All barriers are introduced explicitly as "tax equivalents".

aggregations (Malcolm, 1998). Taxes were incorporated, while maintaining the internal consistency of the database and minimising the impact of the tariff change on the value of commodity and financial flows. The updated database containing the services tax estimates forms the basis for the subsequent experiments.

WTO commitments

117.   Before the phasing in of the liberalisation commitments specified in its GATS schedule, the number of sectors with a guarantee of full access was lower for China than for all other country groups (developed, developing and acceding countries).[100] This is consistent with the level of the trade restrictiveness index (TRIs) and tax equivalents computed in OECD (2005j). As noted in Mattoo (2003), the picture changes after the implementation of the liberalisation commitments. Overall, both the coverage and depth of market access commitments are much higher than the commitments offered in the Uruguay Round by any other group of countries (including high income countries). Also, China's commitments on national treatment are deeper and wider than those of all other country groups.

118.   To define the simulation scenarios that correspond to the implementation of China's commitments in the five services sectors, the components of the trade restrictiveness index were scored on the basis of China's GATS commitments that reflect (i) the state of policy in 2001 (the date of accession) and (ii) the state of policy in 2008 (the date by which all liberalisation commitments will have been implemented).The sectoral analysis in Annex 1 describes the policy changes in China, while the changes in TRI estimates are graphically presented in Charts A1.11 to A1.6. The corresponding services tax equivalents reductions associated with the implementation of WTO commitments in these five services sectors are presented in Table A5.4.

Discussion of simulation results

Global effects

119.   Tables 14, 15 and 16 below show the percentage changes in real income and economic welfare (as measured by the equivalent variation) as well as per capita welfare gains from China's implementation of WTO commitments and complete liberalisation in all goods and selected services sectors (banking, insurance, communication, other business services and distribution). Equivalent variation in income represents the money metric equivalent to the utility change brought about by the price change. That is, it does not necessarily indicate that the recipient's income would actually change by this amount, but rather it represents the change in utility. Hence, in principle the two measures of economic performance presented in the two tables can differ in some cases even with respect to the sign.

120.   The tables show that China's WTO commitments implemented in goods and five services sectors is estimated to increase its real income and per capita welfare by almost 2%, while its complete liberalisation in the analysed sectors is expected to increase its real income and per capita welfare by approximately 3%. In terms of welfare effects, China is expected to gain around USD 17.6 billion from implementing its WTO commitments in the analysed sectors. About USD 13.7 billion are estimated to come from implementing all agricultural and manufacturing WTO commitments[101] and additional USD 2.8 billion from implementing its commitments in the analysed services sectors. Total liberalisation would generate welfare gains of about USD 28 billion to China, with USD 15.9 billion coming from goods liberalisation and USD 11.9 billion from services liberalisation. These results are in line with most of the findings derived from the literature review.

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[100]   See Mattoo (2003).

[101]   Removal of ATC quotas on Chinese exports in the EU15, US and Canada is also taken into account.

121. While the world as a whole is projected to be better off by almost USD 30 billion under the first scenario and USD 48.2 billion under the second liberalisation scenario, the effects on individual OECD countries are estimated to be rather marginal in both scenarios.

Table 14. Impact on real income and welfare from China's implementation of WTO commitments in all goods and selected services sectors

	Real Income			Equivalent variation (EV)		
	Total %	Goods %	Services %	Total USD m	Goods USD m	Services USD m
Australia	-0.08	-0.08	0.01	-248	-227	20
New Zealand	0.03	0.04	-0.01	13	14	-2
China	1.95	1.51	0.35	17695	13761	2821
Hong Kong, China	0.81	0.67	0.14	1351	1072	278
Russia	-0.06	-0.05	-0.01	-177	-142	-27
Japan	0.07	0.06	0.00	2661	2451	63
Korea	0.19	0.20	0.01	617	647	26
Canada	-0.05	-0.04	0.00	-280	-232	3
United States	0.05	0.04	0.01	4717	4272	615
Mexico	-0.10	-0.09	0.00	-192	-164	19
EU15	0.08	0.07	0.01	4655	3899	389
Rest of Europe	0.01	0.01	0.00	-63	-36	-1
Rest of the World	-0.05	-0.04	0.01	-1175	-1149	282
Total				29575	24167	4486

Source: FTAP model projections

Table 15. Impact on real income and welfare from China's elimination of barriers in all goods and selected services sectors

	Real Income			Equivalent variation (EV)		
	Total %	Goods %	Services %	Total USD m	Goods USD m	Services USD m
Australia	-0.04	-0.01	-0.04	-131	-45	-99
New Zealand	0.19	0.16	-0.01	83	69	-3
China	2.99	1.71	1.34	27904	15952	11973
Hong Kong, China	1.22	1.00	0.37	2806	2009	719
Russia	0.19	0.17	-0.07	509	479	-191
Japan	0.20	0.15	0.04	7852	6280	1089
Korea	0.57	0.54	-0.01	2270	2179	-63
Canada	-0.05	-0.01	-0.07	-306	-78	-377
United States	0.05	0.05	0.00	5188	4614	575
Mexico	-0.10	-0.08	-0.05	-29	-30	-93
EU15	-0.02	0.01	0.00	-2272	-116	-96
Rest of Europe	0.10	0.08	0.01	712	522	66
Rest of the World	0.07	0.05	0.00	3680	2700	230
Total				48267	34535	13730

Source: FTAP model projections

Table 16. Per capita welfare gains: implementation of WTO commitments and full liberalisation

	WTO accession			Full liberalisation		
	Total %	Goods %	Services %	Total %	Goods %	Services %
Australia	-0.08	-0.07	0.01	-0.04	-0.01	-0.03
New Zealand	0.03	0.04	-0.01	0.20	0.16	-0.01
China	1.90	1.48	0.30	2.91	1.67	1.29
Hong Kong- China	0.84	0.67	0.17	1.41	1.01	0.45
Russia	-0.07	-0.06	-0.01	0.17	0.16	-0.08
Japan	0.08	0.07	0.00	0.21	0.17	0.03
Korea	0.20	0.21	0.01	0.59	0.57	-0.02
Canada	-0.05	-0.04	0.00	-0.05	-0.01	-0.07
United States	0.05	0.05	0.01	0.06	0.05	0.01
Mexico	-0.04	-0.03	0.00	-0.01	-0.01	-0.02
EU15	0.07	0.06	0.01	-0.04	0.00	0.00
Rest of Europe	-0.01	0.00	0.00	0.08	0.06	0.01
Rest of the World	-0.03	-0.03	0.01	0.09	0.07	0.01

Source: FTAP model projections

122. The separate welfare effects from goods and services liberalisation for China and the analysed OECD countries and regions with the detailed decomposition of the contributing factors are explored in the next section at both the sectoral and economy-wide level. The main factors that determine these welfare effects are:

1. Allocative efficiency effects which measure changes in resource allocation as a result of policy changes;

2. Income effects from expansion/contraction of capital stocks located in one region;

3. Product variety effects which refer to the benefits that the increased variety of a particular good or service may provide for consumers;

4. Terms of trade effects which measure the changes in the relative price of exports and imports for a country or a region; and

5. FDI-related effects:

   • Changes in normal rents earned on FDI: the normal rentals received by the owners of foreign capital from host regions and rentals paid to the owners of foreign capital in home regions;

   • Changes in barriers rents paid to the owners of foreign capital and affiliates in the home region: the barrier rents received by the owners of foreign capital and affiliates from host regions less the barrier rents paid to the owners of foreign capital and affiliates in home regions;

6. Foreign debt effect

   • Income received or paid on foreign credit or debit by a region; and

   • Interest income received or paid on foreign credit or debt by a region.

123. The income-generating factors (such as allocative effects, net capital endowments and product variety effects) are the most important ones for the world as a whole, but they need to be analysed in conjunction with the income-redistributing factors (such as the FDI income effects) since in such cases what constitutes a gain for one region may be a loss for another one. The following section discusses these results, while Annex 5 presents the detailed results tables.

Goods liberalisation

124.   Implementation of the WTO commitments by China is estimated to bring the global annual welfare gains of around USD 24 billion with almost USD 14 billion accruing to China itself (Table 14). The USD 14 billion accruing to China translate to a non-negligible annual 1.48% per capita gain (Table 16). The bulk of the gain comes from the improved efficiency with which China uses its resources. In fact, these so-called allocative efficiency gains are estimated to amount to around USD 21 billion but are neutralised by losses associated with terms of trade changes as well as negative effects associated with its FDI and, to a lesser extent, China's payments on foreign debt.

125.   The substantial allocative efficiency gains in China are realised through a clear shift of resources away from some, so far heavily protected, sectors such as agriculture and fishing, motor vehicles and parts, chemicals and chemical products and machinery and equipment towards some relatively less protected, albeit also opening, sectors such as textiles, clothing and leather, electronic equipment and food products and beverages. The described pattern of resource reallocation applies equally to Chinese domestic producers and foreign producers located in China.

126.   Such a shift in allocation of resources is tied in with quite dramatic changes in Chinese imports with most of the sectors experience significant increases in import volumes. The most pronounced expansions of China's imports are estimated for agriculture and fishing (116% change in the imported volumes); motor vehicles and parts (57%); textiles, clothing and leather (44%) and food products and beverages, machinery and equipment, electronic equipment all experiencing increase of more than 15%. While some of this increased import demand is attributed to final consumption, the bulk reflects increased demand for intermediate inputs by both domestic and foreign firms producing in China. Indeed, while the magnitudes are a bit smaller, the pattern of expanding imports is very much mimicked by the pattern of expanding exports: textiles, clothing and leather (36%); agriculture and fishing (24%), motor vehicles and parts (21%); food products and beverages(17%) and electronic equipment (15%). The interplay of import and export changes illustrates the impact of market opening on the costs of intermediate products of producers located in China and in turn on their export competitiveness. At the same time it suggests a mitigated impact on OECD economies, which despite being able to export more freely to the Chinese market face an increased competitiveness from producers located in China.

127.   Associated with this significant structural change are the changes in the inward stocks of FDI (Table A5.9). In the FTAP model which accounts for the foreign presence of OECD producers in the Chinese market the impact of improved market access on OECD countries also depends on the extent of their presence in the Chinese economy as well as on the objective of this presence. If foreign presence is a means of jumping high initial market access barriers, liberalisation could result in divestment if supplying the Chinese market from abroad becomes more efficient. If, however, foreign presence is already a more efficient mode of supplying the Chinese market (or alternatively more efficient way of supplying other export markets from China), China's liberalisation may deepen foreign presence in China and benefit the investors that take advantage of yet cheaper intermediate inputs used in their production. In terms of actual simulation results, as far as all foreign investors are concerned, the largest increase of FDI stock is recorded in agriculture and fishing (0.4%) while the largest decrease is recorded in textiles, clothing and leather (-0.5%). While the changes are smaller in other manufacturing sectors, all sectors experience increases in FDI stocks (see Table A5.9).

128.   The significant changes in the volume of China's trade are also strongly reflected in world prices of traded commodities—one of channels through which China's liberalisation impact upon production and employment patterns across the world economy. Here, it is important to note that the world export price index of agriculture and fishing increases by a substantial 3% while prices in most manufacturing sectors fall. For textiles, the clothing and leather the world price index falls by as much as 20% and for electronic

equipment by 3.4%. In other manufacturing sectors price increases are less pronounced. These results suggest that China's integration into the world economy may benefit agricultural producers through increased demand while manufacturing suppliers may face falling export prices as a result of competition from the Chinese producers.

129. As already foreshadowed, the substantial gains associated with better allocation of productive resources across China's economy are counterbalanced by quite substantial terms of trade losses. That China loses from the terms of trade changes is not astonishing since the considered scenario is largely constrained to lowering of imports barriers in China and therefore implies a large boost to Chinese import demand which results in increasing prices of Chinese imports. Additionally, prices of Chinese exports are reduced as a result of reduction of production costs as well as the need to export more in order to finance the increase in import demand. The two effects result in a negative aggregate terms of trade effect for China of 1.8% indicating the percentage points difference between the increase in price of aggregate imports and the price of aggregate exports. The large size of the Chinese economy inevitably contributes to the magnitude of the negative terms of trade effect. On the flip side, in general China's trading partners benefit from improvements in their terms of trade.

130. Another factor that mitigates the extent of China's gains from its own opening is losses from its outward FDI (Table A5.5). These losses are associated with the impact that China's liberalisation has on the rates of return on FDI held outside China. At the same time China's implementation of the WTO commitments results in an expansion of China's capital endowment and the product variety which contribute positively to China's welfare gain.

131. The impact of China's implementation of its tariff commitments and the removal of ATC quotas has a rather limited impact on the OECD membership (Table A5.5). In absolute terms the biggest gainers are the US and EU15 with respectively around USD 4.2 and USD 3.9 billion annual gains. Other gaining OECD members include China's proximate trading partners Japan and Korea. Small losses are predicted for Australia, Canada and Mexico. In terms of per capita welfare gains (see Table 16) the biggest winner is Korea with 0.2% annual gain in per capita welfare, followed by Japan (0.07%), EU15 (0.06%) and United States (0.05%). All the gaining OECD countries benefit from allocative efficiency and substantial favourable terms of trade effects.

132. Three OECD economies, Australia, Canada and Mexico are predicted to be worse off by respectively 0.07, 0.04 and 0.03% of per capita welfare. These losses originate mainly from terms of trade losses (Mexico and Australia) and from increased payments associated with their foreign debt positions in the faced of raising world real interest rate (Australia, Canada and Mexico). The unfavourable terms of trade effects are due to losses in shares in the Chinese market that are implied by an unequal impact of China's WTO commitments on post-tax prices of imports from different OECD countries. Australia, for example, which exports to China substantial shares of their agricultural production (Table A3.1), does not seem to benefit from as large reductions of agricultural tariffs as the US or Rest of World do (Table A5.3), and hence has to accommodate the lowering of tariffs by reducing its export prices (hence the negative terms of trade effect) or otherwise risks losing market shares. Mexico also suffers from terms of trade losses but its total loss is dominated by the increased payments on its foreign debt.

133. The small impact of China's opening up on the OECD countries is broadly in line with the existing CGE literature and, more fundamentally, with underlying trade data. Indeed, an extensive analysis of OECD-China trade structure presented in Annex 1 suggests that that apart from the OECD economies located in Asia and Oceania, dependence on China as a destination market for exports in 2001 was rather limited. Exports to China expressed as shares of respective GDPs are highest in Korea (6.7%), New Zealand (2.2%), Australia (1.5%), Japan (1.2%) and, again, tend to be lower in Canada (0.7%), United States (0.3%), EU15 (0.6%) and Mexico (0.2%). For comparison, the US exports to the EU15 accounted

for 29% of its total exports and 2.7% of its GDP in 2001 and the EU15 exports to the US accounted for 11% of total EU15 exports[102] and around 3.7% of its GDP.

134.   The scenario in which China is assumed to totally remove its import duties results in an expansion of global gains from USD 24 billion to USD 34 billion i.e. by one third (Table A5.6). First, this suggests that China's WTO commitments in the area of tariffs are already quite ambitious and deliver most of the gains that can be had from reforms in this particular domain of China's trade policy. Interestingly, full liberalisation scenario reduces marginally China's overall welfare gains: even though there is potential for gains from allocative efficiency from China's further liberalisation, negative terms of trade and foreign debt effects increase more than proportionally and keep the overall welfare gain on par with the results from WTO accession results.

135.   The result for China contrasts with those for most of the OECD countries which apart from the EU15 tend to gain more (or lose less) in both absolute and per capita terms from this more ambitious liberalisation scenario. Korea remains on the top of the gains list but its gains amplify to 0.57% increase in per capita terms. Japan with 0.17% per capita welfare gain is next followed by New Zealand (0.16%) and United States (0.05%). While losses for Australia, Canada and Mexico are somewhat reduced, the EU15 is predicted to turn form a significant gainer to a marginal looser. The latter effect is associated with the fact that in the full liberalisation scenario the EU15 becomes a net seller of bonds which implies a significant increase in interest payments that follows an increase in interest rates. Also, the EU15 registers losses from asset price changes for its FDI assets. Both features are specific to the FTAP model and require further exploration in future quantitative work.

136.   The full liberalisation scenario is more favourable for Russia which turns to a significant net gainer (0.16% increase in per capita welfare) from being a net looser in the WTO accession scenario. The unfavourable terms of trade and allocative efficiency effects in Russia in the scenario of China's WTO accession are due to losses in shares in the Chinese market that are implied by an unequal impact of China's WTO commitments on post-tax prices of imports from different trading partner. This is rather expected given Russia's disadvantaged position in negotiating the terms of China's accession to the WTO as a non-member as well as the erosion of preferential access to the China's market enjoyed by Russia prior to 2001. Only the liberalisation that goes beyond China's WTO accession commitments delivers market access opportunities that benefit Russia.

Services liberalisation

137.   Implementation of WTO commitments in the selected services sectors is estimated to generate benefits of almost USD 3 billion to China (see Table A5.7), while the total liberalisation of these sectors would more than triple these gains (see Table A5.8). This indicates that, despite extensive commitments in the area of services, significant services barriers still remain.

138.   As is the case with the goods liberalisation scenario, the services liberalisation effects for China are dominated by improvements in allocative efficiency and negative terms of trade. As expected, the allocative efficiency gains are quite substantial (given high initial barriers). The allocative efficiency improvements are derived from changes in the size of production of all sectors and are driven mainly by the movement of capital from other countries/regions to China in the five analysed services sectors (see Table A5.10). Given the relatively high initial magnitude of the reduced/removed services barriers, China attracts substantive foreign capital in distribution, insurance and other business services. This enlarges its total capital endowment, so that the expansion of the five services sectors is not accompanied by reductions of outputs in other sectors (See Table A5.10 – no sectoral resource shifting). This capital reallocation from

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[102]   Including intra-EU15 trade.

OECD regions and the Rest of the World to China (positive capital endowment effect) has an additional impact on product variety in China as it determines an increase in output which is associated with more varieties from more firms and more varieties for consumers to choose from. The product variety effects thus reinforce the gains from capital reallocation.

139.   As opposed to allocative efficiency gains, terms of trade effects are negative for China. This worsening of terms of trade is in line with our expectations and discussion of goods liberalisation: the reduction/ removal of the relatively high services barriers in China determines a fall in the relative price of exports to imports.

140.   Turning to FDI-related contributions, it is important to note that China experiences losses from its outward FDI. The contribution to Chinese welfare of stock changes for FDI assets is negative but small as the positive contribution of foreign capital change in China (determined by the reduction of mode 3 services barriers) is offset by losses on Chinese-owned capital abroad. The contribution to welfare in China from rate of return changes is similarly negative, driven by negative contributions abroad.

141.   In terms of rents from services barriers (contributions to income of changes in the rents from barriers to services trade as these barriers are eliminated), net FDI rents (given by rents from output impediments) flow from the OECD investing regions to China (the recipient region). The net FDI rents represent a significant source of gains for China and losses for Hong Kong, China and the Rest of the World. Critical to determining the overall welfare impact of services liberalisation is the assumption about who receives the impediment rents. It is assumed in FTAP that for foreign-owned industries impediment rents accrue mostly to the owning region, with only an income tax contribution going to the region in which the industry is located. Therefore, in concordance with this assumption, the economies-regions investing in China register losses.

142.   The impact on the OECD countries is estimated to be marginal under both services liberalisation scenarios. The allocative efficiency effect tends to be quite small (negative for Hong Kong, China, Russia, Japan and Rest of Europe, and positive for all other OECD countries/regions) depending on the size of the change in their capital stock (in general quite small, driven by the initial low shares of outward FDI to China). The net capital endowment effect is negative in most OECD countries/regions determined by increased outflows of capital due to changes (decreases) in the rates of return on capital located within these countries/regions. Similarly, product variety effects tend to be quite small and negative in the OECD countries. By contrast, most OECD countries experience small improvements in their terms of trade (except for Canada and Mexico and Russia, who experience negative terms of trade).

143.   Turning to FDI-related contributions, it is important to note that they dominate the (small) welfare effects of almost all OECD countries. Also, while China experiences losses from its outward FDI, most OECD countries benefit from increased FDI income. The benefits from increased FDI income for OECD countries are mainly explained by the fact that, initially, all these countries were net suppliers of services FDI to China. By removing entry barriers, OECD countries increase their FDI to China and gain from return on FDI (increased rates of return on capital in China). In a few OECD countries/regions (New Zealand and Rest of Europe) the gains from increased FDI to China do not compensate the losses on FDI in other regions.

144.   In summary, China gains mostly from allocative effects, product variety and net capital effects, while the OECD countries/regions gain from improvements in their terms of trade and increases in net FDI. Russia, Korea and Mexico, which are more protected initially, lose from terms of trade. Similarly China experiences a worsening of terms of trade but the overall welfare effects remain positive.

Conclusions

145.   This paper examines China's emergence as a global player in international markets over the last few decades. It provides an overview of China's trade policy environment following the country's process of market opening and joining the WTO. It charts China's climbing share of world trade noting that it is now the third largest trading nation after the US and Germany. As its share in world trade has grown so has the trade links with OECD countries. China's top trading partners are the European Union, the United States and Japan. China is now the top trading partner of Japan and one of the top three trading partners for a majority of OECD economies.

146.   The paper looks at China's potential impact on world markets. One way it is making a global impact is through its participation in international production networks. Fuelled by its trade and investment liberalisation, the engine of China's phenomenal growth in foreign trade over the past several decades has been international processing activities. The paper looks at China's two-pronged export growth strategy. The first part of the strategy is to capitalise on one of its greatest factor endowments – a surplus of labour – by promoting job-creating, labour-intensive manufactures. The second aspect of this strategy is to further its goal of economic development by upgrading its economy by producing and exporting higher-technology goods. It appears that China is also moving up the value chain.

147.   Another way China is making a global impact is on world prices. As China experiences rapid urbanisation, industrialisation and infrastructure construction, it is importing ever greater amounts of raw materials and primary products leading to upward pressures on world prices of key commodities. At the same time, the lowering of trade barriers and rapid productivity growth in Chinese manufacturing and electronics sectors has led to a sudden surge of exports consequently pushing down China's export prices in the international market. This trend is likely to endure as China continues to catch up. The extent of this decline in China's terms-of-trade is, however, relatively small compared to the overall growth in per capita GDP. The counterpart has been an improvement in incomes and living standards in the rest of the world. Indeed, the import of low-priced Chinese manufactured goods has increased consumer incomes in the OECD area by almost 0.2% annually. Also, the impact of higher non-oil commodity prices on incomes in OECD countries is likely to be limited insofar as supply-side responses are in the offing.

148.   In order to quantify China's impact on the world economy, the latter part of this paper presents new estimates based on general equilibrium model, the FTAP. The model includes a treatment of foreign direct investment on a bilateral basis which, given the importance of foreign presence in the Chinese economy, is essential for understanding the impacts of its liberalisation.

149.   The model finds substantial gains for China and a rather limited impact on OECD economies as a result of China's implementation of WTO commitments or completing liberalisation in the area of tariffs and services barriers. Given that the structure of bilateral trade flows between China and individual economies of the OECD reflect divergent patterns of comparative advantage as well as differences in structure of trade barriers and geographical location, implementation of China's WTO accession commitments as well any potential further liberalisation by China is predicted to result in a heterogeneous impact on the OECD membership. The most direct impact is expected through improved export performance of OECD countries that are already trading with or investing intensely in China but still face significant market access barriers. The observed trade patterns suggest that the impact through the market access channel is likely to be more important for Korea, Japan, Australia, and New Zealand.

150.   The second channel through which China's liberalisation may affect OECD economies is through increased competitiveness of Chinese exporters for which the costs of intermediate products and services may decrease as a result of liberalisation. The non-negligible market shares of China in OECD countries' imports suggest that increased competition with Chinese imports is indeed a likely outcome of its

liberalisation. However, these competitiveness effects are almost always counterbalanced by the market access effects, resulting in the end in relatively small overall gains for the OECD countries. Additionally, it should be noted that the paper has not accounted for the dynamic effects of China's openness and is therefore likely to provide lower-bound estimates of China's integration into the world economy.

151. The modelling results are however conditional on production, consumption, trade and investment data reflecting the time of China's WTO accession and may hence be only approximate given the pace of structural changes within the Chinese economy as well as the relationships between China and its commercial partners. Additionally, it should be noted that the paper has not accounted for the dynamic effects of China's openness and is therefore likely to provide lower-bound estimates of China's integration into the world economy.

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ANNEX 1: ANALYSIS OF SECTORAL BARRIERS IN SERVICES

1.   This Annex describes in detail China's liberalisation commitments as specified in its GATS schedule. We calculate indices of trade restrictiveness to describe the implementation of China's commitments in five services sectors (banking, insurance, telecommunication, distribution and engineering services).[1] The main components of these sectoral trade restrictiveness indices (TRI) as well as the policy changes induced by WTO commitments are described below. The components of the TRI were scored on the basis of China's GATS commitments that reflect (i) the state of policy in 2001 (the date of accession), and (ii) the state of policy in 2008 (the date by which all liberalisation commitments will have been implemented). The sectoral analysis below describes the policy changes in China, while the TRIs (Charts A1.1 to A1.6) graphically reflect these changes. The graphs show that implementation of WTO commitments in banking would lower the restrictiveness of this sector below the OECD average; by contrast, in all other sectors, despite significant liberalisation measures, the restrictiveness indices remain above the OECD average (but lower than in most developing countries covered in this exercise). The corresponding services tax equivalents associated with the implementation of WTO commitments in these five services sectors are presented in Table A5.4. The reduction in the tax equivalents in Table A5.4 is employed in the simulation exercise to model services liberalisation in modes 1 and 3.

Banking and Insurance

Components of the TRI

- *Modes 1 and 2*: restrictions on cross-border borrowing and lending, restrictions on cross-border insurance transactions, establishment or residency/recognition requirements to provide cross-border financial services, requirement to co-operate with local organisations, geographical limitations, limitations related to the scope of business, authorisation requirements, restrictions on purchasing financial services abroad;

- *Mode 3*: foreign equity limits, limitations on the form of establishment, including joint venture requirements, screening and approval, limitations on the scope of business activities; limitations concerning the expansion of banking and insurance outlets, and

- *Mode 4*: limits on the duration of stay, on number of work permits, issues related to licensing/recognition requirements, limitations on the board of directors.

Policy changes in banking

- Banking: the 2001 policy environment

2.   China ranks among the countries that have a restrictiveness index standing above the average. Here, the restrictiveness stems partly from Modes 1 and 3. In Mode 1, cross-border borrowing requires application and approval and there are limitations on the amount of foreign exchange funding that foreign banks can acquire from overseas through the imposition of a quota system. With respect to Mode 3, the foreign equity limit has to be underlined since it induces a very high level of restrictiveness. The percentage that an individual foreign financial institution can invest in the shares of a China-funded

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[1]   The approach is described in detail in OECD (2005j) "Modal Estimates of Services Barriers", TD/TC/WP(2005)36, 8 November 2005.

financial institution shall not exceed 20%. In addition, the percentage of the sum of several foreign financial institutions investing in shares of a China-funded financial institution is in practice limited to 25%. Furthermore, restrictions on the geographical coverage of banking activities (especially lending) have to be mentioned. While the geographic and client limitations related to foreign currency operations were eliminated in 2001, foreign banks could only operate in specified regions and accept deposits only from non-residents and only in foreign currencies, and make no loans to Chinese citizens. In terms of licensing, while the schedules indicate that they have to be awarded solely on the basis of prudential regulations, the rules governing foreign funded financial institutions stated that each foreign bank can not open more than one branch within one year, and that any foreign-funded financial institution with its application being rejected has to wait at least one year to submit another application (this requirement was repealed in 2004 by the revised *Rules for Implementing the Regulation of the People's Republic of China Governing Foreign-funded Financial Institutions* (see below) issued by China's Banking Regulatory Commission. Finally, the process of screening and approval also represents a significant obstacle.

- Banking: WTO implementation (2008)

3.   According to China's GATS commitments, the banking sector will be fully liberalised by 2006. The geographic limitations on the scope of business will be phased out gradually by 2006. Local currency business with Chinese enterprises will be allowed by 2003 and with all clients in 2006. With respect to licensing, on July 26 of 2004, China's Banking Regulatory Commission issued the revised *Rules for Implementing the Regulation of the People's Republic of China Governing Foreign-funded Financial Institutions (*hereinafter referred to as the new Rules*)*, which took effect as of September 1, 2004. In a bid to lower the market entry thresholds for foreign banks, the new Rules have repealed such requirements provided in the previous Rules as that each foreign bank can not open more than one branch within one year, and that any foreign-funded financial institution with its application being rejected has to wait at least one year to submit another application. The new Rules have also significantly relaxed operating capital requirements for the Chinese branches of foreign banks to provide local currency (Renminbi) services to the Chinese enterprises and individuals, reduced the layers of capital requirements imposed on the Chinese branches of the wholly foreign-owned banks and the Sino-foreign joint-venture banks, and lowered their minimum capital requirements as well.

Chart A1.1. Banking TRI
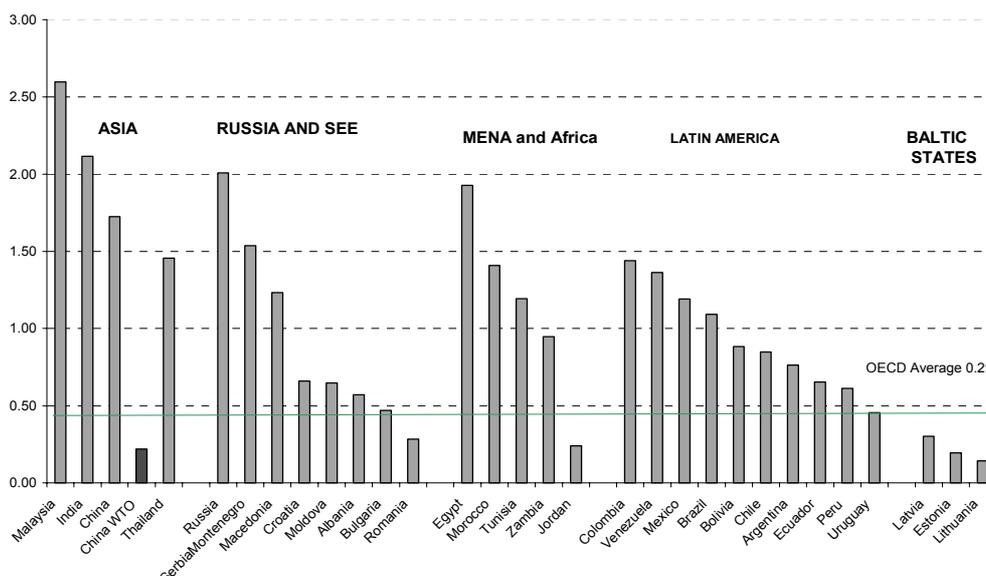
Source: Authors calculations based on the methodology described in OECD (2005j) and the sectoral policy changes presented in Annex 1.

Policy changes in insurance

- Insurance: the 2001 policy environment

4.   China's high restrictiveness index in insurance services can be explained mainly by its FDI ceilings (limit of 50% for foreign equity holdings in life and 51% for non-life insurance joint ventures), restrictions on the form of commercial presence (only branches and joint-ventures are allowed), geographic limitations (at the time of its WTO accession, China has allowed foreign life and non-life insurance firms to establish business in five cities only), restrictions on the scope of business (foreign non-life insurance companies are allowed to provide only selected forms of non-life activities and life insurance only to individuals, not to groups) and licensing requirements (while according to China's GATS commitments, licensing will be carried out based on prudential criteria alone, without numerical restrictions or discretionary economic needs tests, there are additional requirements that have to be met to obtain a licence: There are three requirements for foreign insurance companies applying for licenses[2]: Foreign funded insurers (i) Must have more than 30 years of establishment in a WTO member country; (ii) Must have had representative office in China for at least 2 years and (iii) Shall have total assets of more than RMB500 million at the end of the year prior to application. National firms applying for licenses do not need to fulfil these requirements. In addition, there are also restrictions related to modes 1 and 2: restrictions on cross-border supply, except international maritime, aviation and transport (MAT) insurance and reinsurance and brokerage related to international MAT insurance and large-scale commercial risk insurance and reinsurance, restrictions on consumption abroad of brokerage, requirement for reinsurance cessions. Also, the list of legal entities permitted to write insurance and reinsurance does not include "an association of underwriters".

- Insurance: WTO implementation (2008)

5.   According to China's GATS commitments, by 2004, the insurance sector will be liberalised except for the 50% foreign ownership limit in life insurance. The sequence of liberalisation measures is as follows: the establishment restrictions in the non-life segment should be lifted in 2003, the geographic restrictions and restrictions on business scope in 2004, with cession requirements to be abolished in 2005. Nevertheless, as opposed to the banking sector, where foreign equity limits are totally eliminated, a 50 % foreign ownership limit will be kept on the life insurance segment. In both banking and insurance licenses are to be awarded solely on the basis of prudential regulations.

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[2]   According to Article 8 of the *Rules on the Regulation for the Administration of foreign invested insurance companies* effective from 1 February 2002 on www.circ.gov.cn.

Chart A1.2. Insurance TRI
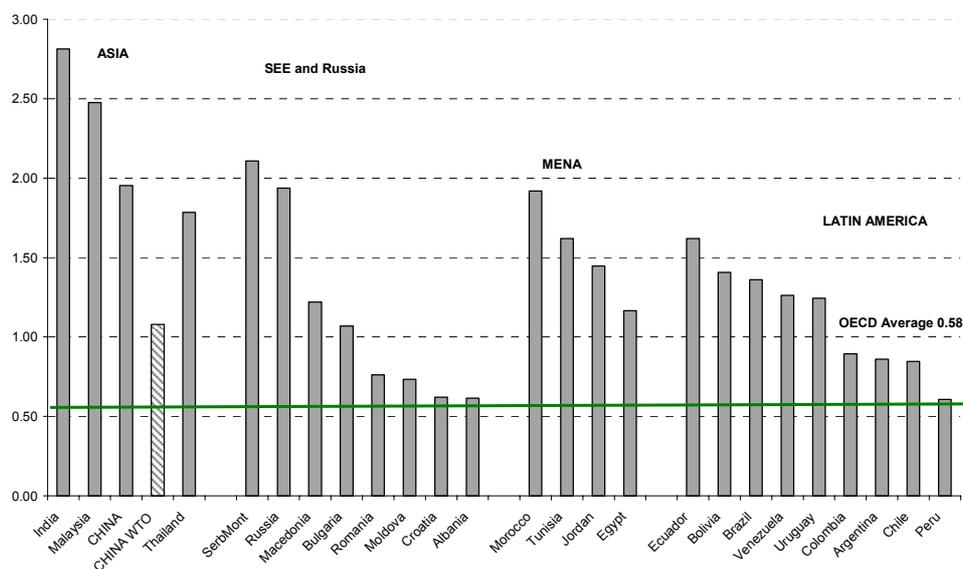
Telecommunication (fixed and mobile)

Components of the TRI

- *Mode 1*: restrictions on leased line or network provision, restrictions on connections of leased lines and private networks to the public switched telephone network (PSTN), restrictions on international simple resale and IP telephony.

- *Mode2*: restrictions on call back services.

- *Mode 3*: foreign equity limits, level of competition, including joint venture requirements, screening and approval, limitations on business activities, licensing restrictions.

- *Mode 4*: limits on the duration of stay, on number of work permits, issues related to licensing/recognition requirements, limitations on the board of directors.

Policy changes in telecommunication

- Telecommunication: the 2001 policy environment

6.   China's telecom sector is characterised by significant entry controls (limits on foreign ownership 30% in value added telecommunications, 25% in mobile voice and data), joint venture requirements to enter the market, geographical restrictions and restrictions on the business scope of telecom companies. Furthermore, there are significant restrictions related to leased line or network provision and connections of leased lines and private networks to the PSTN.

- Telecommunication: WTO implementation (2008)

7.   Important changes occurred in this sector since 2001. Most geographical restrictions were eliminated in 2002 and 2003. Also, foreign investment limits were raised to 49 % in value added telecommunications and mobile voice and data. According to China's GATS commitments, by 2007 all geographic restrictions

will be eliminated and foreign investment limit in fixed telecom will be relaxed. Majority foreign ownership will not be allowed. There is no commitment to allow cross border delivery of telecom services.

Chart A1.3. Fixed Telecom TRI
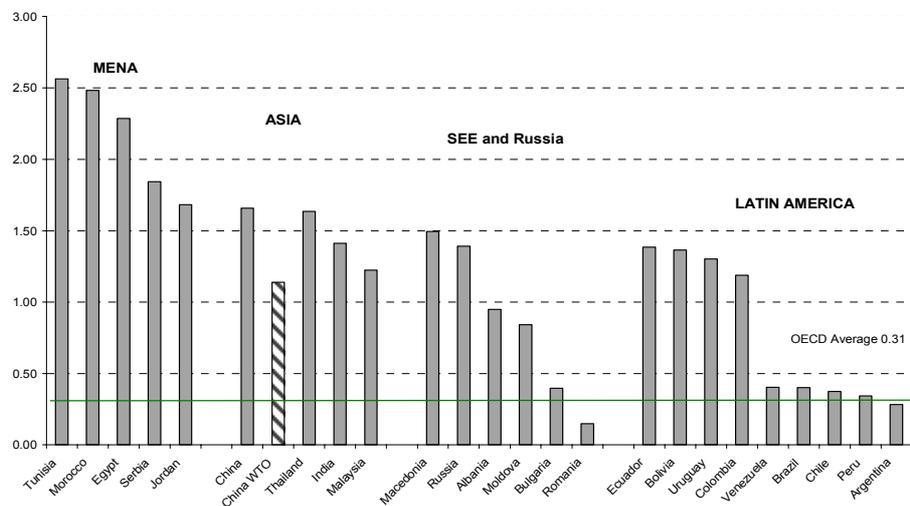
Source: Authors calculations based on the methodology described in OECD (2005j) and the sectoral policy changes presented in Annex 1.

Chart A1.4. Mobile telecom TRI
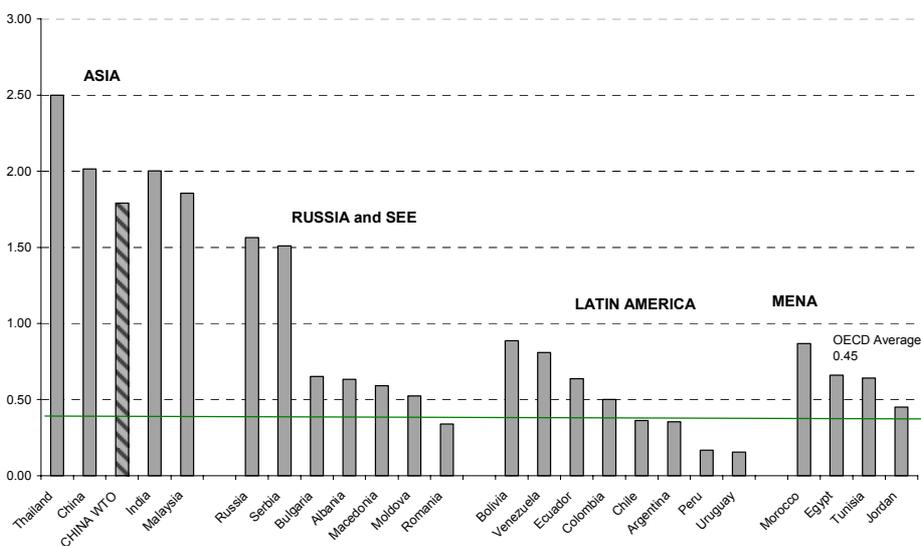
Source: Authors calculations based on the methodology described in OECD (2005j) and the sectoral policy changes presented in Annex 1.

Professional services (engineering)

Components of the TRI

- *Mode 1*: restrictions on servicing the market on a cross-border basis (*i.e.* establishment requirements).

- *Mode 2*: restrictions on consumers purchasing business services abroad.

- *Mode 3*: foreign equity limits, Foreign partnership/joint venture/association, Investment and ownership by foreign professionals, Multidisciplinary practices level of competition, including joint venture requirements, screening and approval, limitations on business activities, licensing restrictions.

- *Mode 4*: limits on the duration of stay, on number of work permits, limitations on the board of directors, licensing and accreditation of foreign professionals, residency and local presence.

Policy changes in engineering

- Engineering: the 2001 policy environment

8. The magnitude of the engineering restrictiveness index is explained by restrictions related to the form of establishment and joint venture requirements (in terms of mode 3) and entry, licensing and accreditation requirements for foreign professionals and management as well as quotas/economic tests on the number of foreign professionals and firms (in terms of mode 4). With respect to mode 1, while there are no barriers for scheme design, co-operation with Chinese professional organisations is required for all other segments.

- Engineering: WTO implementation (2008)

9. According to China's GATS commitments, by 2006, the sector will be fully liberalised (except for the above-mentioned mode 1 restrictions). The restrictions on the form of establishments are to be lifted in 2006.

Chart A1.5. Professional services (Engineering)
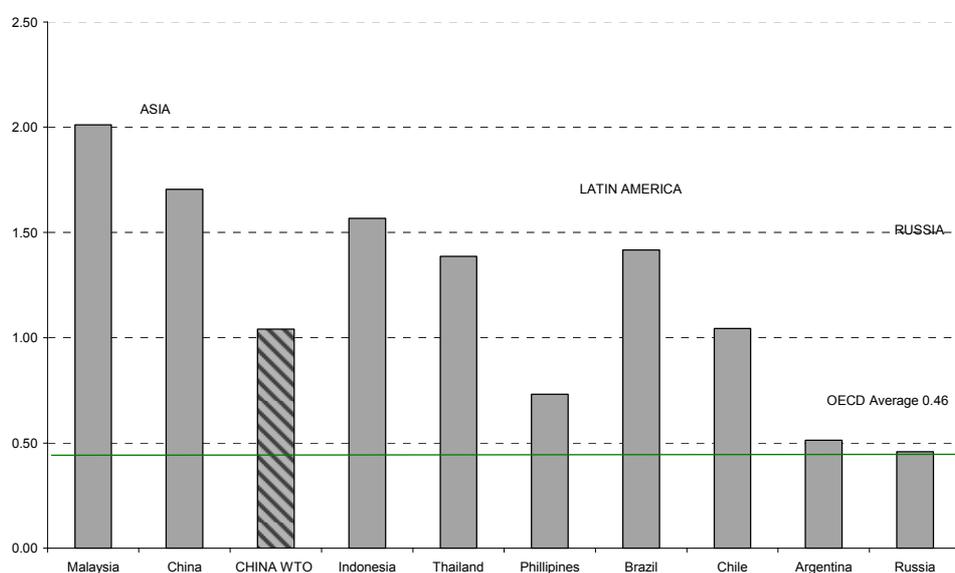
Source: Authors calculations based on the methodology described in OECD (2005j) and the sectoral policy changes presented in Annex 1.

Distribution

Components of the TRI

- *Mode 1*: restrictions on servicing the market on a cross-border basis (*i.e.* establishment requirements).

- *Mode 2*: restrictions on consumers purchasing distribution services abroad.

- *Mode 3:* foreign equity limits, restrictions on commercial land, restrictions on large scale stores, wholesale importing licensing, promotion of retail products, state monopolies – product exclusions, protection of intellectual property rights.

- *Mode 4*: limits on the duration of stay, on number of work permits, licensing requirements on management.

Policy changes in distribution

- Distribution: the 2001 policy environment

10.   The relatively high restrictiveness index is explained by restrictions related to the form of establishment (entry is allowed only through joint ventures), geographical restrictions and product exclusions (books, newspapers, pharmaceuticals, pesticides, chemical fertilizers, processed and crude oil are excluded).

- Distribution: WTO implementation (2008)

11.   According to China's GATS commitments, by 2006, the sector will be largely open. Foreign majority ownership will be permitted and no geographic or quantitative restrictions will apply. The only remaining restrictions relate to cross border trade and the delivery of two products. In addition, China has committed to open permit foreign invested enterprises to distribute their products manufactured in China, and provide subordinate services. Also, foreign services suppliers will be permitted to provide the full range of related subordinate services, including after sales services for the products they distribute. These deep commitments determine the level of the new TRI that is very close to the OECD average.

Chart A1.6. Distribution TRI
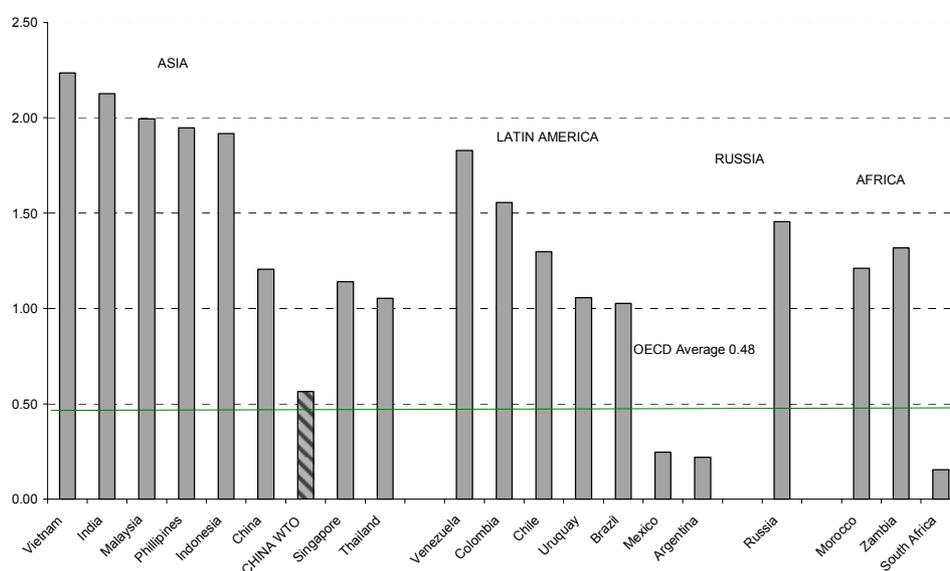
Source: Authors calculations based on the methodology described in OECD (2005j) and the sectoral policy changes presented in Annex 1.

ANNEX 2: MODELLING THE IMPACT OF CHINA'S INTEGRATION ON THE GLOBAL ECONOMY, A REVIEW OF THE LITERATURE

12.   Since the 1990s, there has been a heightened interest in China's integration into the global economy resulting in an increase in studies quantifying the impact of the country's WTO-related trade reforms. The numbers of such studies not only reflect the interest in the country, but also the development of ever more sophisticated means to measure such impact. The increase has been made possible by advances in theory and analytical techniques as well as dramatically increased computational and data processing power of computers.[1] This attachment reviews several studies that estimate the effects on China's economy from its accession to the WTO and its impact on other developing and developed countries.

Methodology

13.   Measuring the economy-wide impact of trade liberalisation requires a global, general equilibrium framework, which captures both the intersectoral effects in each economy and the links among countries. The general equilibrium approach employs detailed information on factor endowments, economic structures, and policy instruments. These variables are all integrated in a single or multi-country, multi-sector market-clearing framework with sophisticated representation of demand and supply relations. By simulating the effects of policy, structural, or market changes, a well-defined CGE model[2] is a useful tool for economic impact analysis as it enables an assessment of the impact of industry-specific policies on the economy at large.

14.   What follows provides an overview and discussion of current work on measuring and modelling China's liberalisation/WTO accession. It examines the main results found in the computable general equilibrium (CGE) literature and analyses these results on the basis of the underlying modelling framework, the protection data employed, the ways of incorporating these protection measures into the models and the assumed accession/liberalisation scenarios. Often the literature uses the Global Trade Analysis Project (GTAP) developed at Purdue University.[3] The GTAP is a static resource allocation model taking resource endowments and technology as given. Despite its usefulness in analysing the possible economic effects of China's WTO accession, some of GTAP's features such as the constant returns to scale assumption, the labour mobility assumption across sector as well as the fact that this is a static model impose certain limitations on the results of the modelling exercises. However, a number of empirical

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[1]   For more information, see R. Piermartini and R. Teh, (2005), "Demystifying Modelling Methods for Trade Policy", WTO, Geneva, Discussion paper No 10, 2005.

[2]   A CGE model is defined as an integrated system of equations (or general equilibrium model), derived from economic theory of the behaviour of all economic agents, whose simultaneous solution uses a numerical database to determine values of the endogenous variables. D. Schreiner, D. Marcouiller, G. Tembo, and E. Vargas, *Computable General Equilibrium Modeling for Regional Analysis, Glossary of Terms*, West Virginia University, available at: http://www.rri.wvu.edu/WebBook/Schreiner/glossary.htm

[3]   GTAP is a standard global applied general equilibrium model with perfectly competitive markets and constant returns to scale technology. The model represents consumer demands through a constant difference in elasticities functional form and on the supply side emphasises the role of intersectoral factor mobility in the determination of sectoral output. Product differentiation between imported and domestic goods and among imports by region of origin allows for two way trade in each product category, depending on the ease of substitution between products from different regions. Land, capital, skilled and unskilled labour, and, in some sectors, a natural resource factor are used in production and are fully employed. See https://www.gtap.agecon.purdue.edu/.

investigations adapted the GTAP model in order to take into account increasing returns to scale and barriers to labour mobility. Also, a number of studies analyse the economic effects of China's WTO accession using a dynamic model. For example, a few studies are based on the G-CUBED Asia Pacific Model developed at the Australian National University. The G-CUBED[4] is a dynamic model that examines the explicit linkages between capital markets, and thus investment, and the real sectors

Relevant quantitative studies

15.   This section briefly examines two detailed literature reviews – OECD (2002a) and Gilbert and Wahl (2002) – and then discusses several studies that are relevant to the work presented in Section III of the paper. The two reviews and one study, OECD (2002b), were completed before China entered the WTO and before the country's concessions under the WTO accession agreement were known. The OECD's Trade Directorate prepared an overview and comparison of 16 major studies written between 1996 and 2000 that estimated the impact on China's economy from its accession to the WTO.[5] The OECD's review of literature found that the major findings of the studies measuring the impact of WTO on China differed markedly, but the majority of them indicate major overall welfare gains to China's economy and to the world as a whole. However, trade liberalisation would likely create both winners and losers. Most of the studies projected that China's textile and apparel sectors would benefit greatly from China's WTO accession, due to the phase-out and removal of quotas on China's textile and apparel exports that would occur with China's accession. On the other hand, some heavy industry sectors, such as autos, and certain land-intensive agricultural sectors, such as wheat and corn, might contract as a result of China's WTO entry. Most of the studies limited their analysis to the effects of China's tariff cut offers and the removal of textile and apparel quotas on Chinese exports; they generally did not address the full range of trade liberalisation measures (such as the removal of non-tariff barriers and reducing restrictions on services trade) that China has committed to in bilateral and multilateral trade negotiations for WTO membership.

16.   Gilbert and Wahl (2002) look at 30 studies between 1994 and 2000.[6] They found that China will improve its own net welfare through trade reform while other economies are likely to be relatively unaffected in net welfare terms. The gains estimated to accrue to China from unilateral reform and WTO accession are in the range of USD6 to USD 30 billion (or between 0.5 and 2.4% of GDP). Net welfare to the Rest of the World from Chinese unilateral reform or WTO accession is estimated to range from USD 8 to 35 billion. In terms of sectoral issues, a major conclusion that emerges is that China's expansion of textile and clothing exports with the end of the MFA would result in declines in these industries in developed countries.

17.   The OECD (2002b)[7] evaluated the impact of China's WTO accession on neighbouring countries in Asia. The study employed a dynamic, multi-sector, multi-country, macro-economic model – the G-Cubed Asia Pacific model – that captures linkages through both trade in goods and services, and capital flows between China and its trading partners. This model has both detailed country coverage of the region and rich links between countries through goods and asset markets. Importantly, the model facilitates an analysis of the effects of changes in flows of FDI to China. The study presented three scenarios. The first is the "naïve" case where the only reductions are in China's trade barriers. The second scenario is the "FDI

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[4]   For more information, see W. J. McKibbin and P. Wilcoxen (1995), "The theoretical and empirical structure of the G-Cubed model", Economic Modelling, 16 (1), pp. 106-148,
        http://www.msgpl.com.au/msgpl/download/struct.pdf

[5]   See OECD (2002a), op. cit., "Summary of Studies on the Impact of WTO on China", pp. 761-783.

[6]   See J. Gilbert and T. Wahl, "Applied General Equilibrium Assessments of Trade Liberalisation in China", *The World Economy*, Vol. 25, Issue 5, May 2002, pp. 697-731.

[7]   See OECD (2002b), *Global Economic Impact of China's Accession to the WTO*, CCNM/TD(2002)10.

diversion case where the simulation supplements the naïve simulation with a 1 percentage point reduction in the risk premium demanded by foreign investors in China. The third scenario is the "FDI with technological spillovers" where the simulation incorporates increases in total factor productivity (TFP) growth rates of the manufactured durable and non-durable goods as well as services sectors located in China, and declines in TFP in goods sectors located in Indonesia, Malaysia, Philippines and Thailand. It is worth noting that, while the study does not model the impact of services/investment liberalisation directly; it analyses how productivity growth in services sectors – as an implicit effect of services liberalisation – increases the return to capital, which then feeds through to the rest of the economy.

18.   The overall results of the naïve case indicate that as long as the removal of trade barriers in China is not accompanied by a diversion of FDI into China, its WTO membership will have significant positive economic effects only on China's economy. In the FDI diversion case the overall results are qualitatively similar to those in the naïve case in the long run, but the key difference is that the quantitative effects on China are magnified. The long run impact in the FDI diversion case is a GDP that is 5% above the baseline level, which is twice the long-run impact of the 2.5% in the naïve case. The deviations of GDP and consumption in all other analysed countries are less than 1% of the baseline. In the third scenario, FDI with technological spillovers, FDI outflows induce slower technological change and inflows induce faster change. The overall results show large gains for China (in the long run, the GDP is estimated to be 25% above its baseline level) and sizeable loses for the ASEAN-4 (Indonesia, Malaysia, the Philippines, and Thailand; the long run GDP losses are 7% for Thailand, 5% for Malaysia and Philippines and 3% for Indonesia). The model indicates that there is very little impact on the other economies, other than Hong Kong - China. China's substantive growth does not seem to generate positive growth effects on other non-ASEAN trade partners. For example, Japan's GDP will be only 0.4% higher in 2020, Korea's GDP 0.6% higher and the Rest of the OECD's GDP 0.3% higher.

19.   The study concludes that the major effect of WTO membership for China is to greatly enhance China's economic security by ensuring better access to foreign markets and increasing its reliability as a supplier. Better access to foreign markets has the effect of reducing the risk premium demanded by investors in China's export-oriented industries and thus stimulating FDI inflows (diverting some FDI from some other Asian countries). Increased FDI, associated with considerable technological spill-over effects, brings major improvements in productivity and large welfare gains to China's economy. The study suggests no major changes in export patterns for most of China's trade partners, with several notable exceptions: some of its East Asian neighbours that compete with China in markets for labour-intensive exports and compete to attract FDI in plants producing such exports could be adversely affected.

20.   The IMF (2004) examines China's emergence and its impact on the global economy.[8] This study employs the GTAP version 5 with 1997 as the base year but the database was updated using 2002 data on bilateral trade flows and macroeconomic aggregates.[9] The authors aim to quantify the impact on the terms of trade and trade flows of different regions of various scenarios for the path of growth in China through 2020. The authors constructed two scenarios. In the first scenario – the "fast-Chinese-integration" scenario – economic variables are broadly assumed to grow at values consistent with long-term projections (by the

[8]   IMF (2004), "China's Emergence and Its Impact on the Global Economy", Ch. 2, *World Economic Outlook*, IMF, April 2004.

[9]   The authors construct a 10-region, 7-sector version. The 10 regions are i) China; ii) the advanced economies; iii) the NIEs: Hong Kong-China, Korea, Singapore, and Chinese Taipei; iv) ASEAN; v) South Asia; vi) sub-Saharan Africa; vii) Mexico, Colombia, and Venezuela; viii) all other Western Hemisphere developing countries; ix) the Middle East and North Africa; and x) the rest of the world. The seven sectors were i) agriculture; ii) mining; iii) textiles and clothing; iv) unskilled labour-intensive manufacturing; v) skilled-labour-intensive manufacturing; vi) unskilled-labour-intensive services; and vii) skilled-labour-intensive services.

IMF, World Bank, and UN). In China, productivity, employment, and human and physical capital are assumed to continue growing rapidly, reflecting a sustained pace of reform and rapid absorption of rural labour into the modern sector of the economy. In this scenario, the Chinese economy is able to absorb approximately 150 million additional workers, coming largely from rural agricultural areas. As a result China's real output grows by almost 8% per year, and its shares of world output and trade more than double by 2020. In the advanced economies, their share of world output declines, reflecting both productivity catch-ups by developing countries and population aging in richer economies.

21.   A second scenario – "slow-Chinese-integration" – was constructed to isolate the impact on the global economy of fast Chinese integration. This scenario assumes that China's share of world output is fixed at current levels, with little change in its share of world trade. This scenario is not meant as a realistic alternative path for China. Rather contrasting it with the first scenario makes it possible to determine the winners and losers from continued rapid Chinese growth. Importantly, all other countries are assumed to display structural flexibility, and can adjust smoothly to different growth rates in China.

22.   The study concludes that while China itself clearly stands to gain the most from its growth, the impact on the rest of the world as a whole will also be beneficial. Industrial economies will benefit from cheaper labour-intensive imports and greater demand for skill-intensive goods and services. Developing countries meanwhile will see increased opportunities for exports to China, both of primary commodities and of manufactures for re-processing and re-export. Those countries whose factor endowments are similar to China's and which compete most closely with it in world markets will be affected. In order to avoid significant losses, these countries will need to undertake sizable adjustments and display flexibility in product and labour markets.

23.   Ianchovichina and Martin (2004) estimate the impact of WTO accession associated with the liberalisation in agriculture, manufactures, and services and analyse the opportunities arising from the elimination of the quotas against China's exports of textiles and clothing.[10] The authors use the GTAP version 5 database constructed with 1997 data as well as improved estimates of protection in agriculture and services. Importantly, the authors use measures of goods liberalisation based on the final, multilateral agreement, while for services liberalisation they halve the tax equivalents estimated by Francois and Spinanger (2000) via a gravity model. For the purpose of these simulations, the standard GTAP model was adjusted to incorporate China's processing arrangements (duty drawbacks are taken into account) and its key labour market mechanisms (barriers to mobility between rural and urban activities are explicitly considered in the model).

24.   Ianchovichina and Martin divide the effects of accession into liberalisation undertaken between 1995 and 2001 in preparation for accession and then liberalisation from 2001 in order to meet China's accession commitments. As a consequence of liberalisation after 2001, they find substantial growth in trade relative to output, with total export volumes rising by 17%. Unsurprisingly, the most rapid growth is in apparel exports with such exports expanding by over 100% in response to the abolition of export quotas. However, the authors note that the expansion in textile and clothing exports is a delayed benefit from the Uruguay Round until 2001 denied to China as it was not a member of the WTO. They see a rise in agricultural exports because of a decline in agricultural input costs and constraints on the out-migration of labour from this sector. Another area where exports rise is in the automobile sector because of an increase in efficiency of the sector as it benefits from economies of scale and greater trade exposure. Imports rise in sectors in which there are substantial reductions in trade barriers, including beverages and tobacco, processed foods, textiles, clothing, oilseeds, dairy products and sugar.

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[10]   E. Ianchovichina and W. Martin, "Economic Impacts of China's Accession to the WTO", in Bhattasali, D., S. Li and W. Martin, (eds.), (2004) *op. cit,* pp. 211-236.

25.   With respect to liberalisation measures undertaken in the first period from 1995 to 2001, the authors found the overall welfare gains to be substantial. They estimate the benefits of reduced protectionism undertaken during this period to be a continuing gain of about USD 30 billion per year (representing about 2.2% increases in per capita real income). The liberalisation undertaken between 2001 and the end of implementation will generate incremental gains to the country of USD 10 billion a year. Ianchovichina and Martin note that the estimates of measured gains in export and income growth are lower-bound estimates. That is they ignore the benefits from the abolition of non-tariff barriers and they involved serious aggregate biases.[11]

26.   The study suggests that reforming economies and their close trading partners are the biggest beneficiaries of China's WTO accession. China will gain the most as it is undertaking the greatest reforms. The authors found that the impact on many of China's OECD trading partners was positive. The largest absolute gains accrue to North America and Western Europe with close to half the gains resulting from the end of textile and clothing quotas these countries impose on China's exports. While their study found that North America, Western Europe and Japan also benefit from China's cuts in protection, the associated changes in per capita utility are extremely small - between 0.0 and 0.2%. Ianchovichina and Martin note that their study does not address the impact of accession on FDI and the hard to measure efficiency gains in services that are associated with this increased investment.

27.   Walmsley *et al* (2004) explore the linkage between WTO accession and investment in China over the next two decades. The authors employ a recursive dynamic extension of the GTAP model – GTAP-Dyn. – that is further expanded to take into account duty exemptions on imported inputs and capital goods used in the production of China's exports. The model enhances the investment theory by incorporating capital accumulation, international capital mobility and international ownership. An 11 regions 13 sectors aggregation of the GTAP version 4 data base is employed in the simulations, and the effects are examined over the period 1995 to 2020. The policy scenario involves: a gradual reduction in risk premium expected by foreign investors, the removal of tariffs and quotas as presented in the accession agreement, liberalisation of cross-border trade in services (modelled as a productivity improvement whose magnitude is given by tax equivalents estimated by Francois and Spinanger), productivity improvements in the automobile sector (modelled as a 20% increase in total factor productivity (TFP)) and sector-specific productivity impacts as a results of liberalising rules governing foreign commercial presence (modelled as asymmetric shocks which leave TFP in services 4.58% higher than the baseline in 2010). Accession is assumed to commence in 2002. Also, it is assumed that it takes 5 years to implement the agreement, with effects on foreign ownership and income payments expected to last until 2020.

28.   The combined resulting impact on GDP (22.5% higher in 2020 as a result of WTO accession) is far larger than predicted in previous studies. The biggest share of the welfare gains (84%) come from the assumed productivity improvements in the automobile and services sectors. By contrast, the tariff and quota liberalisation scenarios are all comparable with findings from other studies. The authors note however that given the uncertainty associated with the impact of accession on productivity in services sectors, this should be an important area for future research.

29.   This review of the literature examined the impact of China's integration on the global economy with a view to providing an overview of available estimates and the underlying models employed in the analyses. The review shows that China's WTO accession or unilateral liberalisation generates overall welfare gains under all modelling assumptions. The results are difficult to compare given differences in the model structures, policy shocks and protection data employed in these simulations. Nonetheless some conclusions can be drawn.

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[11]   D. Bhattasali, *et al*., *op. cit*., p. 12.

30.   An important finding to emerge is that China is the major winner under all modelling assumptions – China experiences substantive welfare gains ranging from 0.4 to 22.5% of its GDP. Larger gains are indicated in dynamic studies that take into account the additional investment-related effects as well as studies that consider the productivity improvements associated with China's liberalisation. By contrast, the impact on the rest of the world in general and on OECD countries in particular is limited in all analysed studies (almost always under 1% change in GDP).

ANNEX 3: STRUCTURE OF CHINA-OECD TRADE AND FOREIGN DIRECT INVESTMENT

China-OECD trade flows

31.   The purpose of this section is to describe the structure of China's merchandise trade with major OECD economies and the associated tariff barriers in 2001. This is also useful in interpreting the simulation results of China's implementation of its WTO commitments as well as the scenario of full liberalisation of China's tariff barriers.

32.   In 2001, China accounted for 6% of world exports and 4% of world imports. However, these shares masked considerable differences in China's importance for individual OECD economies as well as in specific international goods and services markets. As far as the importance of China as a destination market for OECD exports is concerned (Table A2.1), regional factors appear to play an important role with OECD countries located in closer proximity to China tending to export to this market higher shares of their overall exports (*e.g.* Australia 7%, New Zealand 6%, Japan 11%, Korea 16%) as compared to the United States (3%), Canada (4%) or the EU (2%)).

33.   Exports to China expressed as shares of respective GDPs are highest in Korea (6.7%), New Zealand (2.2%), Australia (1.5%), Japan (1.2%) and, again, tend to be lower in Canada (0.7%), United States (0.3%), EU15 (0.6%) and Mexico (0.2%). Overall, these shares suggest that apart from the OECD economies located in Asia and Oceania, dependence on China as a destination market for exports in 2001 was rather limited. For comparison, the US exports to the EU15 accounted for 29% of its total exports and 2.7% of its GDP in 2001 and the EU15 exports to the US accounted for 11% of total EU15 exports[1] and around 3.7% of its GDP.

34.   Sectoral divergences are even more pronounced than cross-country ones with China accounting for significant shares of exports of *agricultural and fishing products* of a number of OECD countries (Australia 15%, New Zealand 12%, Canada and United States each 7%, Korea 6%, Japan 5%) and yet even higher shares of exports of *natural resources* in Japan (43%), Australia (16%), Korea (15%), New Zealand (11%) and Mexico (7%). Remarkably high shares are recorded for many industrial sectors, including *textiles, clothing and leather*–sector that is thought to be China's leading export sector. Indeed, China accounts for 56, 27, 8 and 7% of exports of textiles, clothing and leather of respectively Japan, Korea, Australia and New Zealand. Alike situation is observed in *chemicals and chemical products* where China absorbs 35 , 15, 7 and 5% of exports in this product category of respectively Korea, Japan, Australia and New Zealand. In the EU15, United States, Canada, Mexico these share are typically one-digit, even though they are not negligible. For example, China accounts for 5% of the US exports of *metal products* and *electronic equipment*.

35.   As compared with exports to China, generally somewhat higher figures are observed for China's shares in imports of individual OECD economies (Australia 8%, New Zealand 5%, Japan 14%, Korea (9%), United States (9%), Canada (4%), EU15 (3%)). This suggests that China's further liberalisation may impact upon import-competing industries of the OECD economies (as well as third countries that compete with China in the OECD markets) through improvements in the competitiveness of Chinese exporters. Ratios of imports from China to respective GDPs are highest for Korea (3.3%), Australia and New Zealand (1.6%), Japan (1.4%), Canada (1.2%) while they tend to be lower for the US (1.1%), EU15 (0.9%) and Mexico (0.5%). While there are differences across OECD membership, sectors particularly heavily

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[1]   Including intra-EU15 trade.

dominated by imports from China include *textiles, clothing and wearing apparel* (with import shares of between 5 and 65%); *other manufacturing* (6 to 24%); *machinery and equipment* (2 to 18%); *electronic equipment* (4 to 16%) and to a lesser extent *metal products* (1 to 12%) and *motor vehicles and parts* (0 to 14%).

36.   Outside the OECD area, Hong Kong-China relies on the Chinese market to a great extent in sectors such as *chemicals and chemical products* (61% of Hong Kong-China's exports); *machinery and equipment* (51%); *electronic equipment* (33%); *metal products* (39%); *other manufacturing* (26%); *textiles, clothing and wearing apparel* (24%) and *food products and beverages* (11%). In fact, a similar pattern is observed in shares of imports from China which suggest a large extent of two-way trade, most likely a result of trade in products and components at different stages of their processing. For Russia, China is an important export destination for *machinery and equipment* (28%); *chemicals and chemical products* (14%); *other manufacturing* (10%) and *metal products* (9%). Imports from China constitute 31% of Russia's total imports in *textiles, clothing and leather,* 7% in *other manufacturing* and 6% in *agriculture and fishing.*

37.   Tables A3.3 and A3.4 present refined information on the two-way trade in China's trade with its partners. Aggregate sectoral indices calculated across all trading partners in Table A2.4 suggest that trade in *agricultural products*(index of intra-industry trade of 0.3) and *natural resources* (0.2) including *coal* (0.0) and *oil* (0.1) is mostly one way as is trade in *textiles, clothing and leather*(0.3) but also in *motor vehicles and parts* (0.4) and *other manufacturing* (0.4). Two-way trade seems to be relatively important in *chemicals and chemical products* (0.7)*, metal products* (0.7)*; machinery and equipment* (0.7) and *electronic equipment* (0.6).

38.   Interesting divergences in the nature of China's bilateral trade flows are suggested by the indices of intra-industry trade calculated for each of the bilateral trade flows, and the coefficients of variation in these indices calculated at the product and country levels. At the relatively high level of product aggregation that these indices are computed in our study, the high shares of intra-industry trade reflect both trade in different varieties of the same products as well as 'vertical trade' involving cross-border exchanges of the same good at different levels of processing or an exchange of components and final products. Nevertheless, data show a tendency for China's trade with the most neighbouring OECD economies (*i.e.* Japan, Korea, Australia and New Zealand) to be more of the two-way type as compared to bilateral trade with North American or European OECD economies. However, considerable differences can be observed even within the same industries and regions. For example, in *motor vehicles and parts*, China's trade with Korea displays a high share of intra-industry trade while its trade with Japan displays a low share of intra-industry trade. Trade in *textiles, clothing and leather* with Japan and Korea tends to be two way while trade in this product category with the United States and EU15 is mostly one way. The latter case highlights the possibility that regional trade is likely to contain higher shares of trade along various stages of production chain of the same products. For some other bilateral trade flows such as China's trade with the EU15 in food products and beverages, high shares of intra-industry trade are more likely to be more reflective of an exchange of different varieties of food and beverages that are produced by the trading partners.

39.   The current bilateral services trade data in the GTAP database do not reflect the pattern of services trade among countries; the dissagregation of services flows is based on various assumptions and extrapolations of trade in goods by partner countries.[2] However, given that this database constitutes the

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[2]   Lejour and van Leuwen (2005): This is the first paper that attempts to introduce bilateral services trade data based on reported statistics into the GTAP database[2]. The authors use data of total imports and exports of services from the IMF Balance of Payments statistics, while the bilateral trade matrix comes from the OECD database on services trade by partner countries. The exercise covers 28 OECD countries (which equals approximately 75% of services trade exports in the GTAP database). While limited in coverage, this paper represents an important step in improving the datasets employed in modelling services liberalisation.

basis for analysing cross-border services trade, a brief summary of services trade patterns is presented below.

40.   Wholesale trade represents the most important sector with respect to China's imports from and exports to OECD countries (the share of China's imports in OECD countries exports is above 7% in Japan, Korea, EU 15 and Canada, while the share of OECD countries imports from China is above 7% for Japan, Mexico and EU15). All other sectors record lower values (in general between 1% and 3%) in terms of both shares of China's imports in OECD countries' exports and shares of China's exports in OECD countries' imports.

41.   Overall, trade statistics presented in Tables A3.1 through A3.5 suggest that scenarios considering improvements in access to the Chinese market considered in this paper are likely to have disproportionate effects on individual OECD countries.

China-OECD investment patterns based on the new FTAP-FDI database

42.   The new FTAP - FDI database was constructed following the procedure described in Phamduc (2000). In order to be consistent with the GTAP version 6 database employed in our simulations, the base year for the new FTAP-FDI database is 2001. The database was constructed using the following sources of information: the OECD database[3] on FDI stocks by industry and partner country for all OECD countries, the UNCTAD World Investment Directory[4] for most non-OECD countries, local government sources for China, Hong Kong-China, Russia, Singapore, Chile, Peru, Brazil, and Statistics of Foreign Direct Investment in ASEAN(2004)[5] for Malaysia, Philippines, Thailand, and Viet-Nam.

General investment patterns

43.   At first glance, the main destination for FDI among the analysed economies/country-groups is the EU15; however, two thirds of EU15 FDI is internal FDI, *i.e.* FDI from one EU15 country to another EU15 country. In fact, the EU15 receives only USD 900 billion from abroad, around one third less than the USA. In the EU15, the major recipients are the UK (7.7% of world FDI), Germany (6.6%), while Belgium, France and the Netherlands all receive more than 4% of world FDI. The Rest Of the World region is the third largest inward stock recipient, with several countries receiving comparable amounts of FDI (Singapore, Brazil, Middle-East countries), and with Latin American countries holding preponderant places. Hong Kong-China is the next largest recipient, with a large part of FDI coming from China (29%). But in fact, most FDI to Hong Kong-China transits through tax havens, with British Virgin Islands, Bermuda and Cayman Islands accounting for 42% of FDI to Hong Kong-China. Finally, China receives around USD 203 billion, a figure comparable to Canada, but twice larger than FDI to Australia or Mexico.

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[3]   The OECD database on FDI stocks by industry and partner countries was provided by OECD DAF.

[4]   The UNCTAD World Investment Directory provides detail information about foreign direct investment in a country, comprising detail statistics on flows, stocks and TNC operations, disaggregated by components, industry and investor/recipient country. Since 2002, all country profiles are posted on the following web site before they are published in hard copy or CD-Roms:
        http://www.unctad.org/Templates/Page.asp?intItemID=3198&lang=1.

[5]   See ASEAN (2004) Statistics of Foreign Direct Investment in ASEAN, Sixth edition, available at http://www.aseansec.org/17215.htm.

Japan and Russia each receives USD 55 billion, Korea USD 45 billion, New Zealand and Turkey both around USD 20 billion. (See Chart A3.3).[6]

44.   In terms of outward FDI, the EU15 group is again the largest source of FDI, although around 50% of FDI is again intra-EU15 FDI, with stocks mainly coming from the UK (11.5% of world FDI), the Netherlands (10.5%), France and Germany (both 7.5%). The main EU15 partner is the USA (18% of EU15-originated FDI). As a single country, the USA is the largest source of FDI (17% of word FDI), with stocks going mainly to the UK (16% of USA-originated FDI), Canada (11%), Mexico (7%), several EU15 and Latin American countries, while China receives only 1,6% of US FDI. (see Chart A3.4).

45.   The importance of the services sector in driving FDI flows is obvious from Chart A3.5. The four main sectors for FDI are all in services (Business Services, Trade, Banking, and Other services) and services sectors account overall for 61% of world FDI, while the manufacturing sector represents 31% and the primary sector 8%.

Investment patterns for China

46.   FDI data on China is constructed from UNCTAD (USD 203 billion in 2001) and have been distributed according to sectoral inflow shares, since no stock data is reported at the disaggregated level. Hong Kong-China is the major investor in China, accounting for 45% of China inward FDI stock. The Rest of the World region is the second largest investor, with this performance mostly driven by Chinese Taipei, Singapore and tax havens (essentially British Virgin Islands). The US is the third largest investor in China followed closely by the EU15 and Japan. While these three OECD regions record each around 10% of China's inward stock, their investments in China represent low share in their total FDI outflows (1,7% for the US, 5% for Japan and around 1% for the EU15). (See Chart A3.6).

47.   It is worth noting that, in terms of the sectoral disaggregation, although China's economic structure is more oriented towards manufacturing, the business services sector is still the second recipient of FDI to China (13% of China's inward stock), slightly lower than a group of manufacturing sectors (OMF, a group of industries including mineral products, wood products, paper products). But the manufacturing sector still holds the lion's share when counted as a whole (63%), with the main sectors being the Metallic industry (MET 12%), the electronic equipment industry (ELE 9%), food processing (FOOD 9%) and Chemical industry (CHM 8%).

48.   Apart from the business sector, other important services sectors are the distribution networks in electricity (ELY 6%), followed by the trade sector (TRD 3%). The construction industry, together with the gas, water, recreational, government and social services form the OSV sector (12%). Foreign presence is small in communication (CMN), water and air transports (WTP, ATP) and almost inexistent in financial services (OFI) and insurances (ISR), (Chart A3.7).

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[6]   See Table A5.1 for the correspondence between the sectoral codes employed in Charts A3.3 to A3.7 and their full names. See Table A5.2 for the correspondence between the economies/ country group codes employed in Charts A3.3 to A3.7 and their full names.

Table A3.1. China's imports as share of individual countries' exports, by product category (%)

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	All countries
Agriculture and fishing	15	12	0	11	5	5	6	7	7	0	1	1	5	4
Natural resources	16	11	0	5	3	43	15	1	3	7	2	1	8	6
Coal	0	12	0	0	0	13	0	0	0	0	1	0	0	0
Oil	4	3	0	0	1	9	0	0	3	0	1	1	4	3
Food products and beverages	4	4	0	11	7	10	7	2	2	1	1	1	3	2
Textiles, clothing and leather	8	7	0	24	2	56	27	4	3	0	1	0	4	5
Chemicals and chemical products	7	5	0	61	14	15	35	3	3	1	1	1	9	5
Other manufacturing	4	11	0	26	10	10	22	1	3	0	1	0	5	3
Metal products	11	2	0	39	9	18	20	1	5	1	2	1	5	5
Motor vehicles and parts	0	0	0	11	1	2	2	0	1	0	1	0	2	1
Machinery and equipment	5	3	0	51	28	10	12	2	4	0	3	2	6	4
Electronic equipment	5	2	0	33	30	13	12	3	5	2	4	1	7	6
Electricity, gas and water	2	0	0	46	0	2	3	0	1	0	0	0	0	1
Construction	3	3	0	4	4	5	4	4	4	4	5	4	4	4
Wholesale trade	4	3	0	33	2	11	7	5	3	3	7	6	7	13
Land transport	3	2	0	2	2	2	2	3	3	2	2	2	2	2
Water transport	3	1	0	1	0	0	1	0	3	2	1	1	1	1
Air transport	1	2	0	1	1	0	1	1	2	2	1	1	2	1
Post and communications	1	1	0	1	1	1	1	1	1	1	1	1	1	1
Finance	2	2	0	1	1	1	1	1	1	1	1	1	2	1
Insurance	3	3	0	4	3	1	3	4	4	4	4	4	4	4
Business activities	1	1	0	0	0	1	0	1	1	1	1	1	1	1
Other services	2	2	0	2	2	1	2	1	2	2	2	2	2	2
Total exports	7	6	0	23	8	11	16	2	3	1	2	1	5	4
Total exports as % of GDP	1.5	2.2	0.0	14.1	2.7	1.2	6.7	0.7	0.3	0.2	0.6	0.5	1.7	0.9

Source: GTAP version 6

Table A3.2. Imports from China as share of individual countries imports, by product category

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	All countries
Agriculture and fishing	6	3	0	25	6	12	18	2	3	1	2	2	5	4
Natural resources	10	19	0	26	0	2	2	1	1	1	1	0	2	1
Coal	0	0	0	44	3	17	41	2	4	4	3	1	17	14
Oil	1	0	0	0	1	1	0	0	0	7	0	0	1	0
Food products and beverages	4	2	0	22	2	13	15	1	2	0	1	1	2	3
Textiles, clothing and leather	49	38	0	74	31	65	45	21	21	5	9	10	17	21
Chemicals and chemical products	7	3	0	23	2	8	8	2	5	1	2	1	5	3
Other manufacturing	15	10	0	51	7	24	15	9	23	6	6	3	6	12
Metal products	9	4	0	26	1	12	9	3	8	1	2	1	5	4
Motor vehicles and parts	0	0	0	7	0	4	14	0	0	0	0	0	1	1
Machinery and equipment	5	3	0	40	2	18	6	3	9	2	3	2	5	5
Electronic equipment	9	9	0	33	4	16	10	7	12	4	5	5	6	8
Electricity, gas and water	3	3	0	46	1	1	1	0	1	1	0	0	0	1
Construction	1	2	0	3	2	3	1	2	1	1	3	2	3	3
Wholesale trade	3	3	0	7	3	6	4	3	2	5	7	5	5	5
Land transport	3	3	0	3	3	3	2	3	5	3	3	2	3	3
Water transport	1	1	0	1	2	0	0	2	4	5	1	0	1	1
Air transport	1	1	0	1	1	1	0	1	1	1	1	1	1	1
Post and communications	1	1	0	1	2	1	1	1	1	1	1	1	2	1
Finance	2	2	0	1	4	1	2	1	2	1	1	1	2	1
Insurance	1	1	0	1	1	1	1	1	1	1	1	1	1	1
Business activities	1	1	0	1	1	1	0	1	1	1	1	1	1	1
Other services	2	2	0	1	2	2	2	1	2	2	2	2	1	2
Total imports	8	5	0	35	5	14	9	4	9	2	3	2	5	6
Total imports as % of GDP	1.6	1.6	0.0	23.7	1.1	1.4	3.3	1.2	1.1	0.5	0.9	0.9	1.4	1.2

Source: GTAP version 6.

Chart A3.1. Structure of China's imports
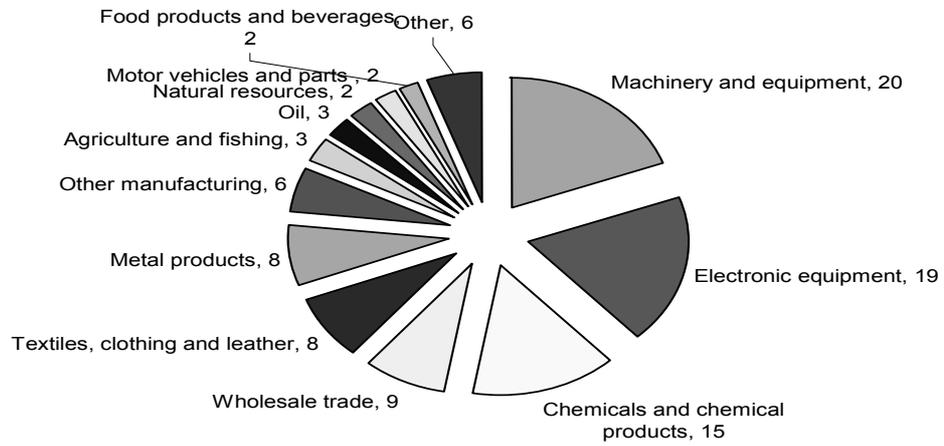
Source: GTAP version 6.

Chart A3.2. Structure of China's exports

Other, 4.5

Land transport, 1.2

Agriculture and fishing, 1.9

Wholesale trade, 2.2

Food products and beverages, 2.4

Metal products, 4.8

Chemicals and chemical products, 7.2

Machinery and equipment, 16.6

Other manufacturing, 17.4

Electronic equipment, 17.6

Textiles, clothing and leather, 24.3
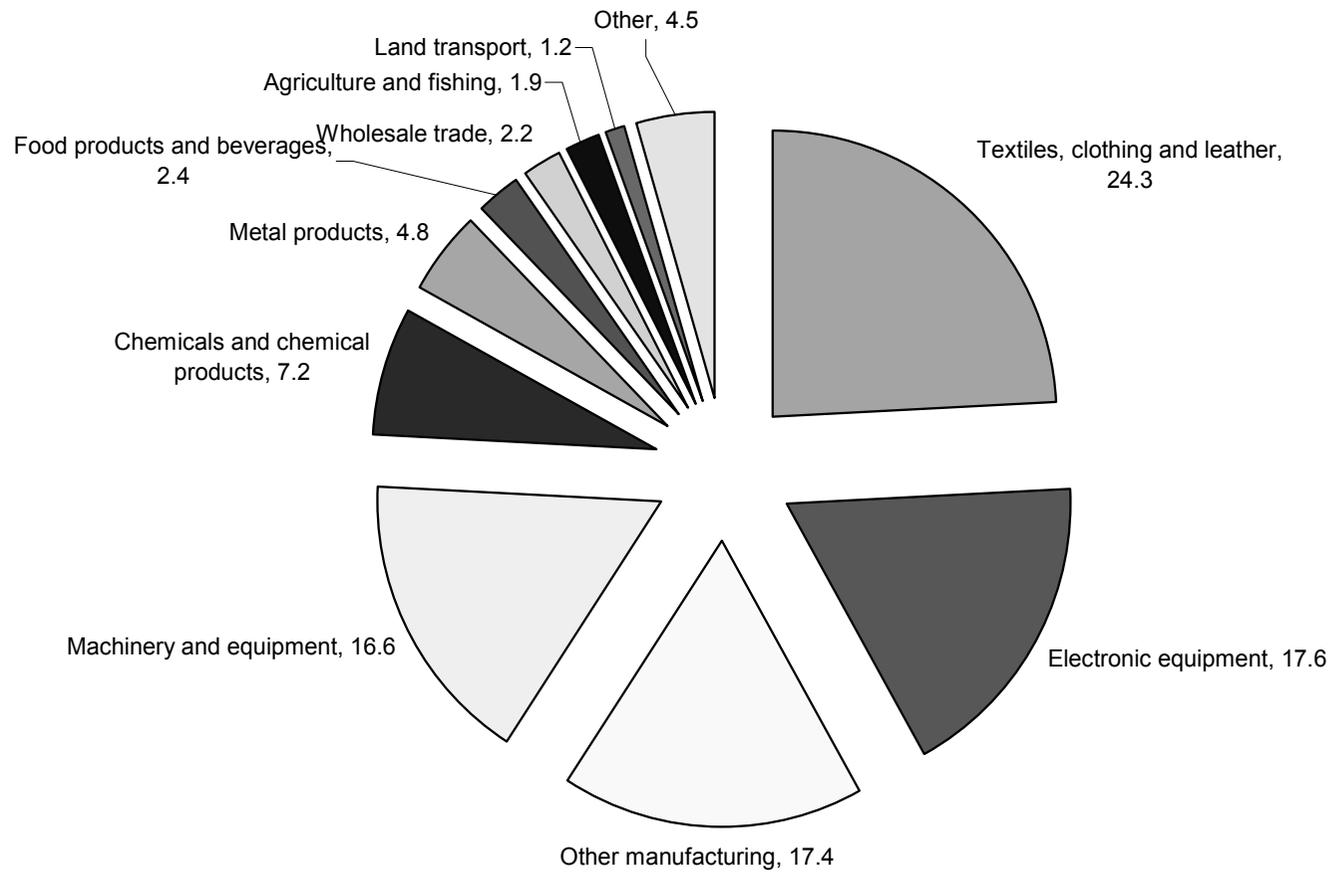
Source: GTAP version 6.

Table A3.3. Country shares in China's imports

	Australia	New Zealand	Japan	Korea	Canada	USA	Mexico	EU15	Rest of Europe
Agriculture and fishing	15	3	1	1	9	26	0	4	1
Natural resources	18	1	1	0	3	2	1	4	1
Coal	39	13	0	0	1	10	0	0	1
Oil	1	0	0	0	0	0	0	1	2
Food products and beverages	7	5	4	2	4	13	1	13	3
Textiles, clothing and leather	0	0	26	24	1	3	0	7	0
Chemicals and chemical products	1	0	16	20	2	9	0	10	1
Other manufacturing	1	2	13	11	4	12	0	17	1
Metal products	6	0	24	12	1	8	0	12	2
Motor vehicles and parts	0	0	30	5	3	5	0	47	2
Machinery and equipment	0	0	26	7	1	16	0	29	3
Electronic equipment	0	0	25	12	1	11	1	15	0
Electricity, gas and water	1	0	0	0	2	9	0	26	9
Construction	0	0	17	0	1	9	1	55	5
Wholesale trade	0	0	3	0	0	2	0	18	2
Land transport	1	0	1	1	4	22	2	33	9
Water transport	3	1	1	2	2	18	1	34	8
Air transport	3	1	2	1	4	25	2	29	4
Post and communications	2	1	2	2	3	20	1	39	6
Finance	1	0	2	1	1	32	1	36	9
Insurance	1	0	0	0	7	12	4	50	6
Business activities	1	0	2	1	2	16	0	47	4
Other services	2	0	1	2	1	38	1	35	5
All products	2	0	18	10	2	11	0	17	2

Source: GTAP version 6.

Table A3.4. Bilateral indices of intra-industry trade with China

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	coeff. of variation
Agriculture and fishing	0.1	0.1	-	0.0	0.5	0.1	0.0	0.2	0.3	0.1	0.5	0.5	0.6	0.9
Natural resources	0.0	0.4	-	0.0	0.0	0.4	0.1	0.1	0.8	0.3	0.8	0.5	0.2	0.9
Coal	0.0	0.0	-	0.0	0.2	0.0	0.0	0.1	0.5	0.0	0.0	0.1	0.1	1.9
Oil	0.3	0.7	-	-	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.1	0.1	1.4
Food products and beverages	0.4	0.1	-	0.1	0.8	0.1	0.3	0.7	1.0	0.8	0.9	1.0	0.8	0.6
Textiles, clothing and leather	0.1	0.2	-	0.3	0.0	0.5	0.7	0.1	0.1	0.1	0.2	0.1	0.6	0.9
Chemicals and chemical products	0.6	1.0	-	0.5	0.1	0.6	0.3	0.8	0.8	0.3	0.9	0.9	0.8	0.4
Other manufacturing	0.2	0.7	-	0.2	0.8	0.5	0.8	0.5	0.1	0.0	0.3	0.2	0.9	0.7
Metal products	0.4	0.9	-	0.5	0.1	0.6	0.6	0.4	0.5	0.7	0.9	1.0	1.0	0.4
Motor vehicles and parts	0.4	0.3	-	0.0	0.5	0.2	1.0	0.4	0.7	0.8	0.1	0.4	0.8	0.6
Machinery and equipment	0.4	0.5	-	0.5	0.2	0.7	0.6	0.7	0.6	0.2	0.9	1.0	0.7	0.4
Electronic equipment	0.2	0.1	-	0.2	0.8	0.8	0.6	0.5	0.5	0.7	0.8	0.3	0.8	0.5
Electricity, gas and water	0.6	0.0	-	0.4	0.6	0.1	0.8	1.0	1.0	0.3	0.9	0.6	0.9	0.6
Construction	0.2	0.7	-	0.6	0.6	0.8	0.3	0.5	0.2	0.0	0.7	0.6	1.0	0.6
Wholesale trade	0.8	0.7	-	0.0	0.0	0.9	1.0	0.8	1.0	0.4	1.0	0.8	0.9	0.5
Land transport	0.8	0.5	-	0.6	0.4	0.3	0.8	0.9	0.7	0.7	0.8	0.8	0.9	0.3
Water transport	0.8	0.8	-	0.6	0.2	0.2	0.9	0.7	0.9	0.9	0.8	0.9	1.0	0.4
Air transport	0.7	0.4	-	0.4	0.5	0.4	0.9	0.7	1.0	0.6	0.9	0.7	0.7	0.3
Post and communications	0.9	0.8	-	0.7	0.7	0.5	0.9	0.9	1.0	0.9	0.9	1.0	0.9	0.2
Finance	0.9	0.8	-	0.9	0.1	0.4	0.8	0.4	0.8	0.6	0.8	0.8	0.8	0.4
Insurance	0.2	0.5	-	0.5	0.8	0.4	0.3	0.3	0.3	0.7	0.2	0.2	0.5	0.5
Business activities	1.0	1.0	-	0.9	0.3	0.6	0.7	1.0	0.8	0.9	0.9	0.8	1.0	0.2
Other services	0.8	0.8	-	0.5	0.6	0.3	0.9	0.7	0.7	0.8	1.0	0.8	0.9	0.3
coeff. of variation	0.7	0.6	-	0.7	0.7	0.6	0.6	0.5	0.5	0.7	0.4	0.5	0.4	

Source: authors' calculations based on GTAP version 6 database.

Table A3.5. Indices of intra-industry trade by product and partner country

by sector		by country	
Agriculture and fishing	0.3	Australia	0.3
Natural resources	0.2	New Zealand	0.4
Coal	0.0	China	-
Oil	0.1	Hong Kong-China	0.3
Food products and beverages	0.5	Russia	0.2
Textiles, clothing and leather	0.3	Japan	0.6
Chemicals and chemical products	0.7	Korea	0.5
Other manufacturing	0.4	Canada	0.5
Metal products	0.7	United States	0.4
Motor vehicles and parts	0.4	Mexico	0.4
Machinery and equipment	0.7	EU15	0.7
Electronic equipment	0.6	Rest of Western Europe	0.6
Electricity, gas and water	0.6	Rest of World	0.7
Construction	0.7		
Wholesale trade	0.5		
Land transport	0.8		
Water transport	0.8		
Air transport	0.8		
Post and communications	0.9		
Finance	0.8		
Insurance	0.3		
Business activities	0.9		
Other services	0.8		

Source: authors' calculations based on GTAP version 6 database.

Chart A3.3. FDI destination, % of world FDI

FDI destination in % of world FDI

Selected EU15 and ROW
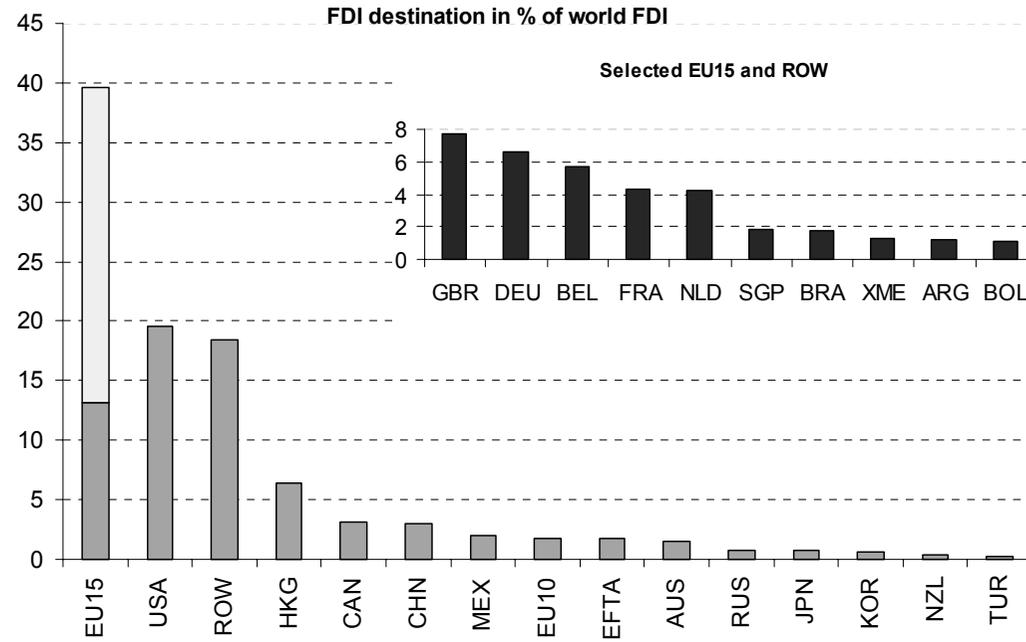
Chart A3.4. Sources of FDI, % of world FDI

Source of FDI in % of world FDI

Selected EU15 and ROW
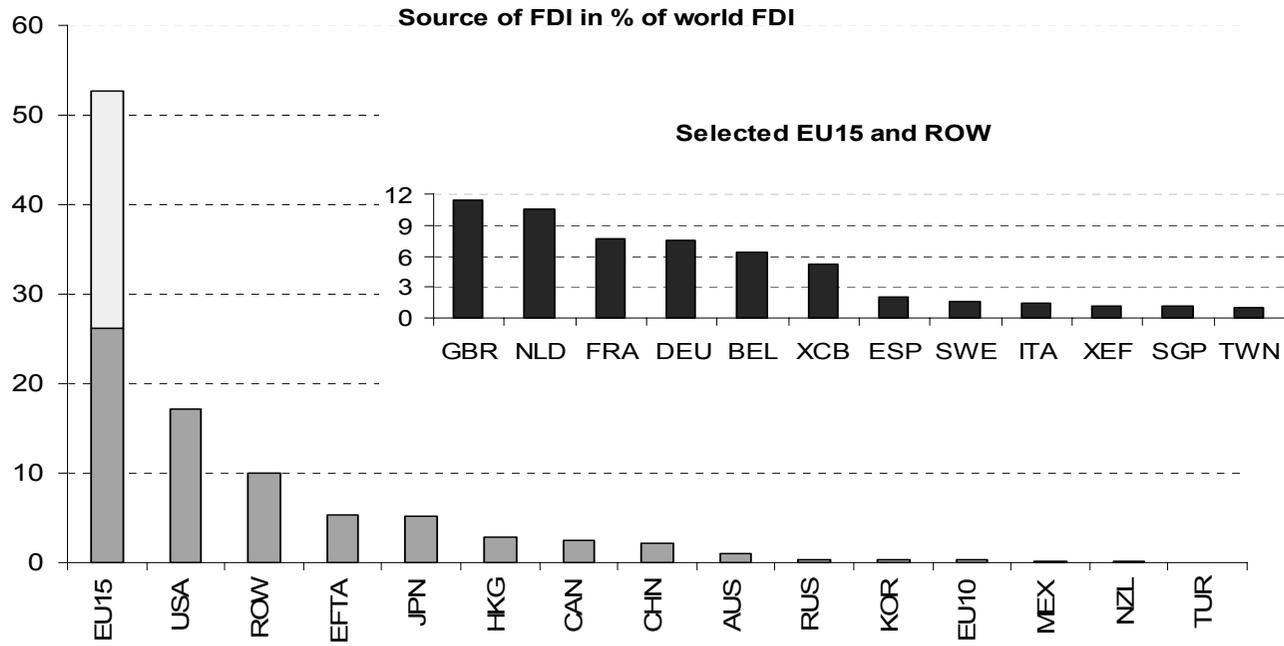
Source: authors calculations (FTAP 2001 database).

Chart A3.5. World FDI by industry, % of world FDI

World FDI by industry, in % of world FDI (US$6893bn)
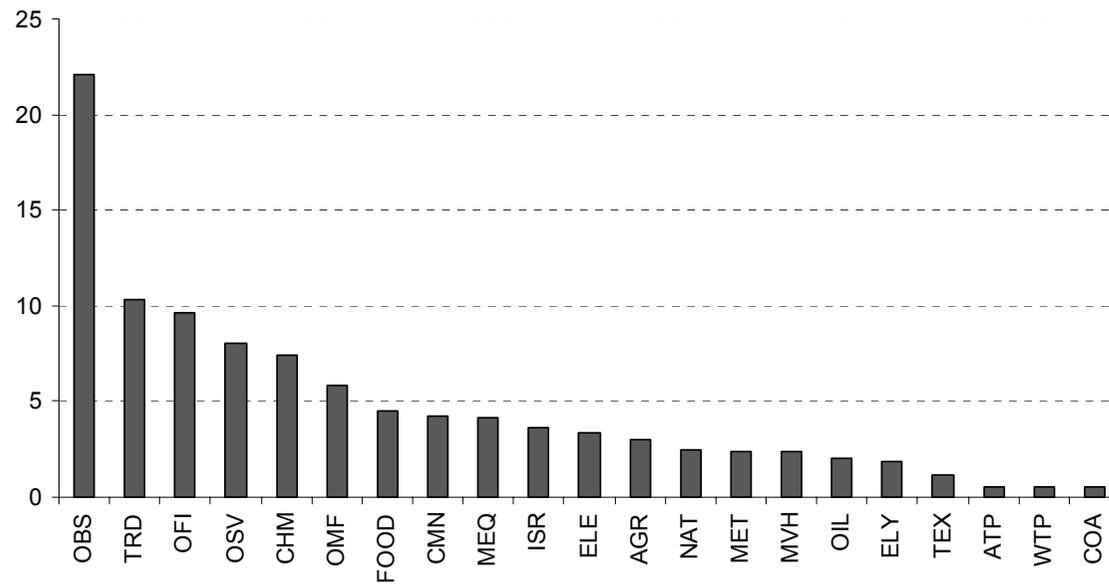
Source: authors calculations (FTAP 2001 database).

Chart A3.6. FDI to China, % of overall inward stock

FDI to CHN in % of overall inward stock (203142 million US$)
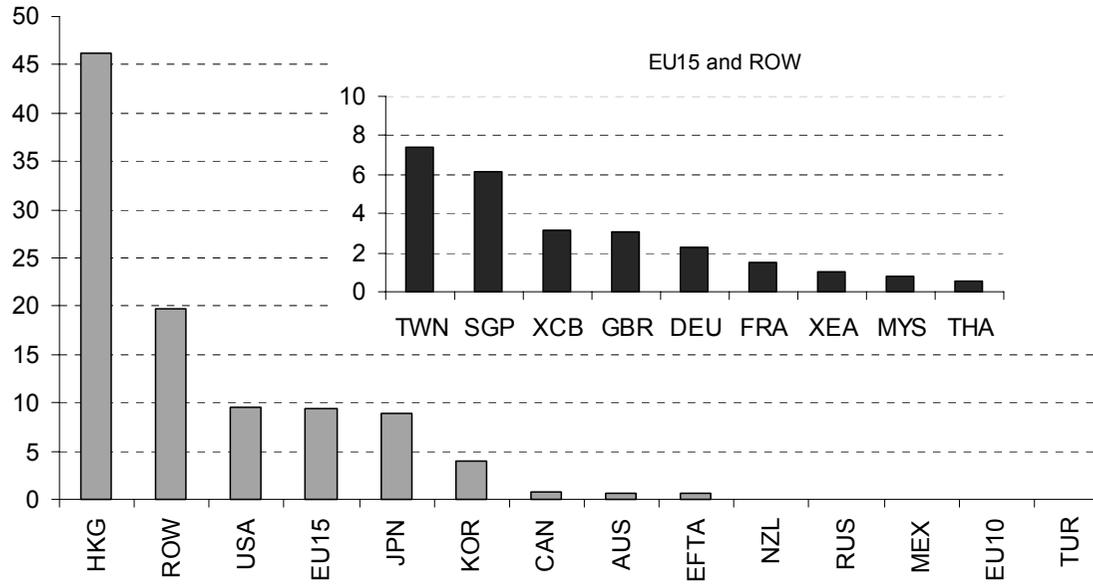
Chart A3.7. FDI to China by industry, % of total inward stock

FDI to China per industry, in % of inward stock
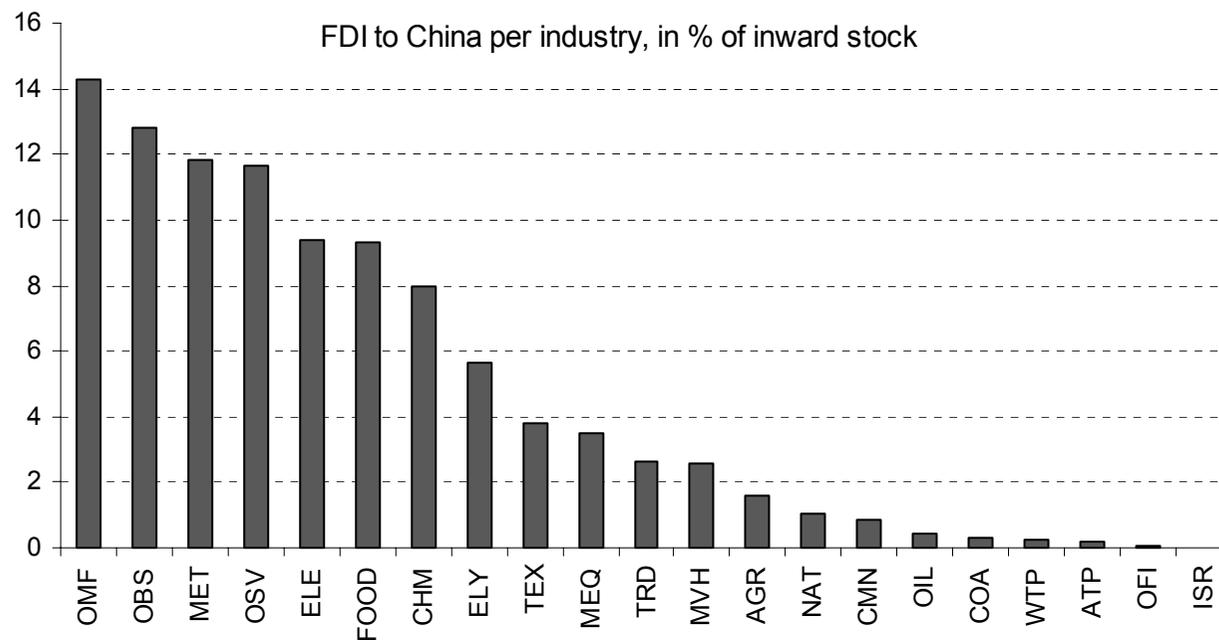
Source: authors calculations (FTAP 2001 database).

ANNEX 4: THE ECONOMICS OF FTAP

49.   This Annex presents a brief description of the FTAP (Foreign Direct Investment and Trade Analysis Project) model employed in the modelling exercise presented in Section III of the paper. FTAP models the activities of three economic 'agents' in each region: firms, government and a representative household (that is, private citizens). The model takes the standard GTAP framework of Hertel (1997) as a description of the *location* of economic activity, and then disaggregates this by *ownership*. For example, each industry located in China comprises Chinese-owned firms, along with foreign multinationals from various parent countries. Each of these firm ownership types is assumed to be making its own independent choice of inputs to production, according to standard GTAP theory. And each firm type has its own sales structure.

50.   On the purchasing side, agents make choices among the products or services of each firm type, distinguished by both ownership and location, and then among the individual (and symmetric) firms of a given type — the model recognises the firm-level product differentiation associated with monopolistic competition. Firms choose among intermediate inputs and investment goods, while households and governments choose among final goods and services.

51.   Agents are assumed to choose first among products or services from domestic or foreign locations, with a CES elasticity of substitution of 5. They then choose among particular foreign locations, and among ownership categories in a particular location, both with a CES elasticity of substitution of 10. Finally, they choose among the individual firms of a particular ownership and location, with a CES elasticity of substitution of 15. With firm-level product differentiation, agents benefit from having more firms to choose among, because it is more likely that they can find a product or service suited to their particular needs[1]. (see Figure A4.1).

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[1]   The first two choices, among domestic and foreign locations, are identical to the choices in the original GTAP model. They have been parameterised using values, 5 and 10, that are roughly twice the standard GTAP Armington elasticities. Two reasons can be given for doubling the standard elasticities. One is that only with such elasticities can GTAP successfully reproduce historical changes in trade patterns (Gehlhar, 1997). The other is that higher elasticities accord better with notions of firm level product differentiation

Figure A4.1. Structure of demand in FTAP
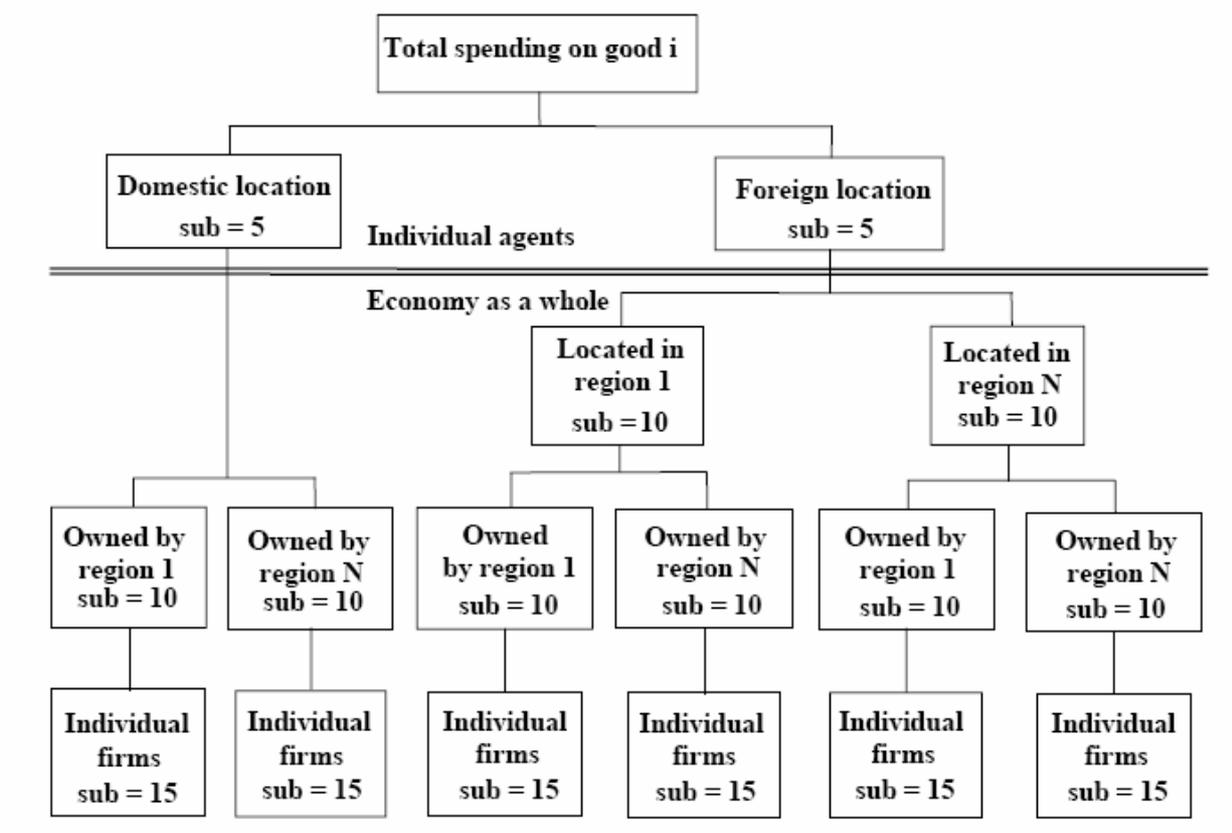
Source: Hanslow *et al*. (1999), "The Structure of the FTAP model".

52. On the demand side, from a host region's perspective, each host region has two types of firms in each sector: domestic firms (the parent firm of the local multinational) and various foreign affiliates. Firms are identifiable by location (sector of the host region) and by ownership (home region). Foreign affiliates combine their home region's capital with the host region's labour, land and natural resources to produce goods and services for the host region's consumers and exports. Within each sector, domestic firms and foreign affiliates produce differentiated products.

53. Consumers in the host region are assumed to allocate a fixed nominal share of their income among goods and services. Consumers' utility is assumed to increase with the number of varieties available for a product as well as with the quantities of different products. Foreign produced goods and services can be delivered via cross-border supply or by foreign affiliates in the host region. Most imported goods and services are assumed to be imperfect substitutes with their domestically produced equivalents.

54. Given these characteristics, an increase in the quantity demanded of services provided by foreign affiliates in a host region increases the commercial presence of these affiliates. An increase in the quantity demanded can be triggered by a fall in their output prices and production costs (that is, an increase in supply).

55. Supply: The representative household is assumed to own all primary factors of production: land, natural resources, capital and labour. The supplies of land, natural resources and labour are given in each region. Land and natural resources are used only by the primary industries sector and in fixed quantities. Labour is assumed to be mobile among sectors within each region, but not between regions. Capital is

mobile among sectors within each region and between regions. With respect to capital allocation across regions and sectors, FTAP follows the imperfect transformation among types of wealth developed by Petri (1997).

Figure A4.2. FTAP asset supply function
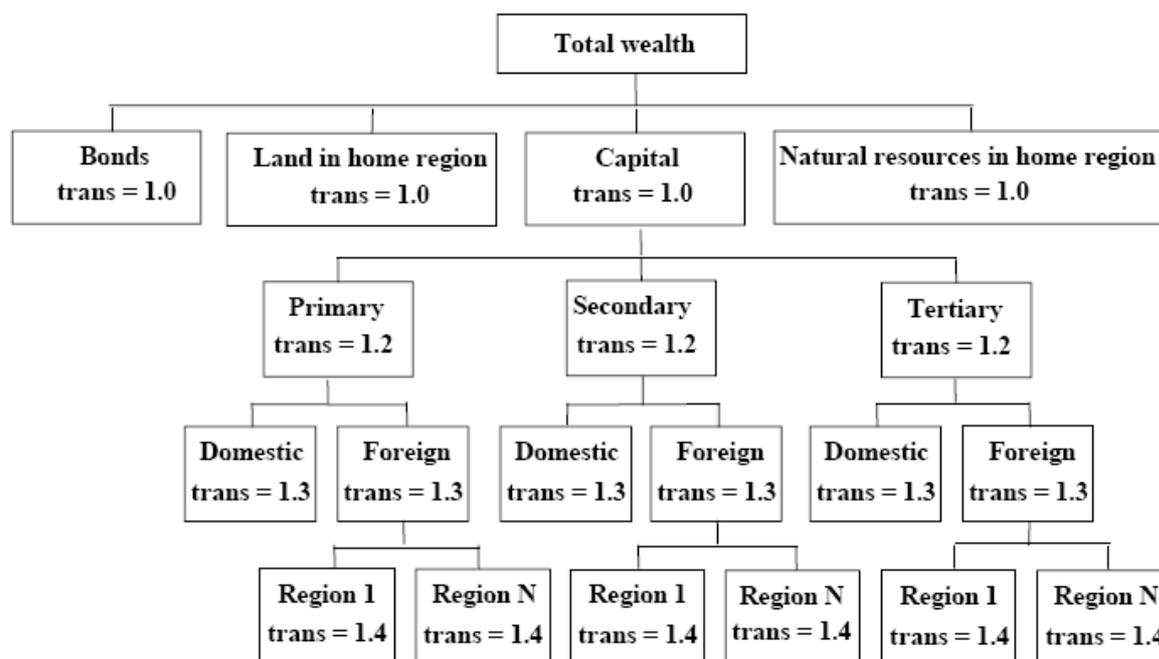
56.   Investors in each economy first divide their wealth between 'bonds' (which can be thought of as any instrument of portfolio investment), real physical capital, and land and natural resources in their country of residence. This choice is governed by a CET semi-elasticity of 1, meaning that a one percentage point increase in the rate of return on real physical capital, for example, would increase the ratio of real physical capital to bond holdings by 1%. A bond is a bond, irrespective of who issues it, implying perfect international arbitrage of rates of return on bonds. However, capital in different locations is seen as different things. Investors next choose the industry sector in which they invest (with a CET semi-elasticity of 1.2). They next choose whether to invest at home or overseas in their chosen sector (with a CET semi-elasticity of 1.3). Finally, they choose a particular overseas region in which to invest (with a CET semi-elasticity of 1.4).

57.   Two levels of direct capital investment are observed. The multinational firm in a given sector makes the decision to invest in its own operations within a given sector across regions, while the regional investor makes the decision to invest in the region's own firms across sectors. The regional investor can only invest its capital overseas through its investment in the region's multinational firms.

58.   Both levels of direct investment are driven by the same return maximization behaviour. At the firm level, for each multinational firm, the return can only be maximised if its home parent firm and all its overseas affiliates generate an equal rate of return on every unit of capital they use. At the regional level, the return to total regional capital can only be maximised if locally originated multinational firms across all sectors generate an equal rate of return on every unit of capital they use.

ANNEX 5: MODELLING RESULTS

TABLE AND FIGURE ANNEX

Table A5.1. Product groups defined by reference to the GTAP Sectoral Classification

Product group	Product code	GTAP sectoral classification	GTAP code
Agriculture and fishing	AGR	Paddy rice, Wheat, Cereal grains nec, Vegetables and fruits, Oil seeds Sugar cane sugar beet, Plant-based fibers, Crops nec, Cattle sheep goats horses, Animal products nec, Raw milk, Wool silk-worm cocoons, Fishing	pdr, wht, gro, v_f, nuts,osd, c_b, pfb, ocr, ctl, oap, rmk wol, fsh
Natural resources	NAT	Forestry, Gas, Minerals nec	frs, gas, omn
Coal	COA	Coal	coa
Oil	OIL	Oil	oil
Food products and beverages	FOOD	Meat: cattle sheep goats horse, Meat products nec, Vegetable oils and fats, Dairy products, Processed rice, Sugar, Food products nec , Beverages and tobacco products	Cmt, omt, vol, mil, pcr, sgr ,ofd b_t
Textiles, clothing and leather	TEX	Textiles, Wearing apparel, Leather products	tex, wap lea
Chemicals and chemical products	CHM	Petroleum coal products, Chemical rubber plastic prods	p_c, crp
Chemicals and chemical products	OMF	Wood products, Paper products publishing Mineral products nec Manufactures nec	lum, ppp,nmm, omf
Metal products	MET	Ferrous metals, Metals nec, Metal products	i_s, nfm, fmp
Motor vehicles	MVH	Motor vehicles and parts	mvh
Machinery and equipment	MEQ	Transport equipment nec Machinery and equipment nec	otn ome
Electronic equipment	ELE	Electronic equipment	ele
Electricity das and water	EGW	Electricity, Gas manufacture distribution, Water	Ely, gdt ,wtr
Construction	CNS	Construction	cns
Wholesale trade	TRD	Trade	trd
Land transport	OTP	Transport nec	otp
Water transport	WTP	Sea transport	wtp
Air transport	ATP	Air transport	atp
Post and communications	CMN	Communication	cmn
Banking	OFI	Financial services nec	ofi
Insurance	ISR	Insurance	isr
Business activities	OBS	Business services nec	obs
Other services	OSV	Recreation and other services, PubAdmin/Defence/Health/Educat Dwellings	Ros, osg ,dwe

Source: GTAP 6.

Table A5.2. Regions defined by reference to the GTAP-5 regions

Region	GTAP code	Country
Australia	AUS	Australia
New Zealand	NZL	New Zealand
Canada	CAN	Canada
China		
Hong Kong–China		
EU15	AUT	Austria
	BEL	Belgium
	DNK	Denmark
	FIN	Finland
	FRA	France
	DEU	Germany
	GRC	Greece
	IRL	Ireland
	ITA	Italy
	LUX	Luxembourg
	NLD	Netherlands
	PRT	Portugal
	ESP	Spain
	SWE	Sweden
	GBR	United Kingdom
WEU	HUN	Hungary
	POL	Poland
	CHE	Switzerland
	TUR	Turkey
	LTV	Latvia
	LTU	Lithuania
	EST	Estonia
	CZE	Czech Republic
	SVK	Slovak Republic
	SLV	Slovenia
	XEF	Rest of EFTA including Iceland, Lichtenstein, Norway
JPN	JPN	Japan
KOR	KOR	Korea
MEX	MEX	Mexico
USA	USA	United States of America
Russia	RUS	Russia
ROW	Rest of the World	All countries/regions not mentioned above
List of countries from the ROW	ARG	Argentina
group presented in the Charts A3.3 A3.3 to A3.7	BOL	Bolivia
	BRA	Brazil
	MYS	Malaysia
	SGP	Singapore
	THA	Thailand
	TWN	Chinese Taipei
	XCB	Rest of Caribbean including Anguilla, Aruba, Cayman Islands, Cuba, Guadalupe, Martinique, British Virgin Islands
	XEA	Rest of Asia including Macao, Mongolia and the Democratic People's Republic of Korea
	XME	Rest of Middle East including Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen

Source: GTAP 6.

Table A5.3. China's average trade-weighted tariffs by trading partner and product

in the baseline, year 2001

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	Average for product category
Agriculture and fishing	19.3	12.9	0.0	27.1	23.9	9.0	14.5	20.7	68.4	4.5	21.0	11.9	65.1	50.4
Natural resources	0.0	0.0	0.0	3.0	0.3	2.9	2.8	1.2	2.3	0.1	1.5	2.8	0.5	0.6
Coal	4.5	4.5	0.0	0.0	4.3	3.5	0.0	0.0	4.5	0.0	3.6	0.0	4.1	4.3
Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food products and beverages	17.1	20.3	0.0	33.5	16.7	24.3	22.2	19.5	18.5	9.6	24.5	17.4	15.4	18.3
Textiles, clothing and leather	18.6	10.8	0.0	21.7	19.3	21.7	18.8	10.5	17.0	13.0	16.7	17.5	18.0	19.4
Chemicals and chemical products	15.6	10.6	0.0	14.5	9.1	12.6	11.6	8.7	10.9	14.2	11.4	10.1	15.7	12.9
Other manufacturing	14.7	8.0	0.0	14.1	3.3	14.6	16.0	2.3	10.4	18.5	14.5	14.3	9.9	11.7
Metal products	11.4	7.2	0.0	4.7	5.5	8.0	9.4	4.2	5.3	7.1	9.0	4.2	6.4	7.5
Motor vehicles and parts	22.5	14.9	0.0	17.8	17.6	42.3	47.7	32.5	30.3	23.9	36.2	43.9	35.4	38.1
Machinery and equipment	13.4	12.4	0.0	13.8	6.0	13.0	12.9	8.0	10.3	14.5	12.1	12.8	13.5	12.1
Electronic equipment	11.6	10.9	0.0	10.0	12.8	10.5	11.3	11.4	10.2	9.2	10.8	11.3	8.9	10.1
Average for partner country	10.8	11.9	0.0	4.7	6.3	13.6	13.4	10.0	13.6	7.6	10.9	8.4	12.2	

After implementation of WTO accession commitments

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	Average for product category
Agriculture and fishing	18.9	8.3	0.0	10.0	15.3	8.1	10.8	19.6	4.7	6.3	20.2	9.3	6.3	9.7
Natural resources	0.0	0.0	0.0	3.0	0.2	2.9	2.8	1.2	2.2	0.1	1.5	2.7	0.6	0.5
Coal	4.5	4.5	0.0	3.5	4.3	3.5	4.1	5.0	4.5	3.7	4.8	4.4	4.2	4.4
Oil	0.0	0.0	0.0	0.0	0.0	3.0	0.0	6.0	0.2	3.0	0.1	0.0	0.0	0.0
Food products and beverages	11.5	10.0	0.0	17.5	9.8	13.8	14.8	9.6	11.2	5.3	12.0	11.1	10.9	11.2
Textiles, clothing and leather	16.0	10.1	0.0	13.7	12.0	9.2	9.4	5.3	8.9	6.8	9.5	9.4	8.6	9.6
Chemicals and chemical products	8.6	6.9	0.0	7.2	6.0	7.2	6.4	5.1	6.6	7.7	7.1	6.7	11.4	8.2
Other manufacturing	7.2	3.5	0.0	7.5	1.4	10.9	9.8	0.8	6.2	9.9	8.6	8.7	5.9	7.2
Metal products	6.0	3.8	0.0	3.7	4.4	5.4	6.0	3.1	3.6	4.3	5.9	3.6	4.9	5.1
Motor vehicles and parts	12.2	10.3	0.0	9.2	11.9	15.9	18.3	11.4	13.8	8.9	14.6	16.3	13.9	15.0
Machinery and equipment	6.9	6.4	0.0	7.5	5.0	6.7	6.7	4.9	5.2	7.8	6.9	7.7	7.4	6.6
Electronic equipment	1.1	0.8	0.0	2.0	4.0	2.4	4.2	1.0	0.6	0.9	1.4	1.9	1.2	1.8
Average for partner country	8.0	6.5	0.0	2.6	4.4	6.2	6.8	6.1	4.0	2.0	5.3	4.8	5.1	

Chart A5.1. China's average trade-weighted tariffs by trading partner (baseline, year 2001)

baseline ▪ after WTO commitments are implemented
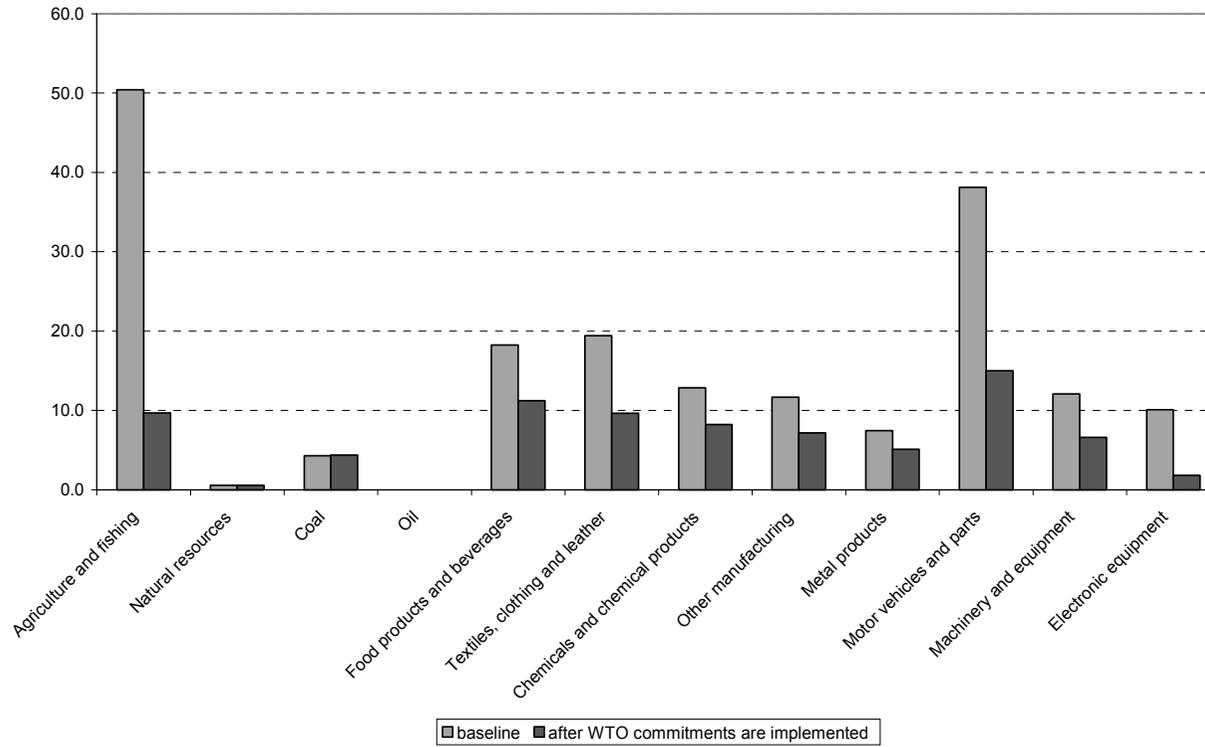
Source: Authors calculations based on GTAP 6.

Chart A5.2. China's average trade-weighted tariffs by product category (baseline, year 2001)

baseline ▢ after WTO commitments are implemented ▣
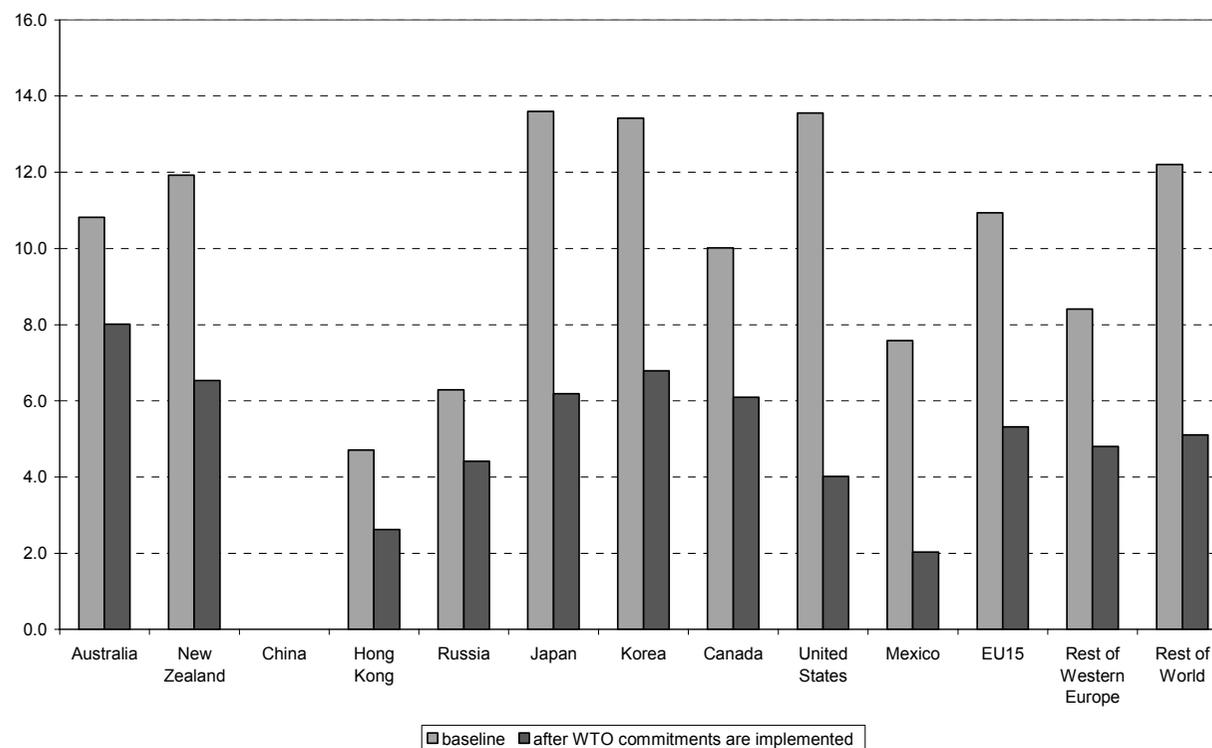
Source: Authors calculations based on GTAP 6.

Table A5.4. Services tax equivalents in China (before and after the implementation of its GATS commitments)

	China	China WTO
Banking mode 1	2.0	0.06
Banking mode 3	21.5	8.17
Insurance mode 1	130.3	67.89
Insurance mode 3	88.2	34.80
Telecommunication mode 1	15.7	7.06
Telecommunication mode 3	38.3	25.95
Trade mode 1	13.7	6.61
Trade mode 3	7.2	2.06
Professional services mode 1	107.3	43.91
Professional services mode 3	10.3	4.78

Source: Authors calculations based on the methodology presented in OECD(2005j) [TD/TC/WP(2005)36].

Table A5.5. Welfare decomposition of results of implementation of China's WTO commitments in the area of goods (USD million)

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	Total
Total welfare change	-227	14	13,761	1,072	-142	2,451	647	-232	4,272	-164	3,899	-36	-1,149	24,167
Main components of welfare change														
Allocative efficiency	-1	-1	20,804	-39	-25	224	102	91	1,090	-67	1,978	-34	-556	23,566
Net capital endowment	-3	-2	839	31	-1	41	17	-7	-114	-4	-40	-34	-284	438
Terms of trade	-116	-5	-7,098	309	-53	1,179	439	48	3,646	-240	2,425	-157	-377	0
Foreign debt effects	-141	-5	-76	77	-94	1,037	-1	-422	200	-290	266	184	-735	0
FDI effects	8	21	-1,559	696	26	-16	78	35	-224	378	-593	48	1,102	0
FDI-related rents	2	0	19	-9	1	-9	-4	13	-63	59	-32	-4	26	0
Product variety	26	6	832	7	4	-1	19	10	-277	-5	-182	-47	-325	68
Other	-2	0	0	0	0	-4	-2	-1	14	6	78	7	0	95

Table A5.6. Welfare decomposition of results of full liberalisation by China in the area of goods (USD million)

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	Total
Total welfare change	-45	69	15,952	2,009	479	6,280	2,179	-78	4,614	-30	-116	522	2,700	34,535
Main components of welfare change														
Allocative efficiency	41	12	29,086	-43	51	835	740	111	1,219	-103	1,884	35	363	34,229
Net capital endowment	-5	-3	958	15	0	84	37	-8	-332	-10	-66	-43	-384	244
Terms of trade	132	24	-12,711	934	77	2,474	1,052	148	4,533	-278	2,698	-5	923	0
Foreign debt effects	-241	38	-377	267	378	3,082	388	-448	-452	-327	-3,770	574	889	0
FDI effects	14	-2	-2,480	1,139	-14	-23	33	83	222	570	-720	9	1,169	0
FDI-related rents	-3	-4	711	-323	-11	-104	-77	40	-235	121	-201	8	79	0
Product variety	17	4	704	21	-1	-65	10	-4	-358	-7	-109	-69	-332	-191
Other	0	0	61	1	-1	-3	-4	1	16	5	168	14	-6	253

Source: FTAP model projections.

Table A5.7. Welfare decomposition of results of implementation of China's WTO commitments in the area of services (USD million)

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Europe	Rest of World	Total
Total welfare change	20.47	-2.37	2820.99	278.19	-26.51	62.90	26.25	2.74	614.97	19.38	388.65	-1.28	281.69	4486.06
Main components of welfare change														
Allocative efficiency	8.70	0.49	3903.15	-4.96	-3.40	-7.37	12.73	13.77	73.78	6.59	104.16	-4.04	36.62	4140.23
Net capital endowment	-1.30	0.16	139.87	15.69	-0.12	5.29	2.27	-0.98	-26.93	-6.33	20.49	-0.27	-5.17	142.68
Terms of trade	16.82	1.86	-1595.20	449.84	-28.85	80.85	6.90	-6.12	478.91	-16.12	446.83	48.39	115.90	0.00
Foreign debt effects	4.52	0.28	-137.79	5.84	5.34	-12.19	0.33	12.68	31.40	8.77	70.47	-6.03	16.38	0.00
FDI effects	4.21	-3.44	-1103.80	229.22	2.07	100.02	55.07	8.20	236.64	30.94	23.60	-10.20	427.49	0.00
FDI-related rents	-6.90	-1.03	934.20	-426.90	-0.11	-80.82	-38.33	-10.22	-79.48	-0.21	-85.92	-5.43	-198.85	0.00
Product variety	-5.57	-0.68	550.47	9.40	-1.47	-23.08	-12.75	-14.61	-99.28	-4.24	-184.53	-23.01	-109.54	81.11

Source: FTAP model projections.

Table A5.8. Welfare decomposition of results of full liberalisation by China in the area of services (USD million)

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Europe	Rest of World	Total
Total welfare change	-99	-3	11,973	719	-191	1,089	-63	-377	575	-93	-96	66	230	13,730
Main components of welfare change														
Allocative efficiency	-3	-1	13,186	-17	-29	-54	-30	-20	-3	-15	22	-20	-94	12,922
Net capital endowment	-5	-1	477	19	-3	-8	3	-12	-239	-14	-26	-16	-176	-1
Terms of trade	35	6	-2,181	992	-81	-4	-47	-26	610	-49	503	36	205	0
Foreign debt effects	-129	-6	-249	80	-85	1,225	-13	-385	58	-228	256	169	-694	0
FDI effects	24	1	-2,984	620	14	212	132	90	503	188	-350	-57	1,607	0
FDI-related rents	-13	-1	2,193	-1,006	2	-194	-89	-4	-232	28	-247	-13	-423	0
Product variety	-7	-1	1,275	30	-10	-91	-21	-20	-124	-3	-289	-36	-194	509

Source: FTAP model projections.

Table A5.9. Implementation of WTO commitments by China in the area of goods: percentage changes in stocks of FDI held in China investing region and sector

	Australia	New Zealand	China	Hong Kong-China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World	All countries
Agriculture and fishing	-1.27	-1.34	0.27	-1.27	-1.32	-1.31	-1.32	-1.31	-1.34	-1.3	-1.32	-1.33	-1.32	0.4
Natural resources	-0.42	-0.46	0.22	-0.39	-0.44	-0.42	-0.45	-0.43	-0.44	-0.42	-0.44	-0.45	-0.44	0.21
Coal	-0.07	-0.1	0.19	-0.03	-0.08	-0.07	-0.09	-0.08	-0.08	-0.06	-0.08	-0.09	-0.08	0.15
Oil	-0.21	-0.25	0.2	-0.17	-0.23	-0.21	-0.23	-0.22	-0.22	-0.2	-0.22	-0.23	-0.23	0.15
Food products and beverages	0.69	0.63	0.13	0.74	0.68	0.7	0.66	0.69	0.69	0.72	0.69	0.68	0.67	0.11
Textiles, clothing and leather	2.8	2.76	0.03	2.71	2.8	2.75	2.69	2.83	2.8	2.83	2.82	2.82	2.72	-0.51
Chemicals and chemical products	-0.22	-0.27	0.19	-0.16	-0.25	-0.23	-0.27	-0.23	-0.24	-0.21	-0.24	-0.25	-0.25	0.24
Other manufacturing	0.11	0.06	0.17	0.16	0.09	0.11	0.07	0.1	0.09	0.12	0.09	0.08	0.08	0.22
Metal products	-0.13	-0.17	0.19	-0.05	-0.15	-0.12	-0.15	-0.13	-0.14	-0.11	-0.14	-0.15	-0.14	0.2
Motor vehicles and parts	-2.23	-2.27	0.29	-2.02	-2.26	-2.23	-2.19	-2.25	-2.25	-2.23	-2.25	-2.27	-2.2	0.29
Machinery and equipment	-0.21	-0.26	0.19	-0.14	-0.24	-0.22	-0.24	-0.23	-0.24	-0.2	-0.23	-0.25	-0.24	0.3
Electronic equipment	1.18	1.13	0.2	1.14	1.17	1.18	1.11	1.18	1.17	1.2	1.17	1.16	1.11	0.23
Electricity	0.14	0.08	0.17	0.19	0.12	0.13	0.09	0.13	0.12	0.15	0.12	0.11	0.11	0.17
Wholesale trade	0.47	0.42	0.16	0.51	0.44	0.46	0.43	0.46	0.45	0.48	0.45	0.44	0.44	0.17
Water transport	0.41	0.36	0.15	0.45	0.38	0.4	0.36	0.39	0.38	0.42	0.38	0.37	0.38	0.25
Air transport	0.46	0.41	0.17	0.51	0.43	0.45	0.42	0.45	0.44	0.47	0.44	0.43	0.43	0.16
Post and communications	0.41	0.36	0.16	0.46	0.38	0.4	0.37	0.4	0.39	0.42	0.39	0.38	0.38	0.16
Finance	0.41	0.36	0.16	0.47	0.39	0.4	0.37	0.4	0.39	0.42	0.39	0.38	0.38	0.14
Insurance	0.35	0.29	0.17	0.4	0.32	0.34	0.31	0.33	0.32	0.35	0.33	0.31	0.32	0.13
Business activities	0.34	0.29	0.17	0.36	0.31	0.33	0.29	0.32	0.32	0.35	0.32	0.3	0.31	0.16
Other services	0.5	0.45	0.15	0.54	0.48	0.49	0.46	0.49	0.48	0.51	0.48	0.47	0.47	0.17

Source: FTAP model projections.

Table A5.10. China's WTO accession in the area of services: percentage changes in stocks of FDI held in China investing region and sector

	Australia	New Zealand	China	Hong Kong China	Russia	Japan	Korea	Canada	United States	Mexico	EU15	Rest of Western Europe	Rest of World
Agriculture	0.20	0.20	-0.07	0.28	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Natural resources	0.41	0.41	-0.09	0.50	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Coal	0.26	0.26	-0.08	0.32	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Oil	0.21	0.22	-0.07	0.29	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.22	0.21
Food products and beaverages	0.11	0.11	-0.06	0.20	0.11	0.11	0.10	0.11	0.10	0.11	0.10	0.11	0.10
Textiles, clothing and leather	0.30	0.31	-0.06	0.38	0.30	0.30	0.29	0.30	0.30	0.30	0.30	0.31	0.30
Chemicals and chemical products	0.25	0.25	-0.07	0.34	0.25	0.25	0.24	0.25	0.25	0.25	0.25	0.25	0.25
Other manufacturing	0.20	0.20	-0.07	0.28	0.20	0.19	0.18	0.20	0.19	0.19	0.19	0.20	0.19
Metal products	0.27	0.27	-0.07	0.34	0.27	0.27	0.25	0.27	0.27	0.27	0.27	0.27	0.26
Motor vehicles and parts	0.21	0.21	-0.07	0.29	0.21	0.20	0.19	0.20	0.20	0.21	0.20	0.21	0.20
Machinery and equipment	0.32	0.32	-0.08	0.39	0.32	0.31	0.31	0.31	0.31	0.32	0.31	0.32	0.31
Electronic equipment	0.38	0.38	0.06	0.44	0.38	0.37	0.35	0.38	0.37	0.38	0.37	0.38	0.36
Electricity	0.20	0.20	-0.07	0.29	0.20	0.20	0.19	0.20	0.19	0.20	0.20	0.20	0.19
Wholesale trade	3.45	3.45	-0.04	3.46	3.46	3.45	3.42	3.45	3.45	3.46	3.45	3.46	3.44
Water transport	0.17	0.17	-0.06	0.26	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Air transport	0.23	0.23	-0.06	0.32	0.23	0.23	0.22	0.23	0.23	0.23	0.23	0.23	0.23
Post and communications	3.81	3.81	-0.05	3.89	3.81	3.81	3.77	3.81	3.81	3.81	3.81	3.81	3.80
Finance	7.14	7.14	-0.06	7.27	7.14	7.14	7.13	7.14	7.13	7.14	7.13	7.14	7.14
Insurance	21.74	21.74	0.28	22.00	21.74	21.74	21.73	21.74	21.74	21.74	21.74	21.75	21.74
Business activities	1.02	1.02	0.04	1.02	1.02	1.02	0.99	1.02	1.02	1.02	1.02	1.02	1.02
Other services	-0.10	-0.10	-0.06	0.00	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10

Source: FTAP model projections.