Estimating the Effects of China's accession to the World Trade Organisation

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Abstract:

Accession to the World Trade Organization (WTO) marks a new era in China's economic reform. In this new era, state capital will lose its dominance of pillar industries such as iron and steel, automobile, petrochemicals, non-ferrous metal, insurance, telecommunication, banking, wholesale, and utilities. This study uses a computable general equilibrium model of China to estimate the economic benefits from China opening its pillar industries to private foreign and domestic capital. The study anticipates that lowering direct entry barriers to private capital will boost productivity by encouraging new competition and foreign direct investment (FDI) inflows into these industries. In this study, the productivity gains from lowering direct entry barriers to FDI and domestic private capital are empirically estimated through a historical simulation of opening the light manufacturing industries. The opening of the light manufacturing industries to private capital happened in the early 1990s following a major policy shift marked by Deng Xiaoping's southern tour. From 1992, this policy shift led to a surge in China's inward FDI flows. The productivity gains estimated from the historical simulation are then used to simulate the opening of the pillar industries following China's WTO entry in 2001. As a result of the expected productivity gains in these pillar industries, this study concludes that WTO accession will not adversely affect production and employment in the pillar manufacturing industries, such as the automobile and parts industry. This result contrasts with the findings of most general equilibrium analyses of China's WTO entry that focus on the removal of tariffs and non-tariff barriers to merchandise trade. In the long term, productivity gains related to WTO accession should place China in a position to become an important production base for capital-intensive manufactured products as well as light manufacturing.

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1. Background and introduction

China's entry to the World Trade Organisation (WTO) marks the beginning of a new era in China's economic reform. In the first era, the 1980s, the Chinese Government gradually introduced market practices and prices to a few selected sectors and factor markets. In the second era, the 1990s, the Government let market forces discipline most economic sectors except pillar manufacturing and services industries; these it kept largely under state control along with capital, land and formal urban labour markets.

The major policy shift of the early 1990s – marked by Den Xiaoping's southern tour - opened light manufacturing industries to foreign direct investment (FDI). The *light manufacturing industries* are consumer goods industries such as textile, clothing, footwear, toys, electrical and electronic appliances. From 1992, this policy change led to a surge in FDI flows into China (Figure 1). Within a few years, Hong Kong and Taiwan clothing and electronics factories established themselves along China's eastern coast. The policy change also spurred domestic non-state investment (notably township enterprises) in liberalised industries. As a result, the non-state sector exposed smaller state-owned enterprises (SOEs) in light manufacturing industries to intensive competition.

However, by the late 1990s, the dominant position of large SOEs in industries the central government labelled pillar remained almost untouched (Mai, 2001). The *pillar industries* are capital-goods manufacturing and infrastructure services industries, such as iron and steel, non-ferrous metals, oil and petrochemicals, automobiles, banking, insurance, telecommunications, wholesale, transport and storage, and utilities. The Government protected large SOEs in pillar industries through direct barriers to entry and high tariffs.

The third reform era commenced as China started to prepare itself for WTO entry in

the late 1990s. The accession terms of China's WTO entry requires the Government to liberalise substantially FDI into the pillar industries (Mai and Lou 1999 and Mai 2001). China started preparing these sectors for competition long before it confirmed its WTO membership in late 2001. In 1999, China and the United States completed their bilateral negotiations on China's entry terms. This accelerated the restructuring of large SOEs in the pillar industries so that they could compete with new foreign and local private entrants on a more equal footing.

In 2000, the Government packaged the best assets of the two largest enterprises, the domestic state owned oil monopolies, into stock companies and partially privatised them via the Hong Kong, London and New York stock markets (for details see Mai, 2002). This marked the beginning of a wave of partial privatisations of giant SOEs that dominated or monopolised key manufacturing and services industries. In 2001, the Government listed the third oil monopoly overseas. A similar industry wide overhaul is underway in other pillar industries including telecommunications, iron and steel, railways and power generation.

These industry wide reforms combined with WTO-induced legal and regulatory reforms are likely to provide an opportunity for a new surge in FDI into China (Economic Analytical Unit, 2002). While major policy shifts in the early 1990s introduced market competition into the light manufacturing industries, the main impact of China's entry into the WTO is likely to be the gradual withdrawal of the state from its dominant position in the pillar industries. This should see China fully embrace a market system, generating significant productivity and income gains.

Many researchers have used computable general equilibrium (CGE) models to analyse the economic impacts of China's WTO accession. A rich body of literature forecasting the likely impacts of China's WTO-entry has emerged (for examples, Zhai and Li 2000, Li and Lejour 2001, Lejour 2001, Fan and Zheng 2001, Ianchovichina and Martin 2001, Li, Zhai and Liu 2001, Francois and Spinanger 2002). Most of the literature is devoted to assessing the effects of WTO-related reductions in tariffs and non tariff barriers. These studies identified very small gains in terms of real GDP from China's WTO entry, mostly around 1-3 per cent of GDP (for a discussion see

Mai 2003). This is due to the fact that the most significant gain of China's WTO-entry comes from the liberalisation of investment and services trade[1].

Analysing the effects of investment and services-trade liberalisation is a challenge to policy analysts using quantitative methods, especially CGE modelling. However, it is of central importance in assessing the major impact of China's WTO entry. Reductions in tariffs and non-tariff barriers are likely to generate only a relatively small share of the WTO entry-related benefits. In part this is because China's actually levied tariff rates have been quite low[2]. Due to the difficulty of estimating tariff equivalents of services trade barriers, most modelling of WTO entry measures only the effects of merchandise trade reform. As discussed above, the most important impact of China's WTO entry is the opening up of pillar industries to foreign and domestic non-state capital; this removal of direct entry barriers cannot be captured by reductions in import barriers. Hence, CGE modelling of tariff removal cannot effectively estimate benefits from services trade and investment liberalisation, arguably the most important component of China's WTO entry package.

This study contributes to the literature by focusing on analysing the productivity impacts of the investment liberalisation, particularly opening of China's pillar manufacturing and services industries to FDI.

The following sections present the methodology used, the major results regarding the impact on China of WTO accession, and concluding comments.

[1] The WTO definition of services trade includes the exporting countries establishing service outlets in the importing countries. Therefore the liberalisation of services trade is essentially an issue of investment liberalisation.

[2] Actually levied tariffs are measured by the value of tariff revenue collected divided by total value of imports. Although announced tariff rates were much higher, many importers avoided paying tariffs through legal and illegal loopholes, including special economic-zone exemptions, duty drawbacks, joint venture companies, smuggling, and abusing the duty drawback scheme.

2. Methodology

As discussed above, assessing the impact of opening pillar industries to non-state capital is the key to assessing the impact of China's WTO entry. A general equilibrium model of China, PRCGEM[3], adapted to run in a recursive dynamic fashion, is well suited for such an analysis. (See Appendix A, for a detailed description of the model and its industry structures.)

The modelling exercise has two parts. The first part is a historical simulation simulating the historical event of liberalising the light manufacturing industries that happened in the early 1990s. In the historical simulation, the model is informed of changes to statistically observed variables, such as GDP, consumption, industry output, and employment. The model estimates changes in the economy that cannot easily be observed statistically, such as industry wide changes in technology choice and productivity. Thus, the historical simulation provides estimates of productivity growth in different industries during a period when there is significant inflow of FDI mainly into the light manufacturing industries. The estimated difference in productivity growth in the liberalised light manufacturing industries and non-liberalised pillar industries provides input into the second part of the modelling exercise. The second part of the modelling exercise is a policy simulation simulating the liberalisation of the pillar industries that remained closed in the 1990s but are being liberalised following China's WTO entry. In the policy simulation, foreign and domestic private capital is allowed to flow into the pillar industries so that the productivity growth in these industries catches up with that of the previously-liberalised light manufacturing industries.

Traditionally, CGE models are used to conduct policy simulations. A policy simulation simulates the effects of exogenous changes, such as an exogenous productivity increase due to a policy change, on the usually observable variables such as GDP and industry output. The approach of using historical simulation to estimate

[3] PRCGEM was developed jointly by CoPS, Monash University, and IQTE, Chinese Academy of Social Sciences. For more details see Appendix A.

technical changes was developed systematically by Dixon and Rimmer with the MONASH model, a dynamic CGE model of Australia (Dixon and Rimmer 2002). This approach is applied in this study to obtain insights into the productivity improvements associated with China's opening of light manufacturing industries to FDI in the early 1990s.

The historical simulation also provides useful trends of shift in consumer tastes and industries' efficiency in using intermediate inputs. These estimates of 1990s preference and technological changes are used to assemble a baseline forecast, a business-as-usual case of the Chinese economy to 2010. The baseline forecast forms the reference case against which the effects of policy changes are measured. In particular, the effects of China's WTO-entry are measured as the deviation from the baseline (Figure 2).

2.1 Simulating changes in the Chinese economy in the early 1990s

The historical simulation, which covers the period 1991-96, "reverse engineers" the model to estimate shifts in technology and preferences. Usually endogenous variables of general equilibrium models including output, consumption, trade, and employment are made exogenous and naturally exogenous variables such as technological changes and shifts in consumer tastes are determined endogenously. This simulation estimates trends of technological changes by employing observed historical data between 1991 and 1996 for:

- macroeconomic variables such as real GDP, consumption, investment, imports and exports
- sectoral output, employment, consumption and trade.

The model then computes changes in:

- sectoral rates of return
- primary factor augmented technological change
- efficiency in the use of intermediate inputs

- consumer tastes.

The period of 1991-96 was selected because, following Deng Xiaoping's Southern Tour in the early 1990s, China experienced a surge in FDI in 1992 and 1993 and a consequent boom in economic activities, especially in the light manufacturing industries. However, from 1997, the Asian financial crisis and tightening monetary policy started to slow the economy; SOEs began to experience serious difficulties, triggering further efforts to liberalise the economy through WTO entry.

The data sources for the historical simulation are:

- China statistical yearbook, various issues
- China industrial statistical yearbook, various issues
- China labour statistics yearbook, various issues
- China township enterprises yearbook 1996
- China rural statistical yearbook
- China foreign trade statistical yearbook, various issues
- 1992 and 1997input-output tables of China.

The historical simulation of the opening up of the light manufacturing industries to FDI and local private capital yielded several interesting results.

- Relatively closed pillar industries on average experienced slower productivity improvement than the light manufacturing industries during this period. On average, primary-factor augmented productivity in pillar manufacturing industries grew 3.6 percentage points a year more slowly than in the light manufacturing industries.[4] Primary factor augmented productivity in the services sector improved 5.4 percentage points a year more slowly than in total manufacturing (Table 1).

[4] Primary factor augmented productivity improves when less primary factor units are required to produce a unit of output.

- From the 1990s, as Chinese production became more sophisticated, industries used less cotton textiles, wool textiles and electricity per unit of output and more motor vehicles, communication, insurance and finance per unit of output (Table 2)[5]
- Consumer tastes shifted in favour of higher value food products (such as fish and meat products) as well as clothing, motor vehicles, communication, education, insurance and tourism related services and shifted against coal (Table 3).
- Because they are less open to non-state investment and competition, pillar manufacturing and services industries achieved higher growth in rates of return to capital than light manufacturing industries during this period[6]. Hence, once liberalised, these previously protected sectors should attract considerable capital inflows. On average, rates of return of the pillar manufacturing industries grew 1.3 percentage points faster than that of the light manufacturing industries. The rates of return of Services industry grew 5.8 percentage points faster than that of the manufacturing industry, reflecting the greater barriers to entering services compared to manufacturing.

2.2 Baseline simulation: a reference case

Baseline simulation of the Chinese economy to 2010 provides a benchmark against which changes due to WTO entry are compared. For example, if we assume in the baseline China's GDP will grow at 7.6 per cent a year during 2000-2010 without WTO entry, GDP would grow from US$1,077 billion in 2000 to US$2,240 billion in 2010, in 2000 dollars. Then a WTO entry induced increase in real GDP of 10 per cent by 2010 would boost real GDP by US$224 billion in 2000 dollars (Figure 2).

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[5] The clothing industry moved away from cotton and wool textiles and into silk and synthetic textiles as it became more export oriented.

[6] The industry rates of return to capital here are in commercial terms, i.e., excluding the social welfare responsibilities of SOEs. In some cases, such as the telecommunication industry, profits soars regardless of the social welfare responsibilities of the large SOEs in the industry. This is due to rapidly growing domestic demand as well as the ban of new entrants into the industry.

In the baseline simulation, forecasts for macroeconomic indicators (growth in real GDP, consumption, investment, employment, exports and imports) by specialist forecasting agencies (including the World Bank, Economist Intelligence Unit, and Chinese Academy of Social Sciences) are incorporated into the model. The model is then used to project growth of different industries. The trend changes in technology and consumer tastes obtained from the historical simulation are also incorporated into the baseline simulation.

The baseline projections anticipate a more rapid growth in manufacturing output and services than in agricultural and mining, thereby continuing China's structural movement away from agriculture and mining into manufacturing and services (Table 4). Furthermore, services industry growth should be nearly as rapid as manufacturing growth (Table 4). This contrasts with the 1990s, when the service sector grew much more slowly than the manufacturing sector.

2.3 Simulating the effects of China's WTO entry

To compute the impact of China's WTO entry, the variables' endogenous and exogenous classifications are swapped back to a conventional policy closure. Hence, variables such as output and consumption are endogenous and variables such as technological changes are exogenous. The model thus computes changes in GDP, sectoral output and consumption in response to exogenous shocks.

To simulate the effects of China's WTO entry, we assume the following.

- Capital will flow into the pillar industries and dampen the rates of return to capital in these industries.
- Rates of productivity growth in the pillar manufacturing industries will catch up with that of light manufacturing industries.
- Rates of productivity growth in the pillar services industries will catch up with that of overall manufacturing industry average.

The modelling assumes the policy of liberalising pillar industries started in 2001 and will be complete by 2010. The sizes of the expected shocks to pillar manufacturing

industries from WTO entry are derived from the historically revealed gaps in the growth of productivity and rates of return between the pillar and light manufacturing industries. The sizes of the expected shocks to pillar services industries are derived from the historically revealed gaps in the growth of productivity and rates of return between services and total manufacturing.

3. Effects of WTO entry

The results of the policy simulation suggest that WTO entry will boost China's real GDP and encourage the Chinese economy to move into higher value-added activities (Tables 5 to 7).

3.1 Higher GDP

China's WTO entry is expected to boost all macroeconomic variables (Table 5). Liberalising pillar industries should raise average annual real GDP growth by 1.1 percentage points during 2000-2010 (column one). After completing pillar industry reforms in 2010, real GDP should be 10.7 per cent larger than without WTO reforms.

Higher capital stock and productivity growth together explain this real GDP boost post WTO entry. By opening its pillar industries, China will attract new capital investment into these sectors, lifting annual capital stock growth rates 0.9 percentage points above baseline levels. More rapid productivity growth in liberalised industries also boosts real GDP (Chart 1).

3.2 Output of all industries expands

Following China's WTO entry, output of all industries expands. Both supply and demand curves for both pillar and non-pillar industries shift outwards as a result of liberalising the pillar industries.

For the pillar industries, lowering direct entry barriers lead to inflow of foreign and domestic private capital. This, in turn, leads to faster productivity growth and lower costs of capital in these industries. There are therefore outward shifts in the supply curves for the pillar industries (Chart 1).

The outward shifts in the supply curves of the pillar industries lead to lower prices of capital goods produced by the pillar manufacturing industries and business services provided by the pillar services industries. The production costs of the non-pillar industries are therefore lowered leading to outward shifts in the supply curves for the non-pillar industries.

On the other hand, the higher real GDP leads to higher demand for consumer goods and services produced by the non-pillar industries. The demand curves for non-pillar industries therefore shift outwards.

The combined effects of the outward shifts in the supply and demand curves for the non-pillar industries lead to higher output in these industries. The expansion in the output of the non-pillar industries leads to higher demand for capital goods and business services produced by the pillar industries. The demand curves of the pillar industries therefore shift outwards. The combined effects of the outward shifts in the supply and demand curves for the pillar industries lead to higher output in these industries (Chart 1). The output of all industries thus expands following China's WTO entry (Table 6).

3.3 WTO entry encourages upgrading to higher value added activities

Like many newly industrialised Asian economies in their earlier stage of economic development, labour intensive manufacturing drove China's economic growth in the past couple of decades. Since the 1980s, successful upgrading into higher value added activities has become a major concern for the Republic of Korea, Taiwan, Hong Kong and Singapore. More recently upgrading also has become important for more developed coastal cities in China, whose wage rates are pricing them out of some labour intensive activities. This study suggests that WTO entry will encourage China to upgrade into higher value added activities and tracks this process.

The modelling finds that, as a result of the opening up of the pillar industries, the output of China's higher value-added pillar industries will expand more rapidly than light manufacturing industries (Table 6). This is because the policy reform for the WTO entry, i.e., the opening up of the pillar industries, allows the pillar industries to

catch up with the productivity growth of the light manufacturing industries that has been liberalised before. China is therefore likely to see a period of faster productivity growth in the pillar industries than in the light manufacturing industries due to the policy change. As the pillar industries in China become more competitive due to the faster productivity growth, the net exports of the higher value added products (such as motor vehicles and iron and steel) is likely to growth faster than the net exports of the light manufacturing products (such as clothing) (Table 7).

3.4 Consumption

The modelling anticipates in the next decade liberalising pillar industries will boost average annual consumption growth by 1 percentage point above the baseline scenario. Anticipated shifts in consumer tastes should expand demand for manufacturing and services products compared to agricultural products. Increasing consumer income following WTO entry will be allocated more to services, other food and clothing rather than basic consumption items such as grain and coal. The most rapid increase in demand will be for services including telecommunications, education and insurance (Table 6).

4. Concluding comments

Many computable general equilibrium studies estimating the effects of China's WTO accession focus on the effects of lowering tariff and non-tariff barriers. Consequently, these studies conclude automobile and other heavy industry output will contract following China's WTO accession (Zhai and Li, 2000, Fan and Zheng 2001 and Francois and Spinanger, 2002). However, by modelling the impact of opening pillar industries to foreign and domestic private investment, this study concludes China's pillar manufacturing industries should thrive following WTO accession.

Liberalising entry to pillar industries will lead to inflow of foreign and domestic private capital into these industries. The inflow of private capital will, in turn, improve their productivity and reduce their capital costs and therefore shift out their supply curves. The income growth from WTO accession induced by the productivity boost and inflow of capital also should shift out the demand curve for these sectors'

products, as well as light manufacturing, services and, to a lesser extent, agricultural products. Hence, in the medium to long term these pillar industries should expand following WTO accession.

Within China, some commentators are concerned that, even though pillar industry could benefit from WTO accession in terms of productivity and output, the Government inevitably will own a shrinking share of these industries. However, the Chinese Government now is convinced that owning a part of a growing pie is better than owning all of a shrinking pie. Inefficient SOEs draining resources through the banking system have become a critical hurdle to China's economic development (Economic Analytical Unit, 2002). The recent lessons of the Asian financial crisis also indicate weak banks and corporates can crucially weaken and expose whole economies. This hurdle only can be overcome by pushing China's economic reform process further, including by liberalising entry to pillar industries, so as to fully embrace a market system. Hence, reforming these previously closed pillar industries will be a major benefit of WTO accession.

Appendix A The PRCGEM Model

PRCGEM is an applied general equilibrium model of the Chinese economy, developed jointly by the Centre of Policy Studies, Monash University, and the Institute of Quantitative and Technical Economics at the Chinese Academy of Social Sciences (For details see Zheng and Fan, 1999, or Adams et al., 2000). The model distinguishes 118 industries or sectors, but a more aggregated version of PRCGEM is used in this study. (See the 33 industry aggregation in Appendix Table A.1.)

The theoretical structure of PRCGEM follows the Australian ORANI-F model, (Horridge et al., 1993). Its main assumptions are listed below.

- Producers:
    - operate in single product industries
    - are price takers and cost minimisers
    - and their behaviour can be characterised by nested Leontief/CES production functions, that allow substitution between domestic and imported sources of produced inputs and between labour, capital and land.
- Investors:
    - create capital goods from domestic and imported commodities
    - are price takers and cost minimisers
    - operate production functions that can substitute between imported and domestic inputs
- Households:
    - are disaggregated into “peasant” and “non-peasant”
    - spend on aggregate in proportional to GDP
    - operate utility functions allowing substitution between commodities, LES, and domestic and imported sources.

- International exports:
    - can be characterised by a CET specification of imperfect transformation in production between two versions of each domestically produced good: one for domestic consumption, one for export.
    - operate on downward sloping demand curves for individual exports.
- Government:
    - consumption moves in line with aggregate household income
- Prices:
    - have basic values determined only by input prices due to zero pure profit conditions and constant returns to scale
    - paid by purchasers are the sum of basic values and sales taxes
    - are money neutral, depending only on relative prices, so one price, often the exchange rate, must be taken as an exogenous numeraire.
- Markets
    - for commodities clear
    - but labour markets need not clear.

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Appendix Table A.1

33-industry aggregation of PRCGEM

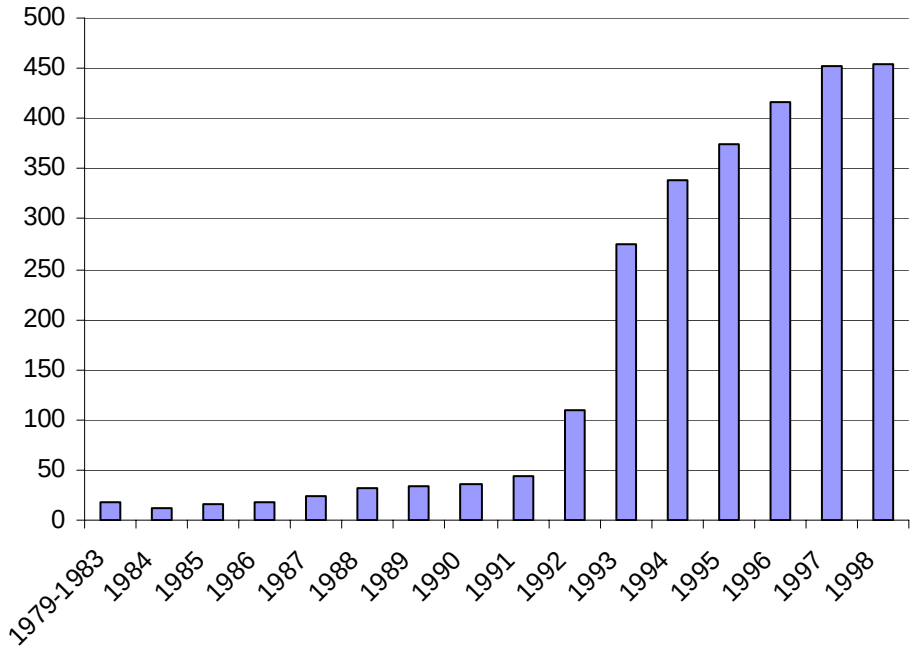
Sectors modeled in historical and policy simulations

	Industries
1	Grains
2	Other crops
3	Livestock
4	Other agriculture
5	Coal
6	Natural gas
7	Ferrous metal ore
8	Non-ferrous metal ore
9	Other mining
10	Egg and dairy products
11	Sugar refining
12	Wines
13	Other food products
14	Cotton textile
15	Wool textile
16	Clothing
17	Motor vehicles and parts
18	Iron and steel
19	Non-ferrous metal products
20	Other manufacturing
21	Electricity
22	Other infrastructure
23	Construction
24	Communication
25	Wholesale
26	Retail
27	Transport
28	Health
29	Education
30	Finance
31	Insurance
32	Tourism related industries
33	Other services

Note: Tourism related industries include hotels and restaurants, entertainment, personal services, and air and rail passenger transportation. The transport industry excludes air and rail passenger transport.

Figure 1

Total amount of FDI actually used, 100 million USD



Source: China Statistical Yearbook, various issues.

Figure 2

History, baseline forecasts and policy simulations

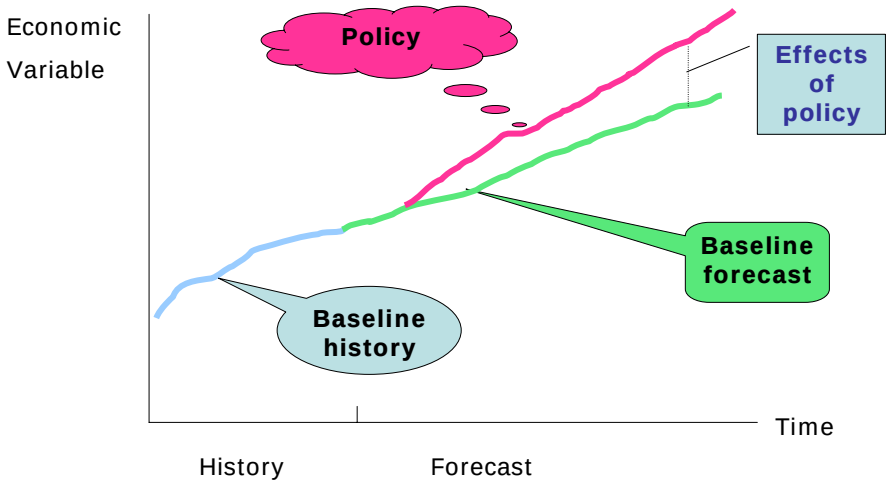


Chart 1

Output of all industries expands following China's WTO entry

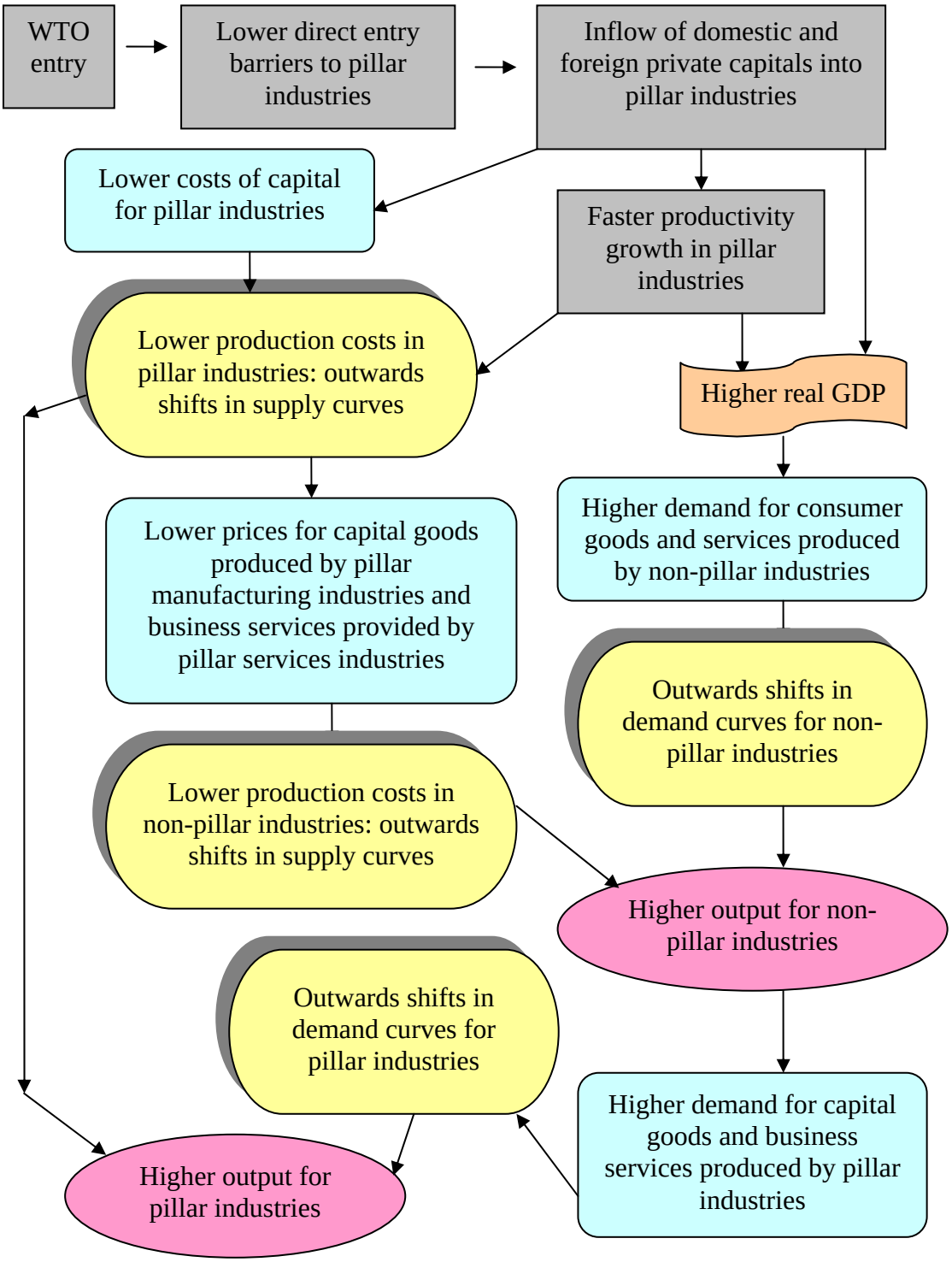


Table 1

Primary factor augmented productivity change by groups of industries

Annual percentage change 1991-96

Industries	Rates of changes in productivity %
Agriculture	6.2
Mining	2.1
Manufacturing	8.3
Light manufacturing industries	10.1
"pillar" manufacturing industries	6.5
Services	2.9

Source: Historical simulation.

Table 2

Changes in intermediate input-using technology

Annual percentage change, 1991-96

Commodities	Rates of technological change %
Cotton textiles	-1.2
Wool textiles	-1.0
Motor vehicles	0.2
Communication	6.4
Insurance	3.0
Finance	1.8
Electricity	-1.6

Note: A positive (negative) number in this table indicates that technological change is commodity-using (saving). For example, the number in the fourth row indicates that in each year industries increased their usage of communication services by 6.4 per cent more than their outputs.

Source: Historical simulation.

Table 3

Shifts in consumer tastes

Annual percentage change 1991-96

Commodities	Shifts in consumer tastes %
Coal	-3.2
Other food products	0.8
Clothing	1.1
Motor vehicles	1.6
Communication	1.9
Education	1.5
Insurance	1.4
Tourism related services	2.2

Note: A positive, negative, number in this table indicates the consumption of the particular commodity grows faster, slower, than the rate caused by changes in income and relative prices. For example, the number in the fifth row shows that each year consumption of communication increases at a rate 1.9 per cent faster than can be explained on the basis of changes in prices and changes in the average budget of households.

Source: Historical simulation.

Table 4

Baseline projections of China's economic performance

Macroeconomic indicators and output of aggregated sectors, without WTO entry

	Average annual growth 2000-2010 Per cent
GDP	7.6
Consumption	6.0
Investment	10.3
Exports	10.4
Imports	11.0
Output of aggregated sectors	
Agriculture	3.0
Mining	6.0
Manufacturing	8.7
Construction	10.4
Services	8.3

Source: baseline simulation.

Table 5

Modeled macroeconomic impacts of China's WTO entry

Macroeconomic indicators and output of aggregated sectors

	Changes in average annual growth rates Per cent	Percentage deviation from baseline by 2010 Per cent
GDP	1.1	10.7
Consumption	1.1	10.7
Investment	1.2	11.6
Exports	1.2	11.2
Imports	1.3	12.0
Output of aggregated sectors		
Agriculture	0.3	2.7
Mining	0.8	7.9
Manufacturing	1.4	13.2
Construction	1.2	11.7
Services	1.4	13.2

Source: Policy simulation.

Table 6

The effects of China's entry to the WTO

Output, consumption and intermediate demand by commodity, per cent

	Changes in the average annual growth rates of value added by commodity	Percentage deviation of value added by commodity from baseline by 2010	Percentage deviation of consumption by commodity from baseline by 2010	Percentage deviation of intermediate demand by commodity from baseline by 2010
Grains	0.3	2.6	0.4	6.8
Other crops	0.3	2.9	-0.4	6.7
Livestock	0.2	2.4	-0.6	5.1
Other agriculture	0.3	2.9	-0.4	6.2
Coal	1.1	10.5	-4.7	12.5
Natural gas	0.6	6.2	7.8	12.6
Ferrous metal ore	0.6	5.8	0.0	16.1
Non-ferrous metal ore	0.8	7.3	0.0	15.2
Other mining	0.7	6.4	0.0	13.9
Egg and dairy products	0.6	5.4	5.2	8.7
Sugar refining	0.1	0.8	6.2	7.7
Wines	1.3	12.5	12.5	14.0
Other food products	0.9	9.1	7.3	9.2
Cotton textile	0.6	6.0	10.9	8.1
Wool textile	0.7	6.3	9.1	7.5
Clothing	0.5	5.0	12.7	12.6
Motor vehicles and parts	1.9	19.1	17.9	16.5
Iron and steel	1.8	17.5	0.0	15.6
Non-ferrous metal products	1.7	16.4	0.0	15.5
Other manufacturing	1.4	13.9	14.3	13.4
Electricity	1.3	12.9	10.7	13.3
Other infrastructure	1.2	12.1	5.8	13.7
Construction	1.2	11.7	0.0	13.9
Communication	1.6	15.4	48.8	13.9
Wholesale	2.3	23.0	37.1	14.3
Retail	1.5	15.2	30.5	13.1
Transport	1.4	13.8	19.4	13.8
Health	1.9	19.6	22.3	13.3
Education	1.5	15.4	23.5	13.8
Finance	1.5	14.4	0.0	14.3
Insurance	1.8	17.7	35.4	14.4
Tourism related industries	1.5	14.8	13.2	13.7
Other services	1.2	11.7	12.0	13.6

Source: Policy simulation.

Table 7

The effects of China's entry to the WTO

Percentage deviation from baseline by 2010, per cent

	Imports	Exports
Grains	37.3	-22.0
Other crops	37.8	-21.9
Livestock	37.2	-22.6
Other agriculture	43.4	-21.8
Coal	68.3	-27.6
Natural gas	26.8	-2.9
Ferrous metal ore	28.3	-13.4
Non-ferrous metal ore	58.9	-25.4
Other mining	22.3	-7.3
Egg and dairy products	24.0	-11.1
Sugar refining	23.6	-14.4
Wines	18.1	2.9
Other food products	23.4	-10.9
Cotton textile	11.4	-0.9
Wool textile	13.3	-1.0
Clothing	14.5	0.7
Motor vehicles and parts	0.1	30.6
Iron and steel	1.9	25.7
Non-ferrous metal products	11.3	14.9
Other manufacturing	9.3	13.1

Source: Policy simulation.