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People's Republic of China and Its Neighbors: Partners or Competitors for Trade and Investment?

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Introduction

The very rapid economic growth of the People's Republic of China (henceforth PRC), its dramatic success in world export markets and its heavy receipts of foreign direct investment (FDI) have generated much thought and debate in policy and business circles in different parts of the world. From Malaysia to Mexico and from Indonesia to India the simple 'threat or opportunity' question has been posed in relation to the 'rise of PRC'. Given the impact of geography on trade and investment patterns, such concerns have been greatest amongst PRC's most immediate neighbors. This paper examines the evidence from a number of recent empirical studies that address different aspects of this issue in the context of PRC-East-South East Asia economic relations. The broad consensus is that whilst there may be risks to individual sectors in all countries concerned the pattern of regional trade and investment that is emerging is mutually beneficial, provided enterprises and governments in PRC's regional partners respond effectively to the adjustments required.

This paper is organized as follows. The remainder of the introduction sketches out briefly some of the conceptual issues. The second section illustrates the differing trade structures between PRC and its regional partners, since the degree of complementarity is critical to the potential gains from expanded trade. The third section examines evidence on changes in export market share in third country markets to assess the extent to which regional partners are losing market share to Chinese exports. The fourth section examines the FDI diversion argument. The fifth section looks at the potential benefits to the region (and to PRC itself) from various forms of trade liberalization arrangements. The final section draws some brief conclusions.

The 'stylized fact' view of PRC is of a large, very rapidly growing economy with very high domestic savings, attracting large absolute values of FDI (but not it should be noted in per capita terms) and achieving dramatic export growth (averaging nearly 17% annually 1990-2002). With a large rural population as a source of labor supply PRC's 'modern sector' growth is seen as based on a near perfectly elastic labor supply at a low real wage based on low rural opportunity costs (a contemporary version of the 'Lewis model' for a labor surplus economy). Given its size PRC thus becomes the marginal supplier for labor-intensive goods on the world market, and its real wage level and productivity set world prices in these products. FDI inflows and domestic investment in skills and technology upgrading allow a shift into more technologically sophisticated product ranges, particularly where labor-intensive segments of international supply chains can be relocated to PRC through FDI (although PRC remains well behind the Republic of Korea and Taipei,China, for example, by technology indicators such as enterprise R and D expenditure per capita).

Falling trade costs (import tariffs, transport and freight charges, time in transit, the cost of information and of managing international supply chains) have facilitated rapid regional integration in trade and capital flows within the East-South East Asian region. Added to this, PRC's rapid expansion provides an opportunity for regional partners to both export to and invest in its large domestic market. However, PRC is also an export rival in third country markets (and a country's own domestic market) in a range of goods from simple labor-intensive products to the more technologically complex (for the latter principally because of its large FDI sector). If FDI to the region is treated as a fixed sum then higher inflows to PRC will be at the expense of other economies and there will be FDI diversion as an additional possible negative effect that will have consequences for trade flows.

The competitive 'threat' from PRC for particular goods can be seen in terms of changes in market share domestically (negative import substitution) and in third country markets. However whether rising international competition leads to income and welfare losses will depend upon the flexibility of economies. In a world of zero adjustment costs economies will simply adapt to changing relative costs and if market share is lost in one product, resources will shift into another where market prospects and returns are higher. The familiar argument

that only firms, not nations, compete strictly rests on the set of simplifying assumptions related to perfect markets and hence zero adjustment costs. In other words, with positive adjustment costs trade competition need not always be mutually beneficial for all different parties.

The impact of 'the rise of PRC' and falling trade costs more generally can be thought of in simple terms of 'trade diversion' and 'trade creation'. For any one economy, trade diversion arises where lower cost or higher quality goods (for example from PRC) displace those of the economy concerned, creating a potential loss of income if new markets are not found and the resources involved are not shifted to other activities. Trade creation is where growth elsewhere (for example in PRC) creates a demand for an economy's exports.[1] It will make a difference what type of products are the subject of this diversion and creation process. In general it is desirable for economies to shift up the 'ladder of comparative advantage' that runs from simple labor-intensive goods, through capital-intensive, to human capital-intensive technologically sophisticated products. How this process is affected by closer trade links with a large fast growing regional neighbor will clearly be important and the dynamic implications of any new regional division of labor will matter. If an economy adapts by specializing in products with a static global market or a lack of technological dynamism, this new specialization pattern may offer lower growth prospects than the initial pre-adjustment one. A priori it is expected that the more adaptable are the firms in an economy, the greater is the scope for mutually beneficial outcomes from closer trade links. Also the greater is the scope for complementarity between partner economies, in terms of resource and human capital endowments, the greater the potential for trade creation and thus the greater will be the gains.

Adaptability in this context implies the ability of firms to identify new market niches, to re-equip and re-train, to identify, purchase and adapt new technology and to establish alliances within international supply chains. These firm-level responses are aided by a supportive and flexible policy environment, which encourages firms to take risks, provides adequate public education, training and research expenditure, ensures firms have adequate support from the financial sector, encourages R and D activity with collaboration, where appropriate, and gives an overall strategic direction to 'national competitiveness policy.'

Trade Structure: PRC and the Region

In general terms it is well known that PRC's trade and production structure is intermediate; less sophisticated than Japan and the first tier newly industrialized economies (NIEs) (Singapore, the Republic of Korea, Taipei,China), but in some sectors considerably more sophisticated than that of the second tier NIEs (Indonesia, Malaysia, Thailand and the Philippines). This can be illustrated in various ways.

The simplest approach is to compare the structure of exports by trade category. Table 1 reports the correlation coefficient between shares for 3 digit SITC categories for two years 1990 (when PRC was still a relatively closed economy) and 2000. It can be seen that in 2000 PRC's export structure was relatively similar to that of Taipei,China, and to a lesser extent the Republic of Korea, ten years earlier. Making the comparison for 2000 PRC's structure is closest to that of Taipei,China and Thailand (correlation coefficients of over 0.5) and most dissimilar from that of Indonesia and the Philippines (correlation coefficients of around 0.3).

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[1] It should be noted that these are not the classic 'Viner definitions' from the theory of customs unions, since the latter assumes a common external tariff that can divert trade from low cost suppliers outside to high cost suppliers within the union. Trade diversion in customs union theory thus becomes a negative factor for an economy and is a cost to be offset against the gains from trade creation.

Table 1 Correlation coefficients PRC and regional export structures (3 digit SITC)

	PRC 1990	PRC 2000
The Republic of Korea 1990	0.38	0.64
The Republic of Korea 2000		0.43
Taipei,China 1990	0.34	0.83
Taipei,China 2000		0.53
Singapore 1990	0.10	0.42
Singapore 2000		0.41
Malaysia 1990	0.28	0.24
Malaysia 2000		0.44
Thailand 1990	0.30	0.52
Thailand 2000		0.51
Indonesia 1990	0.38	0.07
Indonesia 2000		0.33
Philippines 1990	0.23	0.38
Philippines 2000		0.33

Source: Lall and Albaladejo (2004) table 4.

An alternative way of looking at the same data is to draw on a well-established trade classification that groups SITC categories by the technological sophistication of the products they cover based on the R and D intensity and use of natural resource of the products (see Lall 2000 for details). The significance of this means of grouping the data is that more technologically sophisticated products (principally in the high technology category) in general tend to have higher value-added per unit of export and to show the greatest market growth in world trade; in other words the high technology category captures the most dynamic segment of world trade.

Table 2 classifies PRC and regional trade in 2000 by this technology grouping. Over the period 1990-2000, PRC's total export growth was considerably faster in the high technology category (averaging 32% annually as compared with 17% for all manufactures). Whilst PRC's growth in the high technology category (principally electronics) has been impressive, in terms of share in total manufactures it still remains well below most regional partners, with the exception of Indonesia. The importance of low technology goods in 2000 reflects the continued role of clothing and textile products based on low wage costs. This significant role is expected to continue at least in the short term with the removal of the export quota system for these goods in 2005, from which PRC is expected to be the main beneficiary.

Table 2 Technological structure of manufactured exports 2000 (%)

	PRC	The Republic of Korea	Taipei,China	Singapore	Malaysia	Thailand	Indonesia	Philippines
Resource-Based	9.5	11.7	4.4	14.9	13.1	18.4	33.7	6.5
Low technology	44.9	17.1	23.8	6.5	9.6	21.5	31.3	11.9
Medium technology	21.2	34.0	25.5	17.4	17.8	23.8	17.5	11.6
High technology	24.4	37.1	46.3	61.2	59.4	36.3	17.4	70.0

Source: Lall and Albaladejo (2004) table 3 (see original for explanations of categories)

There is no simple formula for determining the degree of potential complementarity between economies, but given these differences in trade structure and the differences in domestic production that underlie them, prima facie there seems clear scope for a re-orientation of trade in the different economies in response to the opportunities created by closer trade integration and liberalization. As we shall see, there is in fact evidence of this occurring at an accelerated pace, particularly through the segmentation of production chains in the high technology (particularly electronics) branches.

Changes in Competitiveness in Third Markets

PRC's dramatic export expansion is widely recognized and its total share of world trade has risen by 4.5 percentage points 1990-2002 (from 1.9% to 6.4%).

Like the NIEs before it, export growth has been a critical driving force for industrial development in PRC, since the opening of the economy to foreign trade in the early 1990's. However the role of export demand in PRC in the 1990's appears greater than even in the first and second tier NIEs at earlier stages of their development. This is illustrated by a simple demand decomposition analysis that breaks down the increase in output over a given period into growth of domestic demand, holding the import share in total supply constant, growth of exports and the import substitution effect.[2] Table 3 reports the result of this decomposition when production data are grouped by the previous technology classifications. For PRC the dominant role of export expansion is clear and its proportionate share generally exceeds that of the NIEs, for all but resource-based manufactured products from the second tier group who are typically net exporters of these products. A figure of 203% for medium-high technology exports 1995-99 means that the increase of exports over this period is a little more than double output expansion, because of the strong negative import substitution effect, as imports took a rising share of the domestic market for these goods in PRC.

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[2] This is based on the identity $\Delta P = d_1 \cdot \Delta S + \Delta X + (d_2 - d_1) \cdot S_2$, where ΔP is change in output between period 1 and 2, ΔS is change in total supply (imports plus domestic production), ΔX is change in exports, d_1 and d_2 are the share of domestic production in total supply in periods 1 and 2 respectively, and S_2 is total supply in period 2. If we divide the three terms by ΔP then the ratio $(d_1 \cdot \Delta S)/\Delta P$ gives the share of domestic demand in total growth, $(\Delta X/\Delta P)$ gives the share of export expansion and $((d_2 - d_1) \cdot S_2)/\Delta P$ gives the effect of import substitution. A negative sign on the last term means that imports are rising as a share of domestic supply and there is negative import substitution. A negative sign on the first term means falling domestic consumption.

Table 3 Demand decomposition analysis manufactures: PRC and NIEs (%)

Region/Time period	Category	Domestic demand	Export expansion	Import substitution
PRC 1990-94				
	Resource-based	93	18	10
	Low technology	-24	164	-40
	Medium and high technology	73	48	-21
1995-99				
	Resource-based	94	17	-11
	Low technology	-30	185	-55
	Medium and high technology	4	203	-107
First tier NIEs 1985-89				
	Resource-based	91	15	-6
	Low technology	48	75	-23
	Medium and high technology	57	44	-2
1990-94				
	Resource-based	103	10	13
	Low technology	60	40	0
	Medium and high technology	68	34	-2
1995-99				
	Resource-based	538	-9	-429
	Low technology	85	21	-6
	Medium and high technology	58	53	-11
First tier NIEs 1985-89				
	Resource-based	99	-45	46
	Low technology	66	28	7
	Medium and high technology	39	81	-20
1990-94				
	Resource-based	77	31	-8
	Low technology	59	44	-3
	Medium and high technology	48	50	2
1995-99				
	Resource-based	61	85	-46
	Low technology	12	96	-8
	Medium and high technology	22	82	-4

Source: Weiss and Jalilian (2004) table 5.

Note: first and second tier NIEs are as defined in text.

This strong export growth has seen PRC's share of world trade rise by nearly five percentage points (1990-2002) and has undoubtedly eroded the position of many regional exporters in third country markets, such as the US and Japan. The most direct way of judging this competitive impact is to examine changes in market share for PRC and regional exporting economies. Lall and Albaladejo (2004) use a simple, but helpful, classification to organize the

data. For any given market (or the world economy as a whole) five groupings are possible. Using the terminology of the authors these are

- *partial threat*: where PRC and the economy concerned gain market share, but PRC gains more;
- *no threat*: where both PRC and the other economy both gain market share, but with PRC growing more slowly;
- *direct threat*: where PRC gains market share and the other economy loses it;
- PRC under threat (or *reverse threat*) where this time PRC loses market share and the other economy gains;
- *mutual withdrawal*: where both PRC and the other economy lose market share.

Data on competition in the world market between PRC and the main NIEs is illustrated in table 4 using these groupings. For each economy its total exports for 2000 are decomposed into these five categories.

Table 4 PRC threat to NIEs in the world market 2000 (% of total exports)

Category	Singapore	Taipei,China	The Republic of Korea	Malaysia	Thailand	Indonesia	Philippines
Partial threat	40.4	34.0	28.0	56.5	61.6	48.3	44.0
No threat	32.0	39.3	42.2	5.0	15.9	10.7	44.3
Direct threat	23.5	22.9	26.2	28.7	15.1	19.9	5.8
Reverse threat	3.4	3.4	2.9	6.3	6.1	8.9	3.6
Mutual withdrawal	0.7	0.4	0.7	3.5	1.3	12.2	2.4

Source: Lall and Albaladejo (2004) table 6.

From this data it appears that all economies have a majority of their exports (or very close to this in the case of the Philippines) under some form of 'threat' as defined here. Countries in the most direct competition by this indicator are Malaysia, Thailand and Indonesia, which tend to have the least sophisticated export structures of the group. The reverse threat, where countries are gaining relative to PRC is modest in all cases. The countries with the more sophisticated trade structures, with a high share of high technology exports, are those where the direct threat (where the country concerned is losing market share whilst PRC is gaining it) is greatest, although no causal inference can be drawn from this relative change in market shares. In fact, data in the appendix to Lall and Albaladejo (2004) indicate that only in Malaysia do a majority (77%) of goods under direct threat belong to the high technology category; elsewhere the majority of directly threatened goods come from low and medium technology and resource-based categories.

A more disaggregate examination of competition in third country markets is provided by Weiss and Gao (2003). To establish the degree of loss in market share to PRC exports, for a given country export growth for any commodity to a particular market (such as the US or Japan) can be decomposed into a share effect (assuming the country keeps a constant share of the market) and a competitiveness effect (allowing for its changing market share). If a comparator economy (in this case PRC) is introduced competitiveness can in turn be

decomposed into the country's market share relative PRC and the change in PRC's market share relative to the rest of the world.[3]

This approach is applied to the exports of five ASEAN countries (Singapore, Malaysia, Thailand, Indonesia and the Philippines, henceforth the ASEAN5) to the US and Japan over the period 1995-2000. To illustrate the magnitude of the loss of exports in the US due to the loss of market share relative to PRC, Table 5 decomposes the change in exports 1995-2000 for the five two-digit SITC categories for which for the ASEAN 5 the absolute export loss relative to PRC in the US is greatest. Change in exports in each category is set at 100, so the competitiveness effect viz –a- viz PRC is a proportion of this. Columns 2 and 3 always sum to 100 as they reflect the two components of total change in exports. Competitiveness relative to PRC is one element of total competitiveness and when the third column has a negative sign the country is losing market share to PRC.

Table 5 ASEAN 5 Decomposition of export increase to the US 1995-2000

SITC	Export increase to US	Constant market share effect	Overall competitiveness effect	Competitiveness viz PRC	Export change as percent of 1995 exports
75	100	112	-12	-220	42
77	100	82	18	-126	55
76	100	593	-493	-572	18
89	100	574	-474	-674	10
82	100	169	-69	-197	78

Source: Weiss and Gao (2003) table 1.

Note: SITC 75 is Office and Data Processing Machines; 76 is Telecommunications; 77 is Electrical machinery; 82 is Furniture; 89 is Miscellaneous.

In all of these categories there has been a strong effect from the loss of market share relative to PRC and in all but SITC 77 there is a 'direct threat' in terminology used above; for SITC the threat is 'partial.' What is measured is the loss in exports due to the fact that a country's market share has not kept pace with that of PRC, as a proportion of actual export increase. In some categories the absolute value of the change in relative market share is several times the value of the actual export increase. For example, for office machines (SITC 75) the loss of exports due to the falling market share relative to PRC is roughly double the actual export increase achieved, whilst for telecommunications (SITC 76) it is nearly six times the actual increase. Nonetheless in all these categories, this strong loss of market share was still accompanied by rising exports from ASEAN.

The analysis of changing competitiveness relative to PRC can be extended by focusing on trends at the four-digit SITC level and explaining these in a regression framework, which links product characteristics with changing market share relative to PRC. Here the dependent

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[3] $\Delta X_{ij} = \Delta Q_i.s_{ij} + s_{ij}.Q_i^* (\Delta s_{ij}/s_{ij} - \Delta s_{ik}/s_{ik}) + \Delta s_{ik}/s_{ik}. s_{ij}.Q_i$
where X is exports and Δ is the absolute change in, Q_i is total imports of commodity i in the market concerned (at the end of the period), s_{ij} is the initial market share of country j in imports of i and with competitor country k, s_{ik} is k's market share for product i. In this expression the first term gives the share effect with market share constant, the second term gives a measure of competitiveness for country i relative to the comparator and the third term gives the competitiveness of the comparator.

variable is the value of lost exports due to change in market share relative to PRC, scaled by division by total exports in 1995 in the same category.[4] Weiss and Gao (2003) test whether loss of competitiveness defined in this way is systematically related to the characteristics of trade categories, whether in terms of technological characteristics, or patterns of specialization. A simple model that makes competitiveness a function of the characteristics of products, as reflected in a measure of specialization, general shifts in competitiveness and changes in tastes as a demand factor, is applied. They use a measure of specialization the relative revealed comparative advantage measure (RCA) at the start of a period to explain changing competitiveness over the period.[5] This is on the grounds that the initial RCA can be taken as a proxy for the relative output level and factor intensity of different products.

The analysis across 690 four-digit SITC categories is first conducted for the ASEAN 5 as a group and then for each economy individually. It is carried out separately for the US and for the Japanese markets. The broad results strongly support the view that not only have the main ASEAN economies have been exposed to increasing competition in both the US and Japanese markets and that their reduced competitiveness relative to PRC appears to be related systematically to particular product categories, with losses greater in the areas within these categories, where the ASEAN economies are most highly specialized relative to PRC.

Significantly, there is evidence of increased competition from PRC at both the relatively labor-intensive and the relatively high technology end of the product scale, although within a given trade category technological sophistication appears generally to offer some protection for ASEAN exporters. This latter effect is found in different products categories for different countries and appears to be most uniform for engineering products in the US. The only product category for which there is no evidence of systematic loss of competitiveness is automobile products, which is both small in value and for which there are the smallest number of observations. In no product category is there any evidence of systematic gains relative to PRC, although for a few countries and categories there is a significant cross-over rate for the RCA variable, which implies that at lower levels of specialization there is a gain of competitiveness relative to PRC, whilst there are losses at higher levels.

For the large categories of electronics and electricals and engineering (which combined are two-thirds of ASEAN exports in the US and 40% in Japan) there is a consistent pattern of loss of competitiveness, which is stronger in more specialized products, and which holds for all countries in both markets. For the other important categories of primary products, resource-based manufactures and textiles and garments, all countries show significant losses in either the US or Japan and in a majority of cases for these categories countries show a significant loss in both markets. Again this is always significantly related to the degree of specialization.[6] It must be stressed that loss of competitiveness as defined here refers to loss of market share relative to PRC. This does not necessarily convert into an absolute decline in exports. Absolute export declines for ASEAN are found for primary products and engineering in the US and for primary products, resource-based manufactures,

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[4] Using the notation in footnote 3 competitiveness (COMP) is measured as

$$COMP_{ij} = [\, s_{ij}.Q_i^* \,(\, \Delta s_{ij}/s_{ij} \, - \Delta s_{ik}/s_{ik}) \,] \,/ X_{ij}$$

where X_{ij} is initial exports of i from j to the market concerned. Where there is a gain in market share relative to PRC, COMP will be positive and where there is a loss it will be negative.

[5] Relative revealed comparative advantage is defined as $RCA = (X_{ij}/X_{tj})/(X_{ik}/X_{tk})$

where X refers to export value, t stands for total exports and k is the comparator economy. In principle the RCA may be related to changes in competitiveness, as defined here, either through shifts in relative factor prices or to a simple 'catching up' effect. As total trade covers a wide variety of product types to impose some pattern on the data dummies are applied for nine product categories that are sub-divisions of the Lall technology classification noted above. The use of dummy variables reflecting these nine categories implies that there is broad homogeneity within each in terms of the response of different products to the explanatory variables.

[6] Weiss and Gao (2003) hypothesize that the link between greater specialization in ASEAN relative to PRC and loss of market share is due to shifts in the relative capital rental-wage ratios that are favorable to PRC and hence unfavorable to ASEAN. Increased domestic savings or rising FDI inflows to PRC, which increase the supply of capital and lower the capital rental-wage ratio, are simple candidates for a general explanation. Naturally, more detailed industry-specific effects as well as general catch-up trends, noted earlier, may also be at work, but the analysis does not capture these.

and textiles, garments and footwear in Japan. Hence much of the erosion of market share is in categories whose sales from ASEAN are continuing to expand, principally the very large category of electronics and electrical goods. Here losses of market share are in the product lines where ASEAN is most specialized, eroding established market positions.

The conclusion is that neighbors in the region have been exposed to strong direct competition from PRC's exports and there has been some trade diversion in the sense of relative loss of market share as a consequence. Before discussing evidence on the net overall impact of closer trade integration we turn to the FDI diversion argument.

Competition for FDI: Is there a Diversion Effect?

FDI inflows have been a major driving force in development in East and South East Asia in recent years and some of the second tier NIEs, in particular have relied heavily on FDI for technology, management and marketing skills. The 'rise of PRC', in terms of its attraction of heavy FDI inflows, has caused considerable concern that if total FDI to the region is limited, PRC's gain will be at the expense of its neighbors. If as expected foreign firms have special advantages that allow access to export markets any FDI diversion will in turn have implications for trade flows and diversion effects. Insofar as South East Asian economies saw declining FDI inflows in the late 1990's in the aftermath of the regional Financial Crisis (and in the case of Indonesia net outflows), whilst PRC was the single largest developing country recipient, this concern had a superficial plausibility. However a closer examination of the data suggests the case is greatly overstated for a range of reasons.

First, there is often confusion in popular discussion between the absolute and relative size of FDI to PRC. Whilst in absolute terms FDI to PRC is very large, once this figure is compared with either population or some measure of economic activity in the country, the ratio is not an outlier in comparison with other countries. This is seen readily in the UNCTAD FDI Performance Index, which compares a country's share in global FDI to its share in global GDP. For 1999-2000 the figure for PRC at 1.2 is roughly the average for the region as a whole and is below the comparable figures for Singapore, Thailand and Malaysia (UNCTAD 2002, table 2.1).

Second, this type of comparison based on officially recorded FDI flows will give an upward bias to PRC's position, since it is widely accepted that 'round-tripping' – that is the export of domestically generated funds and its return to its country of origin as FDI, is more significant in PRC than elsewhere. The motives for round-tripping in the case of PRC are essentially threefold; the reinvestment of flight capital that may have had its origins in the black economy; the preference to register enterprises as foreign investment to take advantage of tax incentives not available to local firms; and the wish to incorporate companies abroad (particularly in Hong Kong, China) to take advantage of improved reputation, corporate governance and superior financial services. Xiao (2004) examines these issues in detail. Through a comparison of FDI statistics in the country of origin and PRC, he breaks down the discrepancy into what he terms a normal 'statistical error' and round-tripping. His most likely estimate of the latter is as high as 40% of FDI inflows in recent years (with high and low estimates of 50% and 30%, respectively). If recorded figures are adjusted downwards by this proportion, PRC's FDI Performance Index figures (as defined above) will appear well below the regional average.

A simple comparison of FDI statistics and their downward adjustment as appropriate casts some doubt on the extent to which FDI to PRC is unusually high. However, one can address

the diversion argument more rigorously by identifying the explanatory factors behind regional FDI inflows and adding a separate variable for 'a PRC effect'. Chantasasawat et al (2003) do this by setting up a regression model that explains FDI to eight East and South East Asian economies (1985-2001) by a number of conventional variables (including measures of market size, tax rates, wage levels, human capital stock, infrastructure quality and government stability) plus FDI inflows to PRC.[7] If the investment diversion case is valid one will expected a significant negative coefficient on the PRC FDI variable.

The key result of interest here is that when the level of FDI investment in the eight neighboring economies is examined, it is positively not negatively related to FDI in PRC. A 10% increase in FDI to PRC raises FDI in the region by 5%-6% depending on specification. Rather than finding evidence of FDI diversion, it appears that FDI creation is at work. The authors explain this by reference to production networking amongst international firms in the region, so that investment in PRC may be linked with investment elsewhere in the region to supply parts and components to plants located in PRC (or vice versa with PRC supplying parts and components to plants in one of the eight neighboring economies). This result holds whether or not FDI from Hong Kong, China, with an assumed high round-tripping element, is included in the analysis. The 'PRC effect' is not the strongest of the factors explaining FDI inflows with measures of trade openness and taxation showing higher elasticities. Nonetheless the significant positive sign on FDI to PRC is a strong undermining of the case that competition for FDI in the region is a zero-sum game. It seems preferable to view FDI flows as at least partially endogenous to regional activity, with FDI responding to the profit opportunities generated by regional growth and with FDI flows to one economy interacting positively with FDI flows to another as international firms exploit regional production sharing in a segmentation of the supply chain.

What is the Evidence on Trade Creation?

PRC has seen a major increase in its imports from its neighbors in the region in the last few years and its rapid growth has been widely identified as a key source of dynamism for these countries. For example, from 1995-2003 exports of precision instruments and electrical machinery (much of this parts and components) from its nine major neighboring trade partners grew by over 600%; exports of machinery, chemical products and transportation equipment grew by around 300%.[8] This import growth was over a period of major change in trade policy in PRC in preparation for WTO accession. Many of the changes needed for WTO entry were introduced during the 1990's, so that the weighted average tariff on manufactures fell from 47% in 1992 to 13% in 2001. Under the WTO agreement it is due to be reduced further to 7% (expected by 2005) and the remaining non-tariff barriers are to be simplified and phased out (Martin et al 2004).

However establishing the link between this surge in imports form the region and the trade reform associated with WTO entry requires more than simply a description or projection of current trade patterns. A counterfactual non-reform scenario must be compared with a projected 'with reform' case. The conventional means of addressing this is to apply a form of

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[7] As there will be simultaneity in the relationship with feedback between FDI to the various countries and PRC the model is estimated as a simultaneous equation system where

$$AFDI_{it} = \alpha + \beta PRC\_FDI_t + \lambda x_{it} + \mu_i + e_{it} \qquad (1)$$
$$PRC\_FDI_t = \gamma + \delta AFDI_{it} + \rho z_t + v + w_t \qquad (2)$$

Here subscripts i and t refer to country i at time t; x_{it} is the set of determinants of FDI to the Asian economies covered, so for country i its FDI inflow is $AFDI_i$; z_t is the set of determinants for FDI to PRC (PRC_FDI); u_i and v are country specific terms, and e_i and w are error terms.
[8] See ADB (2004); these figures include Hong Kong, China as a separate export source and are therefore slightly misleading.

computable general equilibrium (CGE) model that compares a baseline (pre-reform) case with scenarios based on one or more trade reform packages. Roland-Holst (2002) and (2003) applies a version of the well-known GTAP model to assess the impact of reform on trade and income for both the region and PRC itself.[9]

The model provides a direct comparison of with and without scenarios and its outcomes are driven by a combination of assumed macro growth rates, changes in import protection (that is the degree of trade reform) and demand and supply patterns in the countries covered. However, as a projection of the future it is best described as 'indicative'; that is a projection of what will happen if markets clear in the way models of this type assume. As CGE models of this type assume that all markets revert to equilibrium, in effect they imply instant adjustment as resources shift from previously protected activities, so there are no frictional underutilization problems arising from changes in trade policy. This is the perfectly competitive world in which 'competitiveness' is not an issue. This is not to imply that such models give results that have no meaning, but by ignoring transitional difficulties arguably they have an implicit bias in favor of the policy they are examining.[10] Furthermore there is always the issue of whether non-tariff barriers are accounted for adequately in this type of exercise.

The major result of Roland-Holst (2002, 2003) that after WTO accession in the longer-term up to 2020, PRC will have a rising trade surplus with N. America and Europe, but a rising trade deficit with ASEAN and the neighboring region more generally. Broadly speaking PRC will export finished goods to the former markets and import foodstuffs, raw materials, parts and components and capital goods from the latter.[11] Table 6a and 6b illustrates the basic run of the model, which compares the baseline case (that is projections under the assumption of no policy change) with the PRC WTO accession scenario.

Table 6a Trade growth (percentage change from baseline scenario in 2020) with PRC WTO accession.

Exports to	PRC	Japan	NIE	ASEAN	USA	EU	ROW	Total
Exports from								
PRC	0	37	43	36	31	35	32	34
Japan	38	0	-4	-6	-7	-5	-5	3
NIE	32	-10	-7	-11	-13	-10	-10	3
ASEAN	28	-4	-1	-2	-5	-3	-4	1
USA	24	-1	1	-1	0	-1	-1	1
EU	22	0	1	-1	-2	-1	-2	0

[9] The model is aggregated to cover 16 countries and 18 sectors. Production sectors are based on constant returns CES production functions. Macro growth is imposed exogenously from consensus forecasts and there are fixed government and balance of payments positions. The latter is set by exogenously given capital flows and is maintained by a change in the real exchange rate, which is endogenous. Productivity growth is determined partly by the imposed macro growth rate and partly endogenously, as it is assumed to be positively related to the export-output ratio by an imposed elasticity; for details see Roland-Holst (2002).
[10] Modelers often respond, however, that by omitting dynamic effects relating to higher investment or capital flows these models tend to understate not overstate the gains from trade reform; see for example Lee et al (2004) footnote 17.
[11] This broad result is found in a number similar studies; see for example Ianchovichina and Martin (2003)

ROW	13	0	2	-2	-2	-1	-1	0
Total	26	5	6	2	2	0	1	3

Notes: NIE is the Republic of Korea and Taipei,China; ROW is rest of world

Source: Roland-Holst (2002) table 4.2

Table 6a shows for example that PRC's exports to ASEAN are 36% higher in 2020 as a result of WTO accession, whilst ASEAN's exports to PRC are 28% higher. The respective percentage changes for the Republic of Korea and Taipei,China (the NIE here) are 43% and 32%. Table 6b gives the same results now focusing on the change in the bilateral trade balance between different groupings and PRC as a result of WTO accession. The NIE for example have a bilateral trade surplus with PRC in 2020 of US$ 34 billion as a result of WTO accession which explains roughly one-third of the their total projected surplus. For ASEAN the share explained by WTO accession is much smaller (presumably because trade barriers were lower prior to accession) at less than 10% (US$3 billion out of a surplus of US$ 41 billion).

Table 6b Absolute change in bilateral trade balance with PRC in 2020 compared with baseline scenario (in 1997 US $ billions).

Country	Change in bilateral balance PRC-country due to WTO accession	Projected actual bilateral trade balance PRC –country 2020
Japan	-4	-5
NIE	-34	-135
ASEAN	-3	-41
USA	61	166
EU	46	66
ROW	51	71

Note: negative sign indicates a deficit for PRC

Source: Roland Holst (2002) table 4.3 and (2003) table 2.2

These results can be extended by accepting WTO accession as a given and posing the question, what additional trade creation results from new regional arrangements such as PRC's joining the ASEAN free trade grouping, the Asian Free Trade Area (ASEAN plus PRC) or PRC, plus Japan and the Republic of Korea, joining ASEAN (ASEAN plus 3)? Tables 7a and 7b provide the answers in terms of percentage change in trade flows in 2020, now compared with the scenario of PRC's WTO accession, rather than the original baseline.

When PRC in ASEAN is examined a strong growth in PRC exports to ASEAN is predicted (47% above the level with WTO accession alone). Import growth from ASEAN is only modest at 2%, presumably on the basis that barriers in PRC are treated as already very low after WTO accession. ASEAN significantly reduces imports from third countries, so there is an important trade diversion effect (for example US exports to ASEAN are 6% lower and Japanese exports are 10% lower). In the case of the wider group of ASEAN plus PRC, Japan and the Republic of Korea most effects are magnified, with PRC's exports to the latter two countries rising strongly. Again however the exports to PRC grow only modestly relative to the predicted level under WTO accession (Japan's are 2% higher and ASEAN's 4%). This

once more is due to the fact WTO accession is taken to have offered easy market access to PRC to exporters from these economies. There are now also greater diversion effects for exports of non-members than in the more limited ASEAN plus PRC arrangement (US exports to ASEAN, for example fall by 9%).

Table 7a Trade growth (percentage change from PRC WTO accession scenario in 2020) with PRC joining ASEAN.

Exports to	PRC	Japan	NIE	ASEAN	USA	EU	ROW	Total
Exports from								
PRC	0	-4	-4	47	-3	-4	-3	1
Japan	2	0	1	-10	1	1	1	0
NIE	2	0	0	-12	1	1	1	0
ASEAN	2	4	3	33	3	3	1	9
USA	1	0	0	-6	0	0	0	0
EU	1	0	0	-5	0	0	0	0
ROW	2	0	0	-7	0	0	0	0
Total	2	0	0	9	0	0	0	1

Source: Roland-Holst (2003) table 3.2

Table 7b Trade growth (percentage change from PRC WTO accession scenario in 2020) with PRC joining ASEAN plus 3.

Exports to	PRC	Japan	NIE	ASEAN	USA	EU	ROW	Total
Exports from								
PRC	0	21	33	27	-8	-9	-8	3
Japan	2	0	39	40	-2	-2	-2	10
NIE	3	50	31	43	0	-1	-2	11
ASEAN	4	49	35	26	5	4	0	14
USA	5	-4	-11	-9	1	1	1	-1
EU	4	-2	-10	-11	1	0	0	0
ROW	5	-9	-10	-8	1	0	1	-1
Total	4	12	10	13	-1	0	-1	2

Source: Roland-Holst (2003) table 3.3

Detailed information on particular sectors can also be derived from this model. If one considers the relatively inclusive regional trade grouping of ASEAN plus 3 as compared with the WTO accession scenario by 2020 PRC exports are higher in 9 out of the 18 sectors in the model, the vast majority of total export gains are in just two sectors Processed Food (US$40 bill in 1997 prices) and textiles (US$ 8.5 billion) (Roland-Holst 2003, table 3.9). A

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disaggregated look into import and export flows at the sector level arising from the ASEAN plus 3 scenario is also possible utilizing a simple measure 'intra-industry competitiveness, essentially net exports relative to total trade in the sector.[12] Table 8 gives this measure of bilateral trade flows by sector in 2020 for the scenario of PRC joining ASEAN plus 3.

Table 8 Intra-industry competitiveness 2020 for PRC by sector and trading partner (scenario of PRC in ASEAN plus 3).

Sector	Japan	NIE	ASEAN	Total
Rice	1.00	1.00	-0.94	-0.47
Other Grains	1.00	1.00	1.00	-0.48
Oil Seeds	1.00	1.00	1.00	-0.78
Sugar	1.00	-1.00	-1.00	-0.86
Other Crops	0.96	0.92	-0.54	-0.48
Livestock	0.72	0.44	-.64	-0.51
Energy	0.96	-0.28	-0.74	-036
Processed Food	0.94	0.63	-0.45	-0.15
Textiles	0.04	-0.69	0.41	-0.12
Clothing	0.89	0.73	0.99	0.92
Leather Goods	0.94	-0.26	0.80	0.72
Basic Manufacturing	-0.06	-0.38	0.09	-0.02
Motor Vehicles	-0.81	0.52	0.76	-0.32
Other Transport Equipment	-0.06	-0.54	0.85	0.00
Electronic Goods	-0.32	-0.42	0.02	0.06
Other Manufactures	-0.11	-0.05	0.44	0.22
Construction	-0.32	0.31	1.00	-0.48
Services	0.26	0.32	0.34	0.24

Note: NIE is the Republic of Korea and Taipei,China.

Source: Roland-Holst (2003) table 3.13.

The sectoral picture, which emerges is that in general under this scenario PRC is a net importer of primary products, foodstuffs and energy and a net exporter of manufactures. This pattern is replicated in its projected trade with ASEAN. In the important electronics category the IIC figure 0.02 indicates a small trade surplus of 2% of electronics trade (imports plus exports) between PRC and ASEAN. For trade with the Republic of Korea and Taipei,China in general there is a projected net deficit in manufactures with the important exceptions of Clothing, Processed Food and Motor Vehicles; here there is a heavy deficit in Electronics

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[12] For sector i intra-industry competitiveness (IIC) is $IIC_i = (X_i - M_i)/X_i + M_i$, where X and M are exports and imports respectively. This figure can be given for total trade or for bilateral trade between countries x and y, so that for sector i in trade between x and y we have $IIC_{ixy} = (X_i - M_i)_{xy}/(X_i + M_i)_{xy}$.

with the IIC of –0.42 indicating a trade deficit roughly 40% of total trade in electronics with these two countries. Trade with Japan is projected to be in surplus with the exception of the more capital and technology intensive sectors in Manufacturing and Construction.

Concern has been noted that closer trade links with PRC may push ASEAN economies down rather than up the ladder of comparative advantage into lower skill activities. Evidence from the same modeling work casts doubt on this. The IIC indicator can be adjusted to reflect differences in skilled to unskilled labor ratios between sectors, and this labor-adjusted version of the IIC can be used to classify sectors into 'import dependent', 'trade neutral' and 'export oriented'.[13] If one considers changes over the late 1990's (1996-2000) in bilateral PRC-ASEAN trade on a skilled labor content basis there was a substantial shift of 16 percentage points towards greater export –orientation (which was much greater than if the unadjusted data are used). The implication is that over this period ASEAN was increasing its net exports to PRC in relatively more skill intensive activities.

Examination of trade flows alone does not indicate income or welfare changes (and may imply the 'mercantalism fallacy' that exports are good and imports are bad). The modeling exercise also incorporates income change estimates calculated as future discounted income streams with a consumption and savings component. The fullest statement of these estimates by the same author is in Lee et al (2004), which looks at a shorter period 2005 to 2015 and appears to use a slightly different model specification to the earlier work.[14] Table 9 summarizes the income effects by 2015 for three different scenarios – PRC's unilateral removal of all remaining trade barriers (PRC UNI), PRC joining ASEAN and ASEAN plus 3. For 2015 the income change by country and region for these scenarios is given relative to the baseline (broadly the PRC WTO accession scenario). These estimates are given in two versions with (table 9a) and without (table 9b) agricultural liberalization.

Table 9a Income effects relative to baseline 2015 (% change)

Country	PRC UNI	ASEAN plus PRC	ASEAN plus 3
PRC	2.9	1.4	4.0
Japan	0.3	0	1.6
The Republic of Korea	0.6	-0.1	3.7
Taipei,China	1.0	-0.3	-1.0
ASEAN	0.5	2.5	4.0
World	0.4	0.2	0.7

Source: Lee et al (2004) table 1.

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[13] The adjusted figure is $ELTi_{xy} = (\lambda i^x X_i - \lambda i^y M_i)_{xy}/(\lambda i^x X_i + \lambda i^y M_i)_{xy}$, where λi^x is the skilled to unskilled labor ratio in value-added for commodity i in country x and λi^y is the same for country y. Sectors are classed as import dependent if ELTi is between –1 and –0.33, trade neutral if it is between -0.33 and 0.33, and export-oriented if it is between 0.33 and 1; see Roland-Holst and Weiss (2004).

[14] One difference is the inclusion of 'trade costs' as wedge between cif and fob prices. Policy reform scenarios assume not just a removal of tariffs, but also a lowering of trade cost, in this case by 2.5%. Also in the more recent work the baseline scenario is not very explicit; it appears to be the equivalent of PRC WTO accession in the earlier papers.

Table 9b Income effects relative to baseline 2015 (% change) without removal of barriers on food and agricultural products.

Country	ASEAN plus PRC	ASEAN plus 3
PRC	0.9	1.9
Japan	0.1	0.7
The Republic of Korea	-0.1	1.5
Taipei,China	-0.3	-1.0
ASEAN	1.7	2.6
World	0.1	0.3

Source: Lee et al (2004) table 2.

As is predictable in this type of model, since adjustment costs are assumed away, the wider the spread of the area of free trade the larger are the benefits. Hence ASEAN plus 3 is the preferred arrangement in terms of income change for all countries, apart from the excluded trading partner Taipei,China. Unilateral removal of remaining tariffs by PRC is a superior alternative for it and the rest of the world than its entry into the limited free trade area of ASEAN, although the latter is a superior option for ASEAN countries. If agricultural trade is excluded from the reform process, benefits to all parties fall and the Republic of Korea and Taipei,China can lose from PRC's unilateral trade liberalization.

As note earlier these modeling exercises mask complex internal shifts in resource allocation within partner economies as trade barriers are reduced. In PRC this will entail potentially complex shifts within agriculture (for example in relation to grains) and in parts of manufacturing (particularly in heavy industry, parts of which are often said to be highly inefficient). These modeling exercises imply that there is ample income growth to compensate potential losers and ensure a 'Pareto optimal' outcome. However with rising inequality and a fiscally constrained state, compensation is likely to be potential rather than actual and the adjustment process will almost certainly imply winners and losers.[15] Similar points can be made concerning adjustments in partner economies.

There has been considerable concern in many countries including PRC that national domestically owned firms may be too small to compete in global markets. During the 1990's official policy in PRC identified a 'national team' of 120 large enterprises to be 'championed' although for range of reasons, including restrictions on mergers and acquisitions due to intervention by provincial authorities and what was seen as forced diversification, the 'national global giants' strategy has been judged a failure (Nolan 2001: 187). As yet there is little evidence from the trade data that this has been a serious hindrance for the economy and that in key sectors local firms are too small to compete.

Conclusions

There is now considerable evidence, as surveyed here, that PRC's recent rapid growth has generated substantial opportunities for trade and investment in regional partner economies. This rapid growth has sucked in large volumes of imports of both primary and manufactured goods that have compensated its neighbors for their losses of market share in the US and Japan. Even the concern over FDI diversion, which appeared an obvious 'threat' a few years

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[15] How rapidly private sector investors emerge to take up opportunities offered by these developments on the trade front will have important implications for the actual pace and pattern of adjustment; see Kanamori and Zhao (2004) for a discussion of the evolution of the private sector in PRC. Kanamori (2004) discusses fiscal constraints.

ago, can be set aside on the basis of substantial empirical evidence. Central to the growth of intra-industry trade in the region has been the spread of global production networks either between units of the same firm or with independent contract manufacturers, who provide goods to the buyer's specification. Hence final products made in PRC may contain parts and components from many different parts of the region with value-added at stages in a production chain that stretches across a number of countries. FDI has been a prime mover in this process in integrating PRC-based firms in these global networks and in developing the 'triangular trade' between PRC, the rest of East-South East Asia and the large markets in the US and Europe. In this emerging specialization its regional neighbors provide the inputs for manufactures from PRC, which are then exported out of the region. Currently this is proving strongly mutually beneficial.

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