



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**Developing Country Trade: Implications of China's Changing Trade and
Competitiveness in Intensive and Extensive Margin Goods**

By

Agapi Somwaru
Economic Research Service, USDA
Francis Tuan
Economic Research Service, USDA
Mark Gehlhar
Economic Research Service, USDA
Xinshen Diao
International Food Policy Research Institute
Jim Hansen
Economic Research Service, USDA

Contact Author:

Agapi Somwaru
ERS-USDA
1800 M Street, N.W. Room# S5224
Washington, DC 20036

Phone: 202 694-5295
Fax: 202 694-5824
Email: agapi@ers.usda.gov

*Selected paper prepared for presentation at the American Agricultural Economics
Association Annual Meeting, Orlando, Florida, July 27-29, 2008.*

*Copyright 2008 Somwaru, Tuan, Gehlhar, Diao, and Hansen. All rights reserved.
Readers may make verbatim copies of this document for non-commercial purposes by any
means, provided that this copyright notice appears on all such copies.*

Selected paper

**American Agricultural Economics Association Annual Meeting
Orlando, Florida, July 27-29, 2008**

**Developing Country Trade: Implications of China's Changing Trade and
Competitiveness in Intensive and Extensive Margin Goods**

By

Agapi Somwaru, Francis Tuan, Mark Gehlhar, Xinshen Diao, and Jim Hansen

Abstract: This paper delves into China's differential growths in trade flows with high income and developing countries by focusing on bilateral content of trade data over the time period 1978-2005. Unlike other studies, we account for end use of traded goods ranging from primary, intermediate, and finished goods because China's policies impact all segments China's trade flows. In the last 28 years, China has specialized in deficits in the upstream production segments (parts and components) and rapid diversification in consumption goods (extensive margin). While in the late 1970s China's export and import growth on all goods with major high income countries is outstanding in the most recent years China's trade growth with developing countries has taken the lead while China is gaining in extensive margins goods trade. This general pattern evolving is in agreement with some of the new trade theory that gives a dominant role to an expansion of the number of export varieties (the extensive margin), which provides an additional channel for welfare gains from trade.

Key words: China, international trade, growth, intensive, extensive margins, developing countries.

The views expressed in this paper are those of the authors and not necessarily those of the Economic Research Service or of the United States Department of Agriculture.

Developing Country Trade: Implications of China's Changing Trade and Competitiveness in Intensive and Extensive Margin Goods

By

Agapi Somwaru, Francis Tuan, Mark Gehlhar, Xinshen Diao, and Jim Hansen

Since joining the World Trade Organization (WTO) in 2001, China is emerging as a leading exporting nation. Although much attention is focused on the growing imbalance of trade between China and the United States, China's trade is rapidly diversifying with developing countries. China might be viewed as a competing threat with other labor-abundant developing countries for developed country markets. However, it is becoming ever important to understand the complete bilateral make-up of exported and imported goods with China's trading partners, both developed and developing countries (see Somwaru et al., 2007). China's direct trade, for example with India, Southeast Asia, and African countries has intensified dramatically. In just the last 5 years China's exports to India increased from \$2 billion to over \$20 billion in 2007.

China competes world-wide not only in labor cost and availability (quantity) but also in having the advantage of its proximity to capital-rich East Asian economies and rapidly growing developing Asia-Pacific region's markets. Geographic proximity in theory often explains why neighboring countries trade disproportionately, as Krugman (1991) suggests that neighborhood trade is so strong as to create natural trading blocs, but such explanations provide little insight into the sources of growth in China's trade. The highly visible and sustained trade growth raises many questions about how it is attainable.

Although most attention is focused on China's exports, China's *imports* have been equally impressive but largely ignored. Trade growth should be viewed in a broad context by understanding the complete bilateral make-up of exported and imported goods with China's main trading partners.

The expansion of China's international trade has been facilitated by a global reduction in trade barriers and the adoption of its own openness and trade-oriented policies. Foreign-invested enterprises (FIEs) have also been the key China's rising position in the global economy with average annual growth rates of trade at three time world rates. China provides a case advancing this matter because of its trade policy favoring processing operations through preferential tariff rate exemption on intermediate goods, used as inputs in manufacturing.

Typically multinational firms will make decisions whether to export or to produce in a foreign market using foreign direct investment (FDI). However, China is not the final destination for the bulk of finished industrial goods manufactured in China. Our analysis is focused on China's inward and outward trade flows which in turn could be primarily motivated by FDI related activities. China's trade reforms, before and after its accession to the WTO, brought continuous reductions in non-tariff barriers and in levels and dispersion of tariffs. This allowed China to exchange goods and services at world market prices and enjoy increased benefits from its comparative advantages. Because of relative inexpensive cheap labor, favorable FIEs, and "flexible customs regimes" China has emerged as a final processing and assembly platform for finished goods that previously were manufactured in neighboring countries but destined for markets in EU, North

America, and high income Asian countries. Foreign firms have adopted outsourcing policies that localize the production components to utilize China's comparative advantages (Feenstra, Hanson 1995 and 1996; Fukasaku and Kimura, 2002). Empirical studies suggest that trade in intermediate goods is an important channel for transmission of technology to developing countries and the easiest way to benefit from technological spillovers that allows for increase in total factor productivity (Coe and Helpman, 1995; Coe, Helpman, and Hoffmaister, 1995; Keller, 2001). In other words, China can exploit effective protection policies that are associated with a reduction of tariffs on intermediate goods while the effective rate on the final goods increases.

Much recent theory assumes (Grossman and E. Helpman 1989 and Hausmann, Hwang and Rodrik, 2005) that imitation by developing countries of goods invented in developed countries is always equally possible, *ceteris paribus*. However, the speed at which countries can transform their productive structure and upgrade their exports depends on having already acquired knowledge of products and manufacturing technologies from neighboring partners. China has entered a growth phase in its industrial development for producing and exporting technology goods, or so-called intensive margin-type products. Exports of this type include high value-added technology products such as electrical machinery, computers, and telecommunications equipment.

This study seeks to distinguish China's patterns of trade growth between developing and developed countries to assess their unique roles as trading partners. We decompose China's trade flows specifically for developing countries while contrasting China's patterns of trade growth with developed/high income industrialized countries. We have

chosen our method to specifically analyze features of China's trade and development progression. Structural and macroeconomic-based models have little in the way capturing such growth dynamics seen in actual trade. Given the lack of an appropriate analytical framework to depict such dynamics we focus on a flexible statistical approach applied to bilateral sector trade data for the period 1978-2006.

First we address these questions by examining structural shifts in China's trade growth path from a multi-decade perspective. We provide a historical analysis of the past 30 years showing China's growth trade pattern generated by preferential tariff treatment and FDI activities. This strong specialization is also linked with growth in deficits in the upstream segments (parts and components) and rapid diversification in consumption goods (extensive margin). While in the late 1970s China's export and import growth on all goods with major high income countries is outstanding in the most recent years China's trade growth rates moderate but China is gaining in extensive margins goods.

The rest of the paper is organized as follows. In the next section, we present the methodology used to estimate the underlying long-term trends in rates of growth in China's trade flows with developing countries while we presented China's trade pattern with developed countries as a group as reference. The results supporting our analysis are presented in a series of charts based on the model's output. One main finding is that China's strong specialization in the downstream segments of production can be associated with a selective trade policy that granted preferential tariff treatment to assembling and processing activities. This strategy takes advantage of China's abundant

workforce. The result of this form of policy-induced specialization is large deficits in the upstream segments (import-intensive parts and components) and rapid diversification in consumption goods.

Methodology

Our technique for analyzing China's trade is based on the Trend and Cycles Decomposition (TCD) approach. This approach, by capturing the dynamics of growth in trade and trade policy regimes, allows us to obtain factually based evidence that a purely structural model is not likely to provide with misspecified links to trade growth. To capture the dynamic features of China's trade, we use its annualized growth rates. The resulting series of growth rates exhibit relatively large annual variability due to a variety of reasons. Many of the causes for these fluctuations in year to year data are not essential for capturing a "true" trajectory in China's trade growth. Instead, these deviations tend to obscure the underlying longer-term trend in trade growth rates. The longer-term trends in China's trade growth should better reveal the relationship either ex-post or ex-ante to prevailing China's trade patterns. Thus, we employ the TCD methodology to remove or 'filter' these fluctuations from the primary data.¹

For our purposes, we choose the approach developed by Hodrick and Prescott (HP) (1997) in their study of business cycles. Following this approach, the observed time series, y_t , are viewed as the sum of cyclical components, c_t , and growth components, g_t , or

¹ We utilize a time series of trade flows from the United Nations (UN) bilateral trade data which is compiled starting from 1962.

$$y_t = g_t + c_t, \quad \text{for } t = 1, \dots, T \quad (1)$$

Our prior knowledge, based upon economic growth theory, is that growth components follow their secular evolution. The measure of the smoothness of the $\{g_t\}$ path is the sum of the squares of its second difference. The variable c_t is the deviation from g_t . The notion is that, over long time periods, the cycles, c_t , where $c_t = y_t - g_t$, average near zero. This leads to the following programming problem for determining the underlying growth components in the observed time series y_t :

$$\min_{(g_t)_{t=1}^T} \left\{ \sum_{t=1}^T (y_t - g_t)^2 + \lambda \sum_{t=1}^T [(g_t - g_{t-1}) - (g_{t-1} - g_{t-2})]^2 \right\}. \quad (2)$$

The parameter λ is a positive number that penalizes variability in the growth component of the series. The larger the value of λ , the ‘smoother’ is the underlying growth trend g_t . For a sufficiently large λ , at the optimum all $g_{t+1} - g_t$ must be arbitrarily near some constant β and therefore the g_t arbitrarily near $g_0 + \beta_t$. This implies that in the limit, as λ approached infinity, the solution is the least squares fit of a linear time trend mode, and for $\lambda=0$, the smoothed data are exactly the same as the sample data.

The selection of *the smoothing parameter* λ is based on a probability model. If the cyclical components and the second differences of the growth components are identically and independently distributed normal variables with mean zero and variances σ_1^2 and

σ_2^2 (which they are not), then the conditional expectation of the g_t , given the observations, would be the solution of the above equation when $\sqrt{\lambda} = \sigma_1 / \sigma_2$.

Different values of λ provide different information, e.g., a large value of λ approximates the annual average rate of growth given by an ordinary least squares fit to the log of the data. The problem is to choose the value of λ that best depicts the underlying growth component in the data, and then to employ that value ($\lambda = 20$, in this study) for all data series over the period 1978-2006.

China did not share public trade statistics with international organizations until 1984 and even then the validity of some reported trade flows remained questionable. Thus we draw upon data providing China reporting partners compiled by the UN starting from 1978. To capture more clearly the dynamic features of China's trade and competitiveness, we calculate the annual growth rate of its agricultural and non-agricultural trade using aggregates of Broad Economic Categories². Unlike other studies that concentrate on China's trade with the U.S. (Hammer, 2006, Nauhgtton, 2004) we include all China's major high-income trade partners. We then use equation (2), with the value of λ set equal to 20, to smooth the value (expressed in logarithms) of China's bilateral trade in all merchandise. This is implemented using the General Algebraic Modeling System (GAMS, Brooke et al., 1998) software and by deriving the first- and second-order

² The Broad Economic Categories is based upon end-use of trade goods as defined by the UN Statistical Division. Because Hong Kong is used as a transshipment point for China's trade source-destination was readjusted by USDA/Economic Research Service in conjunction with U.S. International Trade Commission recent work valuating goods produced and sold from mainland China, so the bilateral trade in our database is consistent over time.

difference equations required to solve equation (2). Figure 1A captures the trade volatility of China's trade flow with the U.S., EU25, and high income Asia countries while figure 1B presents the growth pattern of the smoothed trade flow with the same countries. The series of China's total exports and imports are used as reference points. Growth paths calculated from the smoothed data are depicted and we discuss the results for China's trade with the USA, EU25, High Income Asian Countries, and the world.

Results- Overview from an Aggregate Perspective

One of the distinguishing features of China's trade growth is the persistent sustainability and diversification of partners and products over time (table 1). The ongoing global relocation of labor-intensive manufacturing has accommodated China's trade growth while the transition to a more market-based economy has help diversify its product mix. This however has not necessarily meant that China's trade growth has stifled developing country export opportunities from direct competition in similar products. In fact in the aggregate developing country imports to China have generally outpaced developed country growth (table 1). In the most recent decade China's import growth adjusted for cycles is greater than its export growth. This acceleration of China's trade with developing countries is often over looked.

In the 1970's *High Income Industrialized* countries were among leading growth destinations for China's total merchandise exports (Figure 1).³ Growing trade dependency with China indicates that changes in China's trade openness policies

³ In this study, High Income Industrialized countries are: the U.S, EU, Japan, and High Income South East Asian countries including Australia and New Zealand while the remaining countries are labeled as "*Rest of the World*" for simplicity reasons.

generated relatively larger impact on its neighboring countries than the rest of the world as China emerged as Asia's production platform. In the 1990s the growth patterns of China's exports show a significant departure from the previous decade as the United States was China's major growth destination in these two decades. The dollar appreciation in the early 1980s contributed to China's competitiveness stimulating import demand in the U.S. market. This is consistent with the prediction of macroeconomic-based trade models and reinforces the importance of economic conditions, such as currency depreciation or appreciation, on trade growth. Finally, in the 2000s the "Rest of the World" or Non-high Income Industrialized countries seem to account for most of China's imports of all products as these countries growth rate follows an upward trend surpassing other countries/country groups in the most recent years (Figure 1). Both imports and exports to this *country group* increased dramatically in the last 10 years and follow the same pattern as China's total trade flows, in the sense imports' growth exceed exports' growth.

High Industrialized Countries Growth Pattern

Evidently once China chose to pursue economic reforms and a more open trade policy, growth in its imports developed rapidly in the 1970s. Unlikely in late 1970s, where China trade flows' growth was dominated by the USA, in the 2000s China's export to EU increased dramatically (Figure 2). Notice that in the last three decades, China's export growth to EU and the USA exceeded that of China's exports of total merchandise. During the same period, China's export and import growth rates with Japan were declining and are below China's growth rates of total merchandise. In the last 5 years, China's import

growth rates exceeded the export growth rates indicating China's growing dependence on goods from foreign suppliers (Figure 2).

Selective Developing Countries Growth Pattern

In the early 1980s China's trade growth was slower compared with that in the 1990s and 2000s (table 1). While the growth rates of total trade flows with India were unstable in the early 1980s likely in part from heavy protection, in the last 15 years China's trade growth with India is steadily increasing. This coincides with India's liberalizing in industrial sectors and India's income and consumer purchasing power growing at a more sustained pace. China's export and import growth to India was above 40 percent while South and South-East Asian developing countries' growth rates of total trade amount to 30 percent. China's growth rates of exports and imports increased steadily and surpass the growth rates of the high income industrialized country group. Furthermore, China's import growth rates with South American countries were almost 40 percent and this captures China's strong specialization in the downstream segments of production that is associated with large import growth (Figure 3).

Africa's growth rates of total trade flows while was negative in the early 1970s it increased at a steady rate as China's import growth with the Africa countries well exceeded that of China's export rates. This supports the hypothesis that developing countries are interlinked in a complementary way. In this case Africa provides the export platform of raw material to furnish China's manufacturing sectors (Figure 4). Unlike Africa countries China's growth rates of total trade flows with the Transitional

Economies follows cyclical variation with peaks and valleys in the 1980s and 1990s. But in the 2000s, China's export growth of total trade to Transitional Economies was over 60 percent while China's import growth rates increased moderately indicating China's ability to expand its markets and capitalize on Transitional Economies' increased incomes. In Figure 5 we attempt to capture China's trade pattern with selective developing country/regions with high income industrialized country group. With increased globalization China's trade growth dynamics have changed, in the sense, developing countries instead of industrialized countries provide both the import and export platform for China. China is expanding and seeking new markets to continue the spare of its trade growth and take advantage of the increased incomes in developing countries.

Results- Sector Detailed Trade Growth

Stable Diversification and Increased Specialization—Space Product Differentiation

Numerous studies have analyzed the importance of trade in intermediate goods and the influence of geographic proximity on production sharing between countries (Naughton, 1997, Gupta, 1997, Ng and Yeats, 1999). China's trade performance indicates that geographic proximity is a factor enhancing the value-added processing chain. China's rise in international processing activities reflects the strategies of Asian firms to relocate their industries in the mainland to take advantage China's comparative advantage along production processing due mostly to low labor cost. Moreover, China's trade policy has favored assembly and processing operations, through tariff exemption on intermediate goods, and set off expansion of China's trade in intermediate goods in FIEs and ETDZs

well beyond geographic proximity regions. This selective trade policy has accelerated China's international processing activities, the engine of rapid diversification of its manufacturing exports.

Decomposition of China's export and import growth at the sub-sector level is needed in order to gain further insight into how China's growth process is driven by its trade content. For this reason we organize the composition based upon the BEC classification into six broad product categories: capital goods, such as machinery except transport equipment, consumer durable goods, such as domestic appliances, consumer non-durable goods, such as food, footwear, and toys, intermediate goods, which includes broad categories of processed goods, parts and accessories mainly for industrial use, technological independent but produced in order to be assembled into final goods, primary energy goods, such as gas and petroleum, and, finally, primary goods, such as raw mineral and agricultural commodities.

In order to understand export diversification and specialization we focus on China's growth patterns comparing the same aggregate goods for the high income industrialized countries and selective developing country/country groups. In the later case, we choose India and all Africa counties as a group. The growth paths of China's trade flows with high income industrialized countries are very distinct over the entire 28-year time period. Examining these patterns enhances our understanding of China's production of differentiated final goods. For the case of capital and consumer durable goods China's

economic growth has ‘pulled-up’ import growth of non-durables and capital goods above their export growth (Figure 6).

In the early 1970s China’s export growth rate of consumer durable goods was over 50 while in the late 1990s and 2000s export growth of consumer durable is about 20 percent. On the other hand, China’s export growth of consumer non-durable goods remained almost the same (around 10 percent) in the last 30 years. China’s export and import growth of capital goods followed a different pattern than that of final non-durable and final durable goods (Figure 6). Capital goods are those that firms purchase as investment goods such as heavy equipment and machines to replace existing capital or expand production. In the 1970s a surge took place in capital goods import growth from high income industrialized Asian countries and the US while China’s export growth lagged considerably. In the 1980s and 1990s, export growth of capital goods, by far the most important category all final goods, well surpassed import growth. In the 2000s, capital goods export growth remained strong for both Asian countries and the US.

Intermediate products while amounting to almost two-thirds of China’s total imports display China’s comparative advantage in production ‘by stage.’ In other words, China’s participation in the international division of production processed is not based on the transformation of raw materials but takes place in technologically advanced sectors (Ng and Yeats, 1999). China’s processing trade pattern or in terms of growth rates is characterized by strong import growth of intermediate goods (Figure 7) while in the later years China’s import growth of primary goods, such as raw grains, soybeans, iron ore,

and other minerals dominates the series. Regarding primary energy goods China's import and export growth rates declined significantly in the recent years given the higher petroleum and coal prices (Figure 7). These findings tend to weaken the Krugman-Bhagwati debate that is whether neighborhood determines the direction of trade or geographic proximity is irrelevant.

In the late 1970s and 1980s China's comparative advantage in downstream manufacturing was the dominant reason for an exceptional export growth that was spurred by high income industrialized countries. In 1990s and 2000s China's export and import growth of capital goods, consumer durable and non-durable is dominated by *high income developing* countries, like India, increased demand due to increased incomes (Figures 8). China's strong specialization in the downstream segments of production, such as computers, office machinery, is associated with large import growth of intermediate and primary goods (Figure 9), China's export and import growth with India remained stable (around 50 percent) over the 28 year period but lower than the rates of durable and capital goods. Figure 10 depicts China's export and import growth with African countries, as representative of *low income developing* countries. In this case, export and import growth of capital, consumer durable and consumer non-durable goods from negative in the late 1970s became positive in the late 1980s and remained stable in the 2000s. Developing countries such as India for example are becoming major suppliers of crude material such as iron ore, cotton, copper, hides and skins, and organic chemicals with China accelerating its exports of electrical machinery and computer components to India (Figures 8 and 9). In general, China's import growth of primary energy goods, such

as oil petroleum increase with increasing rate in the 1980s and 1990s and remains high in the most recent years but at a lower level (Figure 11).

Trade Expansion: Intensive versus Extensive Margins

In the late 1970s, China's export growth of consumer durable and in the 1980s and 1990s China's export growth of capital goods took the lead indicating that China trade growth was broad based and not fueled by a few products. China has entered a growth phase in its industrial development for producing and exporting technology goods, or so-called intensive margin-type products. China has tremendous strides in exports of high value-added technology products including electrical machinery, computers, and telecommunications equipment in recent years to high income industrialized countries (Figure 6). In other words, light manufactures, electronics and capital goods tend to involve skills and assets that are much closer to those required by other goods and hence facilitate the transition from one product to another. This pattern is in agreement with new trade theory that gives a dominant role to an expansion of the number of export varieties (the extensive margin), providing an additional channel for welfare gains from trade.

China's adoption of open foreign direct investment strategies that attracted multinational enterprises has expanded its trade flows in existing goods to an extensive margin growth pattern through growth in the number of trade varieties. China's spur of export growth in the most recent years lies in high value added goods where product differentiation, variety and quality can be identified.

China's rise in international processing activities reflects the strategies of Asian firms to relocate their industries in the mainland to take advantage China's comparative advantage. Moreover, China's trade policy has favored assembly and processing operations, through tariff exemption. This selective trade policy has accelerated China's international processing activities (in extensive margin), the engine of rapid diversification of its manufacturing goods both to the developed and more recently with developing countries.

25.58

Conclusions

Although much has been written about China benefiting from embracing globalization, an accurate characterization of China's evolving trade and the basic mechanisms behind cycles of trade have not been described accurately. This requires a comprehensive profile of China's trade using bilateral time-series data. Our method allows us to perform such analysis indicating that China's rapid export growth is largely driven by expanding trade in existing goods, or so-called intensive margin. We find that other developing countries not only are playing a complementary role in China's trade growth their trade with China has intensified at a faster pace. Our technique allows us to determine China's differential growth rates in trade flows with *high income industrialized* and *developing* country/country groups by focusing on bilateral content of trade data over the time period 1978-2006. We account for the end use of traded goods ranging from primary, intermediate, and finished goods because China's policies impact all segments of China's

trade flows. China's trade growth patterns with major high income countries clearly indicate that the adjacency-neighborhood partners alone is unlikely to explain its unprecedented growth in exports and imports.

China's outstanding performance in trade growth can be traced back to the late 1970s with changes in its policies and increased involvement in the international segmentation of production processes through FIEs and ETDZs. China's strong specialization in the downstream segments of production or processing can be associated with a selective trade policy that granted preferential tariff treatment to assembling and processing activities as well as FDI in those activities. This strong specialization is also linked with growth in deficits in the upstream segments (parts and components) and rapid diversification in consumption goods. Moreover, the technological content of intermediate goods has been a major channel for China's import growth of high technology goods which enabled China to compete as a formidable supplier in global manufacturing. While in the late 1970s and 1980s China's export and import growth on all goods with major high income industrialized countries is outstanding in the most recent years China's trade growth rates moderate but China still maintains a competitive edge. In the 1990s and 2000s, China's export and import growth with *high income developing* countries, like India and South America, has surpassed the trade growth of high income industrialized countries and most noticeable are the growth rates of capital and consumer durable and non-durable goods. In other words, China's export growth is currently shifting away from textile-clothing products towards more high-technology

products (electronic machinery and equipment) would continue to underpin its upward growth of China's exports with the developing countries.

Our analysis based on ex-post long-term time series data highlights why China's exports and imports evolved with *high income industrialized* and *high income developing* countries. By decomposing China's overall trade by major categories we gain deeper insight into causal relationships with policies and that have impacted China's export and import growth patterns. China's great flexibility via foreign direct investment and "joint ventures" spurred by accumulated assets has provided the foundation for China's to redeploy its capabilities from sector to sector and consequently the expansion of the number of export varieties (the extensive margin). We hope to extend this work to overcome some limitation by focusing on greater product detail. For example, capturing the transitions across products and quality improvements within products, the association of *new products* (if any) with "nearby" products, and the role of economic policy and industrial organization.

References

- Bhagwati, J. "Regionalism vs. Multilateralism," *The World Economy*, 15, 5, 1992.
- Brooke, A., D. Kendrick and A. Meeraus. *GAMS, A User's Guide*, Redwood City, Ca, The Scientific Press, 1998.
- Coe, D.T. and E. Helpman. "International R&D Spillovers," *European Economic Review*, 39.5, 1995.
- Coe, D.T., E. Helpman, and A.W. Hoffmaister. "North-South R&D Spillovers," National Bureau of Economic Research, Working paper No 5048, 1995.

- Feenstra, R.C. and G.H. Hanson “Foreign Investment, Outsourcing and Relative Wages,” National Bureau of Economic Research, Working paper No 5121, 1995.
- Feenstra, R.C. and G.H. Hanson “Globalization, Outsourcing and Wage Inequality,” National Bureau of Economic Research, Working paper No 5424, 1996.
- Fukasaku, K. and F. Kimura. Globalization and Intra-firm Trade: Further Evidence, P.J Lloyd and H.H. Lee (eds), *Frontiers of Research in Intra-industry Trade*, Macmillan, 2002.
- Grossman, G. and E. Helpman. 1989. “Product development and international trade” *The Journal of Political Economy* 97(6): 1261-1283.
- Gupta, D.D. “China Engaged: Integration with the Global Economy, World Bank Publication 1997.
- Hammer, A. “The Dynamic Structure of U.S.-China trade, 1995-2005,” U.S. International Trade Commission, Working paper No 2006-07-A, July 2006.
- Hausmann, R. J. Hwang and D. Rodrik. 2005. “What you export matters” NBER Working paper 11905. National Bureau of Economic Research, Cambridge MA.
- Hodrick, R.J., and E.C. Prescott. “Postwar U.S. Business Cycles: An Empirical Investigation,” *Journal of Money, Credit and Banking*, 29, 1997.
- Keller, W. “The Geography and Channels of Diffusion at the World’s Technology Frontier,” National Bureau of Economic Research, Working paper No 8150, 2001.
- Krugman, P. “Is Bilateral Bad?” in E. Helpman and A. Razin, (eds), *International Trade and Trade Policy*, Cambridge, MA, MIT Press, 1991.
- Naughton, B. *Growing Out of the Plan: Chinese Economic Reform, 1978-1993*, Cambridge University Press, 1996.
- Naughton, B. *The China Circle: Economics and Technology in the PRC, Taiwan, and HongKong*, Brookings Institute Press, 1997.
- Naughton, B. “China’s Economic Growth and Technology Development: International Linkages and Implications for the U.S.,” Prepared Statement for a hearing before the U.S-China Economic and Security Review Commission, One Hundred Eighth Congress, Second Session, 2004.
- Ng F. and A. Yeats. “Production Sharing in East Asia: Who does What, for Whom and Why?,” World Bank, Policy Research Working Paper, WPS 2197, 1999.

A. Somwaru, F. Tuan, M. Gehlhar, S. Langley and X. Diao. "Forces behind China's Surging Trade: Competitiveness or Policy Driven?" Selected paper, International Agricultural Trade Research Consortium Summer Symposium, Beijing, China, July 8-9, 2007..

Fig. 1A-Growth in China's Trade Flows, 1978-2006 Very Volatile

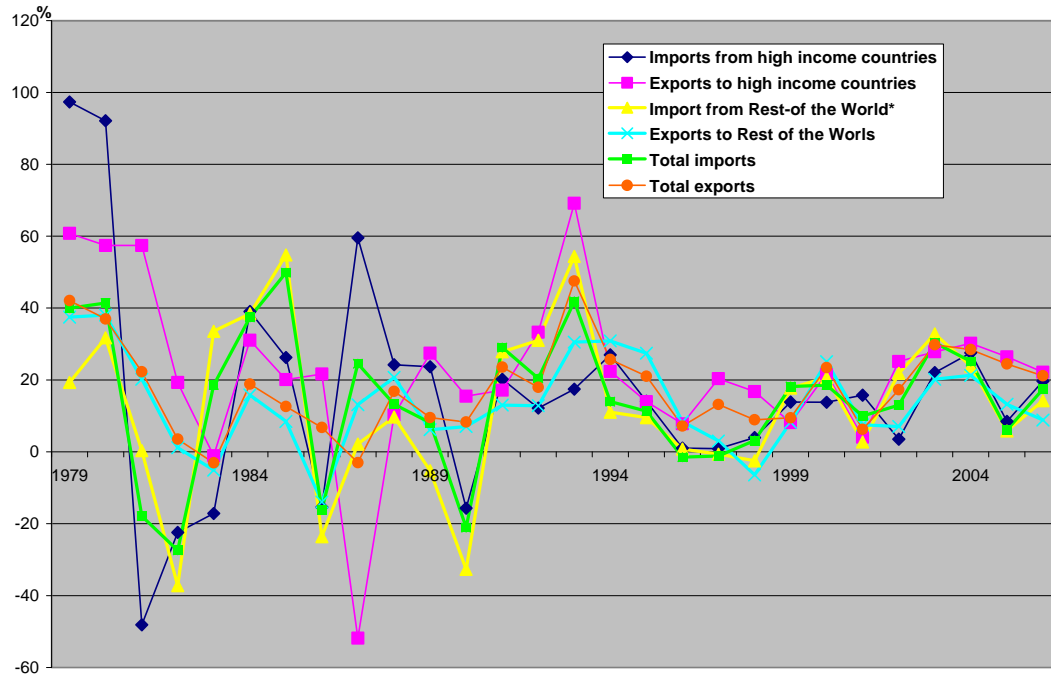
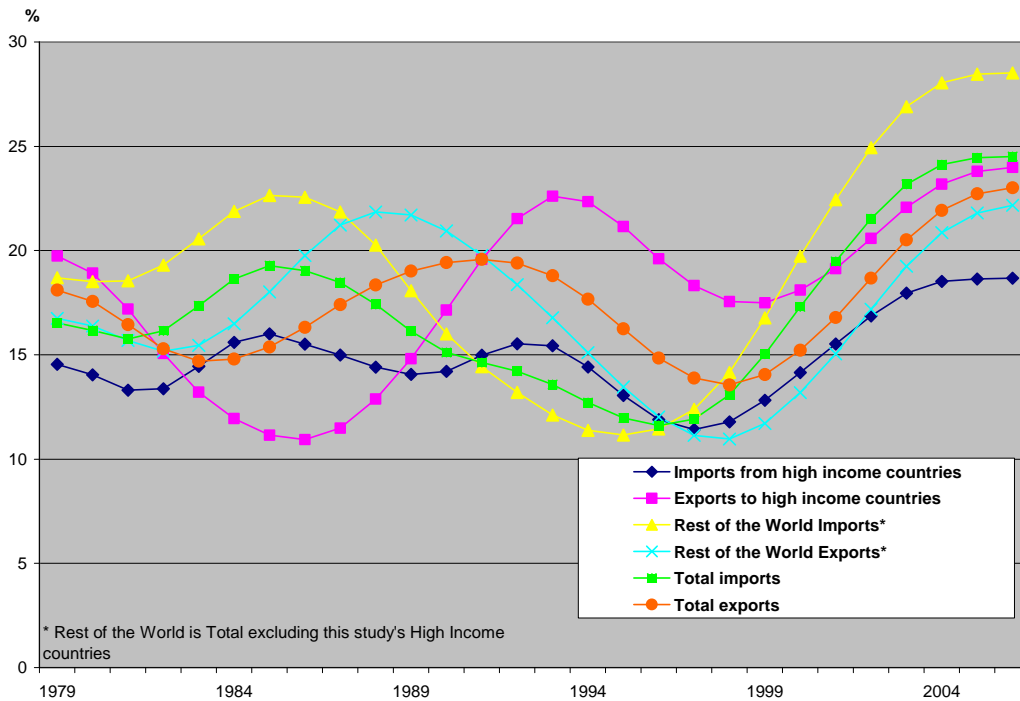


Fig. 1B- Growth patterns of China's Trade Flows, All Products, 1979-2006



**Fig. 2- Growth patterns of China's Trade Flows with selective High Income Countries,
All Products, 1979-2006**

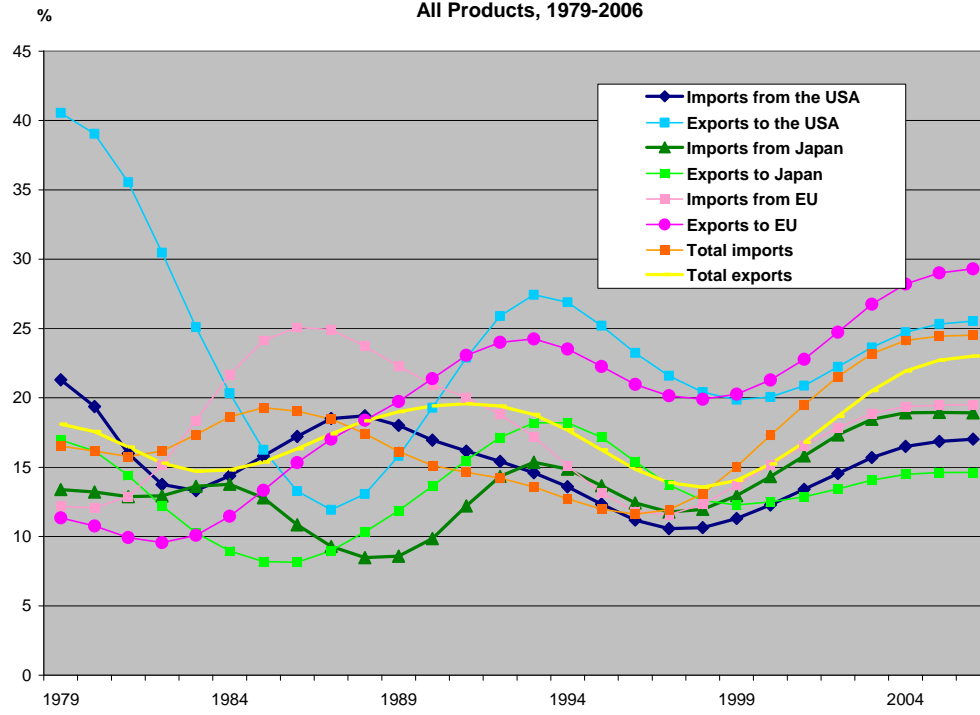


Fig. 3- Growth patterns of China's Trade Flows With Selective Developing Countries
All Products, 1979-2006

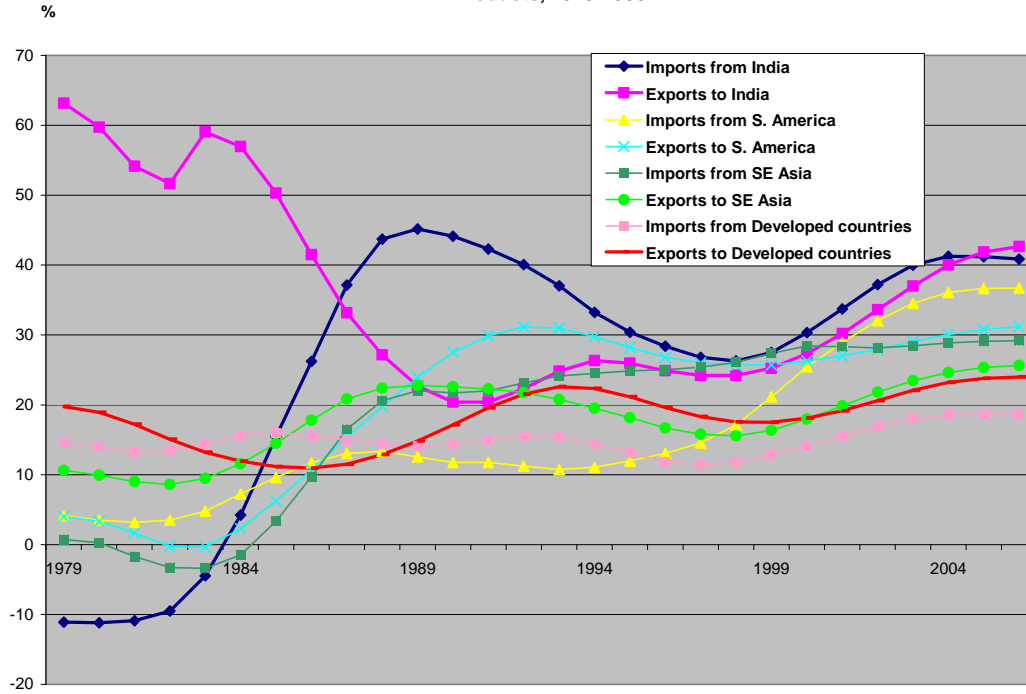


Fig. 4- Growth patterns of China's Trade Flows with Selective Developing Countries
All Products, 1979-2006

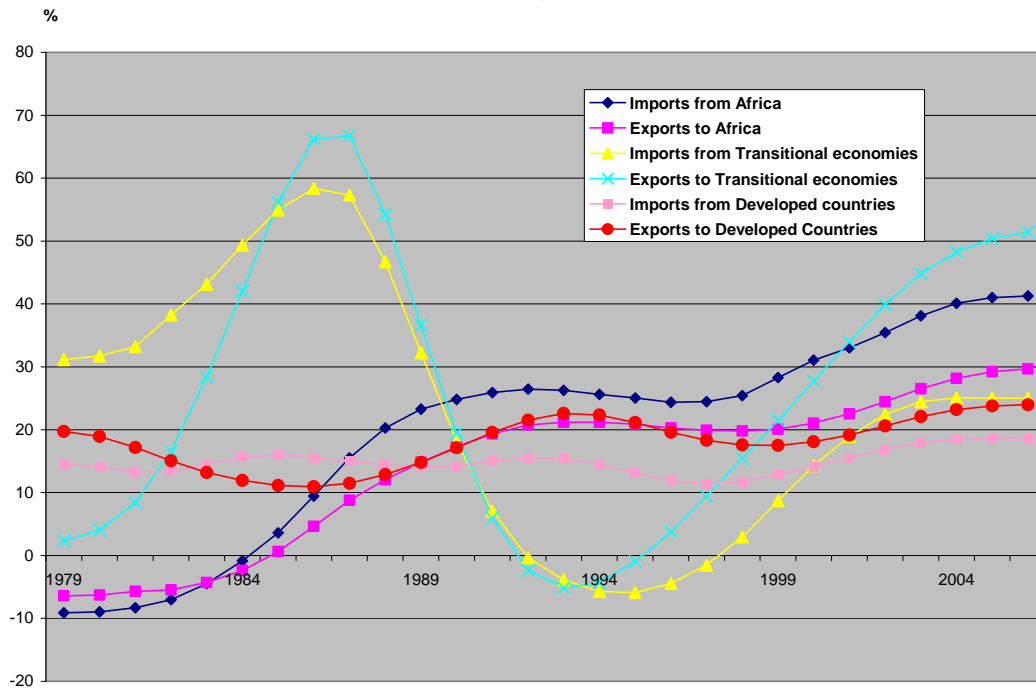


Fig. 5- Contrasting Growth patterns of China's Trade Flows: India, South America, Developed Countries, and World, All Products, 1979-2006

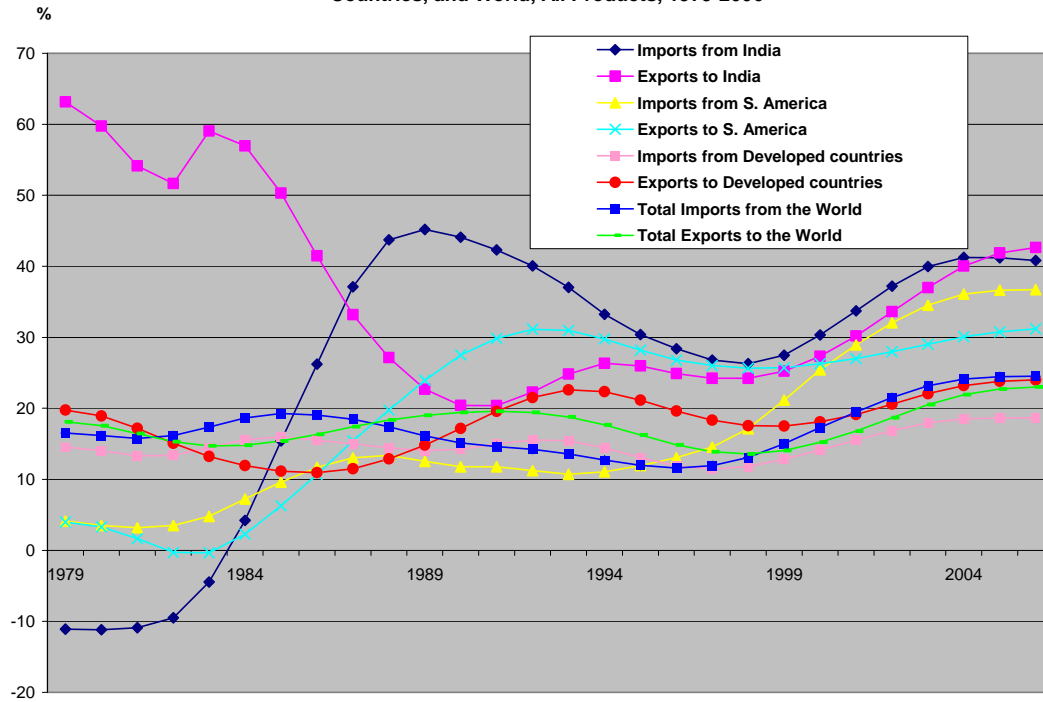


Fig. 6- Growth patterns of China's Trade Flows with High Income Countries by Broad Commodity Categories, 1979-2006

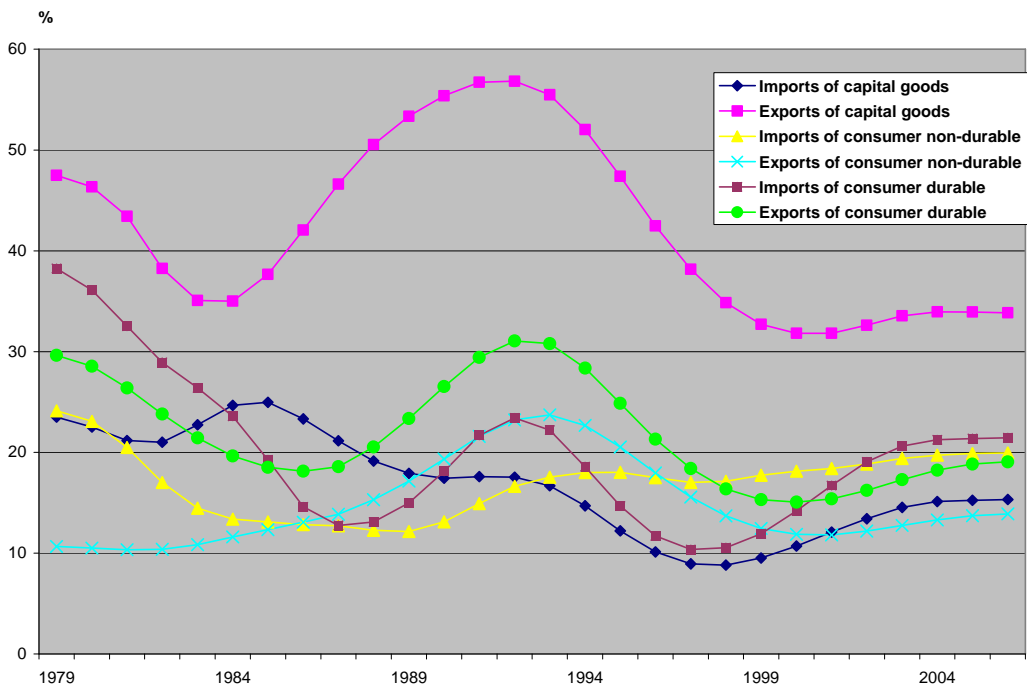


Fig.7-Growth patterns of China's Trade Flows with High Income Countries by Broad Commodity Categories, 1979-2006

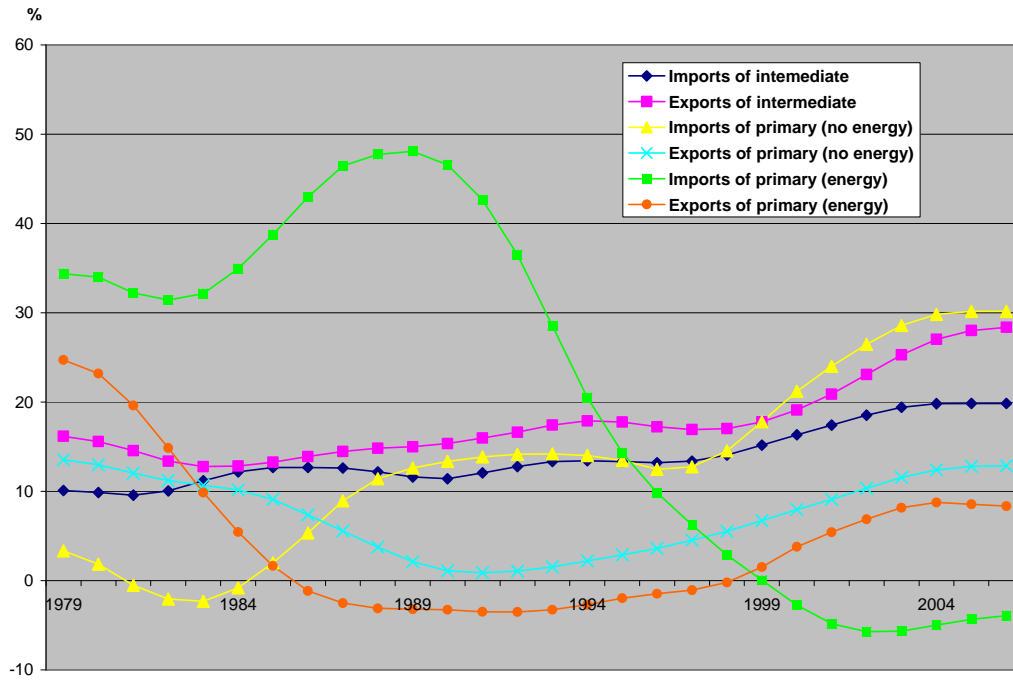


Fig. 8- Growth patterns of China's Trade Flows with India by Broad Commodity Categories, 1979-2006

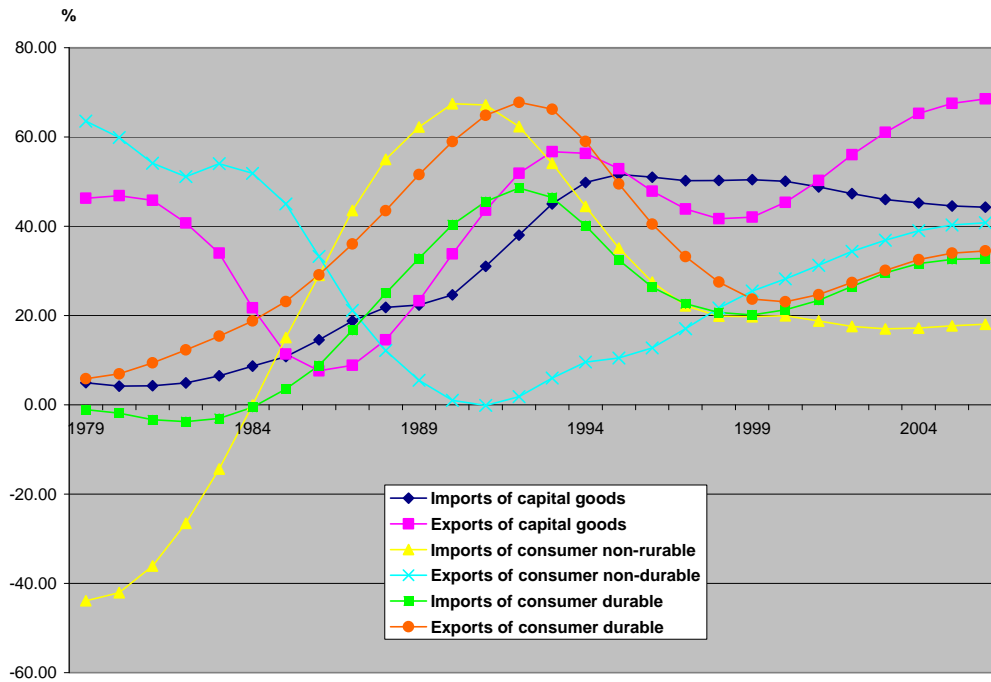


Fig. 9- Growth patterns of China's Trade Flows with India by Broad Commodity Categories, 1979-2006

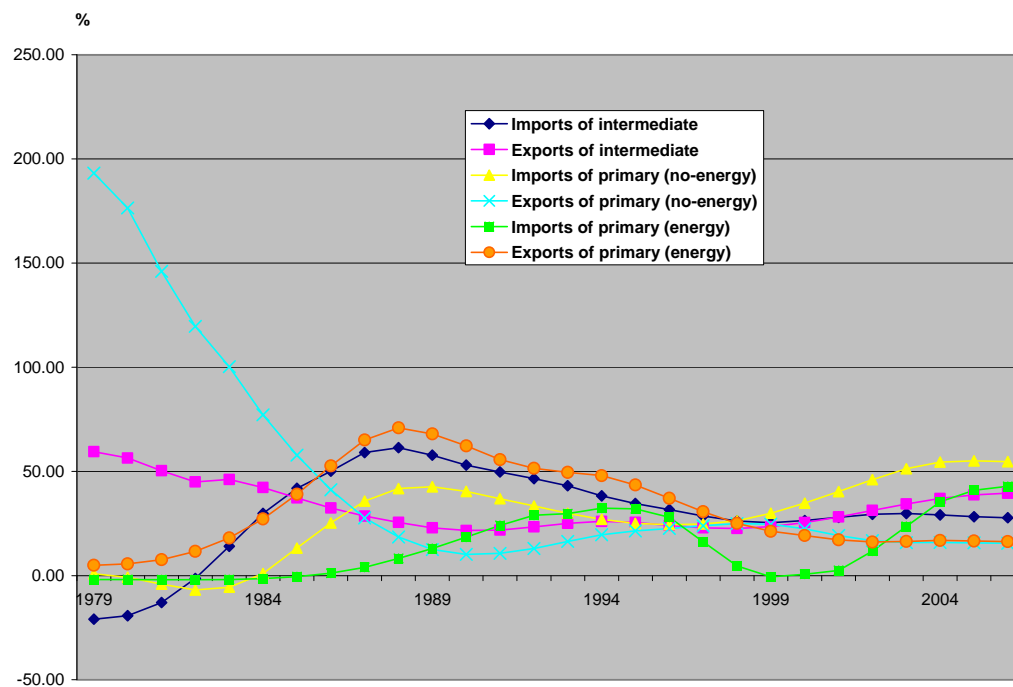


Fig. 10- Growth patterns of China's Trade Flows with African Countries by Broad Commodity Categories, 1979-2006

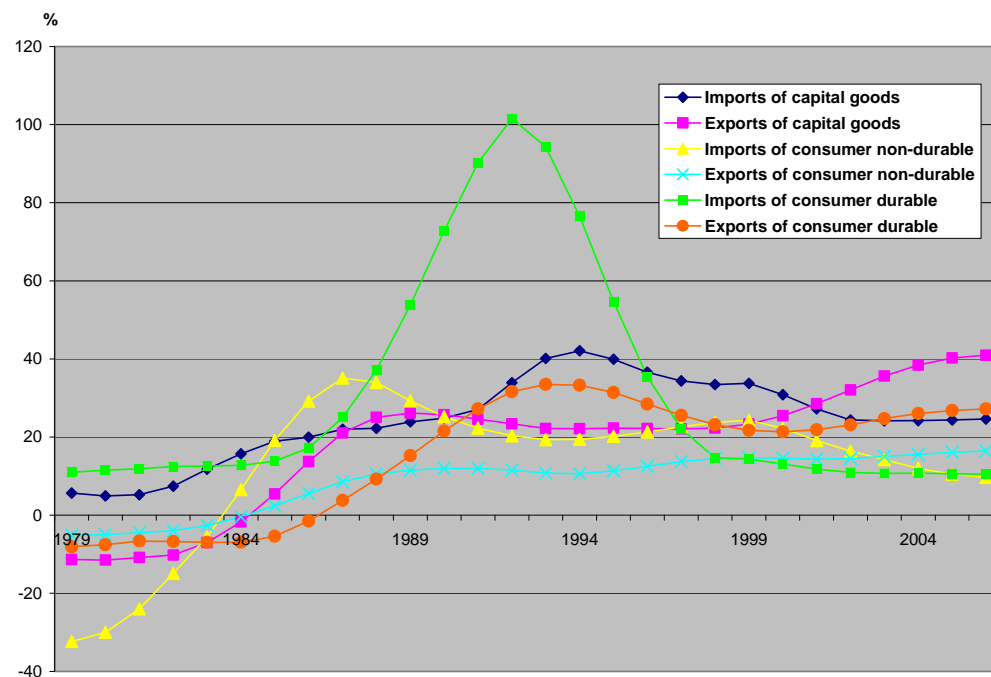


Fig. 11- Growth patterns of China's Trade Flows with African Countries by Broad Commodity Categories, 1979-2006

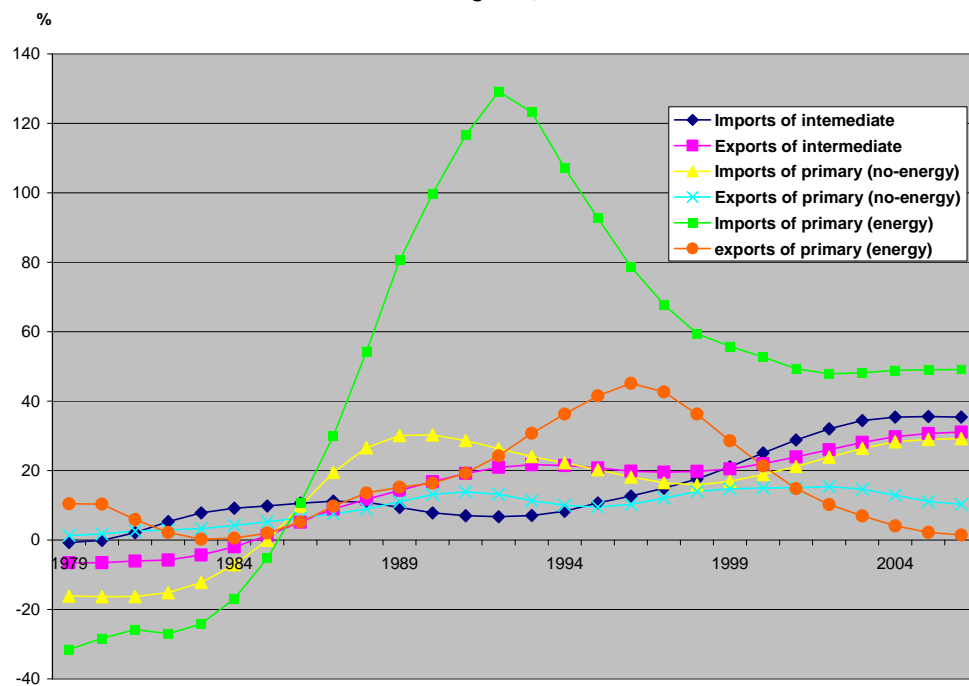


Table 1--China's estimate annual growth* for total merchandise trade by trading partner

Item	1980s	1990s	2000s
Total imports	17.36	13.39	22.08
Total exports	16.67	16.75	19.84
Imports from Developed countries	14.57	13.56	17.19
Exports to Developed countries	14.30	19.73	21.55
Imports from Developing countries	20.27	13.31	25.58
Exports to Developing countries	18.05	15.03	18.50
Imports from India	11.34	33.61	37.79
Exports to India	47.23	23.88	36.10
Imports from South America	7.86	13.44	32.91
Exports to South America	7.87	28.16	28.90
Imports from South and Southeast Asia	5.76	24.42	28.64
Exports to South and Southeast Asia	14.31	18.94	22.66
Imports from Africa	3.03	25.67	37.15
Exports to Africa	0.94	20.07	25.95
Imports from Transitional Economies	43.32	1.51	22.17
Exports to Transitional Economies	34.70	6.28	42.35

* Note: Growth rates estimated using TCD method annualized by time period.