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The Rise of China: Prospects of Regional Trade Policy

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ABSTRACT

China now engages in multilateral trade liberalization as a new member of the WTO. Concurrently, the number of regional trade agreements is increasing worldwide. China and its trading partners would benefit from increased regional liberalization. Using a gravity equation for 23 Asia-Pacific countries between 1992 and 2000, we show that ASEAN and APEC currently have small effects on Asia-Pacific exports, which are mainly influenced by growth, trade barriers and common language. However, we find that China's participation in regional agreements has large export potentials, not only with respect to ASEAN, but also in a broad agreement including South- and East-Asian countries.

Keywords: China, Economic Integration, Trade Forecasting and Simulation, Gravity Model

JEL: **F15**, **F17**

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1. Introduction

In the past decades there has been a large expansion of trade in the Asia-Pacific region. Inspired by the East-Asian tigers, other countries in the region are increasingly participating in trade. In order to boost international trade, most Asia-Pacific countries pursue a policy of multilateral trade liberalization and have also entered into one or more regional trade agreements (RTAs). Given the increase in RTAs in other parts of the world, future multilateral liberalization may take place between trading blocs rather than between individual countries. Moreover, in response to difficulties in effecting multilateral trade negotiations, RTAs might demonstrate larger dynamics in liberalizing trade. This may be the case especially in the Asia-Pacific region.

China's recent accession (2001) to the World Trade Organization (WTO) is a major step forward in the multilateral liberalization process. The opening of the large Chinese market will create new trade and investment opportunities for both China and its trading partners. But compared to its neighboring countries, China has to date been less active in joining RTAs in the Asia-Pacific Region. Nevertheless, China continues to further integrate with other Asian countries, as demonstrated by the recent talks between China and the Association of Southeast Asian Nations (ASEAN)[1]. This raises the question what regional trade policy is optimal for China and what the consequences are for the entire region. This paper focuses on the options for Chinese regionalism within the "regionalism versus multilateralism" debate.

In what follows, we estimate a gravity model for a set of 23 countries in Asia and the Pacific over a period of 9 years (1992-2000). In particular we try to answer three questions:

1. Which countries offer the largest openness to imports and exports and are hence good partners for regional trade liberalization?
2. Are the existing RTAs in the Asia-Pacific region trade creating or trade diverting with respect to members and non-members?
3. How large are the trade potentials for each country involved if China joins these RTAs?

[1] See Antkiewicz and Whalley (2004) for an overview of China's recent RTA negotiations. See 2.3 and further for an overview of the member countries of ASEAN and APEC.

We focus on three RTA-scenarios. The first two involve RTAs with the Association of Southeast Asian Nations (ASEAN) and the Asia-Pacific Economic Cooperation (APEC) forum. The third is what we shall call the "Asian APEC", consisting of a large group of Asian economies.

The gravity approach here is fine-tuned by some recent suggestions made in the literature. First, we pay particular attention to the distance-variable and, secondly, we apply recent panel data econometrics throughout. Finally, we take into account new suggestions to measure trade creation and trade diversion effects.

The empirical findings point to limited effects from existing RTAs once we apply the appropriate methodology. Nevertheless several countries in the Asia-Pacific region show a large openness to trade. The formation of an RTA would hence be beneficial. If China joins APEC, ASEAN or a broader Asian RTA, there will be large export potentials for most countries. The effects of China's integration into ASEAN are the largest, but the trade potentials with Southern Asia are also considerable.

The gravity approach is complementary to computable general equilibrium (CGE) models. Recent CGE-studies have looked at the impact of China's accession to the WTO. Ianchovichina and Martin (2001), using the World Bank GTAP multi-country model, find that China and the majority of its trading partners benefit from this accession. Adjustment requirements are limited because of China's liberalization policy in recent years. Based on a single-country CGE-model, Zhang (2004) predicts that China's exports and imports will grow thanks to WTO membership. However, exports grow less than imports; hence the Chinese trade surplus is predicted to shrink. Moreover, Brown et al. (2003) show that the welfare increase from RTAs are mostly smaller than the gains from multilateral trade liberalization. Generally speaking, these CGE-studies focus on a broad range of issues affected by China's integration in the world economy. The gravity model focuses on changes in bilateral total trade only and is particularly useful for analyzing how trade flows are influenced by creating or expanding RTAs.

In what follows, section 2 explores the benefits and disadvantages of regional trade policy in the Asia-Pacific region. In section 3, we use the gravity model to assess the impact of the current Asia-Pacific RTAs and the prospects for future regionalism in the region. In section 4, we consider the prospects of trade potentials for China and its trading partners once China joins RTAs. Finally, section 5 formulates some policy conclusions.

2. Regionalism versus Multilateralism in the Asia-Pacific Region

2.1. Growth, Trade and Economic Ties in the Asia-Pacific Region

Most Asia-Pacific countries experienced high economic growth during the past decade. However, as Table 1 shows, there are significant differences across the region in terms of GDP per capita and average growth rates. China's growth performance is remarkable even within this group of countries. Other Asia-Pacific countries benefited from this high economic growth in China, as China's growth also increased its imports. Hence, China's growth is both export-driven and import-driven[2]. Average yearly growth between 1992 and 2000 equals 15 % for exports and 14 % for imports. Both exports and imports almost tripled over the same period.

China's main trading partners are situated in the Asia-Pacific region. In 2000, approximately 80 % of Chinese exports went to neighboring countries. At the same time, China imported about 71 % of its imports from the region. Nevertheless, as Table 2 shows, the share of intra-regional trade declined in the 1990s. Especially the importance of trade with APEC went down significantly, whereas the share of ASEAN and SAARC increased very significantly. Average yearly import growth (1992-2000) equals 50 % for ASEAN and 70 % for SAARC. This is mainly driven by the large Chinese appetite for raw materials and capital goods. This impact of China's exports on the other Asian economies has been recently investigated by Eichengreen et al. (2004). They find that China crowds out exports of consumer goods by less-

[2] Therefore some call China the "world's factory", as China processes imported basic commodities and raw materials – apart from capital-intensive goods – and exports final consumer goods to the entire world.

developed Asian countries. Conversely, more advanced Asian economies benefit from Chinese imports of capital goods.

2.2. Advantages and Disadvantages of Chinese Regional Trade Policy

Economic integration theory basically points to two results from forming an RTA, in line with Viner (1950) and Kemp and Wan (1976). Members benefit from trade creation, while non-members are hurt by trade diversion. However some countries may be unwilling to join an RTA, because the gains from regional liberalization are not always equally distributed. Unequal distribution may take place both between and within countries. We summarize the advantages and disadvantages of Chinese membership, subsequently for China and for the region.

From China's perspective, RTAs are likely to be trade-creating. Chinese exports will benefit from increased market access to neighboring countries, but RTAs are beneficial to China's imports as well. China is already an important importer of raw materials from the region. Cheaper imports of these products will improve the competitiveness of the Chinese manufacturing sector, which is the main driving froce behind China's recent successful economic performance. Apart from trade creation, China may experience trade diversion caused by RTAs in which it does not participate. From this perspective, Baldwin's (1993) "domino theory of regionalism" is applicable to China. That is, if China experiences trade diversion because other countries form an RTA, then it becomes more likely that China will also pursue a policy of regional integration[3]. If China is excluded from all RTAs, it would be severely hurt by trade diversion. In this case, it is optimal to pursue an active regional trade policy in order to join one or more RTAs.

From the viewpoint of the other countries in the region, access to the large and expanding Chinese market should result in large export opportunities and hence trade creation. Advanced countries in the region, and also other emerging markets will benefit from increased Chinese openness. On the other hand, Asia-Pacific countries

[3] Baldwin (1993) uses sunk costs (transportation costs) as an argument for economic integration. Alternative mechanisms can be applied. One example is attracting FDI. Regional integration can make smaller countries more attractive to foreign investors that prefer currently to invest in the large Chinese market.

fear competition from China with its large inward FDI flows. However, RTAs including China may attract FDI into other Asian economies as well, as foreign investors circumvent the external barriers. Investors will screen the entire region and they will choose their optimal production location in order to serve the entire RTA-region.

Finally, RTAs are important politically. Given China's increasing political power, increased trade relationships are an important instrument internationally. For other Asian countries strong trade ties with China may serve as a guarantee for regional safety and stability, which is a major concern of all existing RTAs. Hence from this perspective, regionalism might be the optimal choice for the entire region[4].

2.3. Options for China's Regional Trade Policy

Given that there are reasonable arguments in favor of further regional trade initiatives involving China, the question becomes which RTA is preferable. We assume three integration scenarios in what follows.

China is presently involved in two regional initiatives that focus on trade liberalization[5]. First, there have been negotiations with ASEAN and an extended ASEAN to include, next to China, Japan and Korea, mostly referred to as ASEAN+3. Secondly, China is already a member of APEC. Although APEC consists of a large variety of countries, the organization also aims at increased trade liberalization.

ASEAN is not a homogeneous group. There is a clear gap between the more developed member countries (Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand) and some poorer countries, which joined ASEAN at a later stage (Cambodia, Laos, Myanmar and Vietnam). This heterogeneity hampers the planning

[4] Some argue that discriminatory liberalization - which is the case in most RTAs – could improve Asia's negotiating position in the WTO multilateral negotiations. Such liberalization offers the continent a means of retaliation against other trading blocs. This may involve a "yen bloc" or "Asian bloc", apart from the EU and NAFTA. But many countries already have an outward-looking policy. So one can wonder who will be affected by this discriminatory policy. The United States especially is wary of Asian trade integration and might retaliate. For this reason Panagariya (1994) argues against any Asian RTA, as the costs outweigh the benefits.

[5] There are more initiatives, but these two might be considered as the most important ones.

for further regional trade liberalization. Although ASEAN was founded in 1962, the organization launched AFTA (ASEAN Free Trade Area) only in 1992. The agenda on economic integration has been adapted several times since then. For now, ASEAN aims at forming an RTA among the six richer and founding members in 2010 with a complete elimination of all import tariffs. The newer members will join the RTA in 2015. Some exceptions are to be made for sensitive products. These exceptions may be crucial for AFTA's success. Meanwhile the six founding members plan to form an RTA with reduced tariff rates under the so-called Common Effective Preferential Tariff Scheme (CEPT).

Most members of ASEAN are also part of APEC, except for Myanmar, Laos and Cambodia. APEC is predominantly concerned with trade and other economic issues, and can hardly be called a real RTA. Compared to ASEAN, APEC consists of a much larger group of countries, including advanced economies like the United States, Australia and Japan, but also emerging economies from South America, Asia and even Russia.

Both ASEAN+3 and APEC offer prospects for RTAs for China. However, there might be additional options to consider for China. In particular increased trade liberalization among a larger group of Asian economies may be worthwhile. We will refer to this option as "Asian APEC". In South Asia some modest attempts are being made to increase regional trade. The South Asian Association for Regional Cooperation (SAARC) consists of India, Bangladesh, Pakistan, Sri Lanka, Nepal, Bhutan and the Maldives. These countries set up the South Asian Preferential Trading Agreements (SAPTA), which was signed in 1993 and entered into force in 1996, in order to gradually achieve an RTA among them[6] (Gupta 2002). We thus consider a broad Asian RTA, including the SAARC and ASEAN countries, but also Japan, Korea, Taiwan and Hong Kong, as a third regional trade policy option for China. This option reflects empirical evidence that trade between South and East Asia is growing rapidly (RIS 2002: 98). Moreover, an RTA between the two largest countries in Asia, China and India, undoubtedly may create large trade opportunities.

[6] This gradual approach may subsequently involve the formation of a Free Trade Area, a Custom Union and a full Economic Union.

We thus use ASEAN, APEC and the "Asian APEC" as three scenarios in what follows.

3. Impact and Prospects of Regionalism in the Asia-Pacific Region

3.1. Gravity Model and Data

The gravity model is a popular tool in empirical trade analysis. In particular it is useful to analyze the impact of RTAs on bilateral trade flows. We use the following gravity model specification:

$$\ln E_{ijt} = a + b_1 \ln Y_{it} + b_2 \ln Y_{jt} + b_3 \ln POP_{it} + b_4 \ln POP_{jt} + b_5 RER_{it} + b_6 RER_{jt} + b_7 DIS_{ij} + c_k D_k + e_{ijt} \quad (1)$$

Where

E_{ijt}	export flow in year t from country i to country j
Y_{it}	country i's GDP in year t
Y_{jt}	country j's GDP in year t
POP_{it}	country i's population in year t
POP_{jt}	country j's population in year t
RER_{it}	real exchange rate between the exporters' currency and the USD in period t
RER_{jt}	real exchange rate between the importers' currency and the USD in period t
DIS_{ij}	distance between country i and j
D_k	dummies ($k=1,\ldots$) capturing geographical and cultural effects
e_{ijt}	error-term (see details and varying assumptions below)

There exists a very large number of studies using the gravity approach. These studies are sometimes criticized for lack of theoretical foundations and econometric shortcomings. But in the previous two decades several authors have contributed to fill this theoretical vacuum (e.g., Bergstrand 1985, Bergstrand 1989, Deardorff 1998; and

Evenett and Keller 2002). For some recent overviews regarding the wide literature on gravity models, see Feenstra et al. (2001), Greenway and Milner (2002), and Anderson and van Wincoop (2003). It can be said accordingly that the basic expression of the gravity model has solid theoretical underpinnings.

Dummy variables will be added to the basic specification, to capture geographical and cultural common effects. In particular dummies are included for common borders, for islands (exporters and importer separately) and common language. The language dummies refer to English, Chinese and Spanish[7]. These dummies equal one if the language is well-understood in both trading partners.

Panel data are used for 23 countries over a time period of 9 years (1992-2000). From APEC and ASEAN we include: Australia, Canada, Chile, China, Hong Kong, Indonesia, Japan, Korea (Republic of Korea), Malaysia, Mexico, New Zealand, Peru, Philippines, Russia (Russian Federation), Singapore, Taiwan, Thailand and the United States. Five other countries are included to represent the entire Asia-Pacific region: Bangladesh, Pakistan, India, Nepal and Sri Lanka. Some smaller countries in the region are left out because of data limitations[8].

Bilateral trade data are based on export data from the UN Commodity Trade Statistics Database (UN-COMTRADE), expressed in US dollars. If export data are unavailable, they are replaced – if possible – by import data (the reverse side of the same trade flow). See Appendix A for more details. There is only a limited number of missing observations.

Data for GDP and population are from the United Nations Statistical Yearbook[9]. Population is expressed in midyear estimates (thousands). GDP is expressed in millions of U.S. dollars at constant 1990-prices. The conversion rates used to convert national currency into U.S. dollars are the period averages of market exchange rates,

[7] In reality there may be several languages in the region that are related to each other and might influence trade flows. We define common language minimally, i.e., widespread in both countries.
[8] The following countries are not included: Brunei (APEC, ASEAN), Papua New Guinea (APEC), Vietnam (APEC, ASEAN), Cambodja (ASEAN), Laos (ASEAN), Myanmar (ASEAN), Bhutan (SAARC) and Maldives (SAARC).
[9] GDP data for Taiwan come from Datastream.

taken from IMF – Financial Statistics. Data for languages, border and island effects come from CIA World Fact Book (2004).

Real exchange rates of the importing and exporting country are added to the gravity specification, as exchange rate adjustments have occurred during the financial turmoil during the 1990s. These exchange rate changes influence the *volum*e of trade, as well as the *value* of trade expressed in U.S. dollars. Real exchange rates are based on IMF data: the period-average nominal exchange rate is multiplied by the U.S. over the domestic GDP-deflator for each exporter and importer separately.

Distances are interpreted geographically and expressed as the distance (in km) between the capital cities[10]. Often the interpretation of its corresponding coefficient goes beyond geographic distance and may also reflect trading costs, or at least transportation costs. But often also trade barriers are proportional to geographical distance. Polak (1996) shows that the use of absolute distance in the gravity model underestimates bilateral trade, as the average distance between a country and its trading partners varies considerably. An incorrect measure of distance may thus lead to an incorrect interpretation of included dummy variables. Since this is important for measuring RTA-effects, as explained below, we will use an alternative distance variable. Instead of using the absolute distance between a country and its trading partner, distance is scaled by weighted distance between the country and all its trading partners. The shares of each country's exports in world exports are used as weights in this relative distance measure.

Table 3 show OLS-estimates of the gravity model for the Asia-Pacific region. Equation (1.1) uses the traditional distance-variable, whereas in Equation (1.2) Polak's scaled distance variable is used instead. The reported coefficient estimates are in line with most other gravity estimations. Economic growth, measured by an increase in GDP, causes higher exports. Exports are more elastic to the exporter's income than to the importer's income. Population has also a positive effect on exports, whereas real exchange rates are insignificant. Distance influences exports negatively. Surprisingly, we observe a larger negative effect from scaled distance

[10] www.macalester.edu/research/economics/PAGE/HAVEMAN/Trade.Resources/Data/Gravity/dist.txt

compared to absolute distance. Contrary to Polak's findings, within the Asia-Pacific region, absolute distance overestimates bilateral exports[11]. The geographical effects are not significantly different from zero, whereas common language has a large impact on trade.

3.2. Trade Opportunities in the Asia-Pacific Region

Knowing which countries in the Asia-Pacific region are most open to exports and imports might help to choose a beneficial RTA for China and the region as a whole. We can get this information by adding dummy variables for each exporter and each importer country to the basic gravity specification (Matyas 1997, and Harris and Matyas 2001). These dummies capture country-specific effects that determine the regional export flows even if we control for income, population, distance and real exchange rate. It is assumed that these effects are constant over time. A positive estimated coefficient indicates openness to trade, as exports are higher than estimated by the basic gravity model. As we drop the dummy for one country in order to avoid the dummy variable trap, the estimated coefficients should be interpreted as *openness relative to this reference country*. The selection of this reference country is often arbitrary, although this choice influences both the estimates of the basic gravity coefficients and – to a limited extent – the ranking of the fixed effects.

We estimate the gravity model including these country-fixed effects by OLS. This is equivalent to the fixed effects estimator for panel data. Note that we introduce country-effects. Alternatively we could have introduced country-pair fixed effects[12]. OLS is preferred to (feasible) generalized least squares (FGLS) estimation because our time dimension is small relative to the cross-sectional dimension. One needs sufficient time-periods to estimate the variances (and possibly co-variances) for each country-pair. Hence FGLS does not provide consistent estimates in our dataset.

[11] Polak (1996) looks at a wider sample of countries. His comment seems justified for a large group of countries, although apparently it doesn't hold in this regional study.

[12] In addition one can add time dummies. These results are not reported here, as we are more interested in the country-specific effects. Given the relatively short time dimension in our data, adding time dummies reduces the significance of the income and population dummies.

Note that the introduction of these fixed effects is in line with Polak's (1996) comment on distance. Therefore we use absolute distance instead of scaled distance whenever country-specific effects are added to the gravity model. Hence, the fixed effects suggested by Matyas (1997) and Harris and Matyas (2001) reflect both openness to trade and geographical closeness to trading partners. Note also that in the fixed-effect specification the geographical dummies can no longer be included because of multicollinearity problems.

The results are reported in Table 4. The exporter and importer fixed effects are ranked. Countries like Japan, Singapore, Hong Kong and Korea are high-ranking. It appears that both the most advanced countries and the East-Asian tigers are most open to trade. China is relatively open to exports, but relatively closed as an importer. The reverse holds for Chile. Because the most open countries have larger trade flows than predicted by the gravity model for the entire Asia-Pacific region, these countries are the preferred candidates to join an RTA.

3.3. Current Impact of Regional Trade Agreements

Although the openness-to-trade effects might seem somewhat abstract, an effective RTA should consist of countries showing a large openness to trade. To take into account the effect of the existing RTAs, more specifically ASEAN and APEC, we use an approach that is complementary to other gravity studies that investigate the impact of RTAs in a larger sample of countries, ultimately the world (e.g., Frankel 1997, Frankel and Wei 1998).

Traditionally, the impact of an RTA is measured in the gravity model by adding a dummy that equals 1 if both the exporter and the importer belong to the RTA. Table 5 shows the result of measuring this *general* RTA-effect both in a fixed-effects specification and a random-effects specification. In the fixed-effects specification, exports are higher within both APEC and ASEAN. As all ASEAN-countries in this study also belong to APEC, a significantly positive effect for ASEAN, while controlling for APEC-membership, is a strong result. However, in the random-effects specification this result no longer holds.

Based on the Haussman and Breusch-Pagan tests for random versus fixed effects, the fixed effects estimator is preferred. Nevertheless, the fixed effects estimator cannot be used if we want to split up the general RTA-effect into more detailed effects[13]. In order to capture more detailed trade effects from ASEAN and APEC, we follow the methodology suggested by Soloaga and Winters (2001). We use exports as the dependent variable whereas Soloaga and Winters use imports. Therefore we reinterpret their methodology in terms of exports. Instead of adding 1 dummy that equals 1 if both trading partners belong to a particular RTA, Soloaga and Winters (2001) disentangle this total integration effect into *trade creation* and *trade diversion* effects. Consequently, for each RTA 3 dummies are included:

$$\ln E_{ijt} = A_{ijt} + j_q R_{qi} R_{qj} + n_{qi} R_{qi} + n_{qj} R_{qj} \qquad (2)$$

where

A_{ijt} Is the basic gravity specification (1)

R_{qp} is a dummy equal to one if country p belongs to RTA q, zero otherwise ($p = I,j$)

This methodology allows us to distinguish between *import diversion* and *export diversion*. An RTA is defined to be import diverting if its members tend to import less than estimated by the basic gravity model, ceteris paribus the fact that both trading partners belong to the same RTA. This corresponds to $n_{qj} < 0$. Similarly, an RTA is export diverting if its members export less than estimated, subject to the same ceteris paribus condition (or $n_{qi} < 0$). While the import diversion effect is quite common in the integration literature, export diversion is often neglected. Separating the trade diversion effects allows a correct interpretation of the pure *intra-bloc trade creation effect*, which is positive if $j_q > 0$.

Table 6 reports the result of this experiment, after controlling for a large set of other effects. There is no evidence of intra-bloc trade creation effects from ASEAN-membership or APEC-membership. For ASEAN, there are no significant results at all,

[13] These effects would be linear combinations of the country-specific effects.

whereas APEC members have higher exports and imports than predicted by the gravity model for the entire region. According to these results, APEC does not divert trade from non-members to members.

These results are in line with other studies. In a study for a large sample of countries, Frankel et al. (1995) find a large intra-regional trade bias in East Asia, and even more in APEC. This corresponds to the observation that shares of intra-regional trade to total trade are increasing. The formation of RTAs however has a limited impact on this intra-regional trade bias. High economic growth in the region instead seems to be the main determinant of regional bilateral trade flows. From a theoretical point of view, adding information on RTAs does not improve the basic gravity model.

Sharma and Shua (2000) estimate a gravity model for 5 countries separately (Indonesia, Malaysia, Philippines, Singapore and Thailand) for the period 1980-1995. They use data on bilateral trade from these 5 countries with all countries in the world. They confirm the Frankel et al. (1995) finding that economic growth is the main determinant of regional trade in East-Asia. The impact of ASEAN seems insignificant, while trade with APEC-members has a positive impact on the level of trade. Panagariya (1994) does not find evidence of positive effects from the creation of AFTA either. Even other East-Asian trading blocs do not appear to be beneficial. Only open regionalism has some advantages. A similar study by Hassan (2001) for South Asia, with a specific focus on Bangladesh, uses 27 countries. He finds that RTAs in South Asia are neither trade creating nor trade diverting. He expects positive trade-creating effects from RTAs in South Asia only if they are accompanied by other structural policies like encouraging FDI and deepening of capital markets.

4. Trade Potentials from China's Regional Trade Liberalization

Evidence from the recent past about the positive trade creation effects of RTAs is important for policy makers. Equally important is the knowledge about eventual trade diversion effects if one does not join an RTA. However, from the Chinese perspective, it is even more interesting to know how large trade benefits will be once China joins particular RTAs. Similarly, China's trading partners may want to know

how large the impact will be on their bilateral trade with China, if China becomes more integrated in the region.

In this paragraph we calculate these trade potentials. The gravity model is not only useful to find out the determinants of bilateral trade flows and the impact of RTAs. It can also be used to predict future trade flows. In particular it is often used to calculate trade potentials, i.e., the difference between the predicted and the actual bilateral trade flow. Predictions are based on the gravity model estimates. A crucial condition for valuable predictions is a correct estimation of the gravity model, as the estimation method and model specification affect the predicted potentials. We estimate the model by the fixed-effects OLS-estimator, corrected for heteroskedasticity[14].

In order to access the trade potentials between China and its trading partners, we compare actual trade flows to the trade flows predicted by three gravity estimations, i.e. for ASEAN, APEC and the "Asian APEC". Although China formally belongs to APEC, China is excluded from the original estimation, so as not to get an in-sample prediction. The gravity model is more suited for out-of-sample predictions than for in-sample predictions. In-sample predictions basically regard the estimation error as the trade potential. There are reasons to argue that this is not always appropriate (see e.g., Egger 2002).

The estimation results are shown in Table 7. The geographical variables (border, islands) are not reported as they were insignificant or in conflict with the fixed effects. The Chinese-dummy was also dropped since it would be influenced by China's exclusion from the estimation. Additionally, the English-dummy and Spanish-dummy were dropped in the case of ASEAN and "Asian APEC".

These findings are similar to the findings for the entire region. The income elasticity of exports is smaller for the "Asian APEC" compared to ASEAN and APEC. The exporter's real exchange rate versus the USD has no impact on exports. The same holds for the importer's real exchange rate for ASEAN and APEC. Both distance and

[14] Alternatively, we used a random-effects estimator to calculate trade potentials. We prefer the fixed effects estimator as the model including country-specific effects better fits the variation in the data. Hence potential trade is less influenced by estimation errors.

the fixed effects are very significant, indicating that country-specific features and trade impediments influence regional trade considerably.

Based on these estimations the export prospects for China and its trading partners can be calculated. Table 8 gives an overview for the three scenarios. The projected percentage changes, averaged over time[15], are presented and point to large trade potentials in any scenario.

First, we discuss the Chinese export potentials. In the APEC-scenario, Chinese exports to most trading partners increase with the largest export increases for Korea, Philippines, Mexico and Thailand. Exports are projected to be up to 6 times higher than current export flows. There are more moderate increases for Peru and Chile, whereas exports to Hong Kong, Taiwan and Russia are expected to decline. The decline for Hong Kong and Taiwan can be explained by the intense and special trade relationship with China. Compared to the APEC-results, the trade potentials from China's integration into ASEAN are even much larger. Export potentials exceed actual figures more than 20 times, except for Indonesia with a factor of 7. Clearly ASEAN-membership would bring about a very large increase in Chinese exports. Finally, the projections from the "Asian APEC"-scenario are more diversified. For the partner countries that belong to APEC, the findings are similar to the APEC-scenario. In addition there are large export potentials to the SAARC-countries, especially Sri Lanka and India.

Next, the findings for the partner countries' export potentials to China are similar to the Chinese export projections. In the APEC-scenario, export potentials for most trading partners exceed China's projected export growth. Hong Kong, Taiwan, Russia and Peru face reduced exports in this scenario. For Canada and Chile, export potentials are also moderate. In the ASEAN-scenario, to the contrary, export potentials for the trading partners are smaller than for China, except for Indonesia. Still large export opportunities to China are expected for all countries. Finally, all APEC-members benefit less from the "Asian APEC" scenario than from the APEC-scenario, or they are hurt even more. For the SAARC-countries this scenario is very

[15] The results for each separate year are available upon request.

positive. All South Asian countries, except for Nepal, experience large trade increases that exceed China's projected increases.

Some of these predictions may seem rather high at first glance. Nevertheless, export growth performance in the Asia-Pacific region was also remarkable during the past two decades. Moreover, trade barriers within the region are still rather high. Hence, the predicted trade potentials should be interpreted as long-run tendencies as it takes time to eliminate barriers to trade, especially in sensitive sectors. The predicted outcomes are realistic, conditional on the realization of the assumed levels of integration. These potentials not only indicate the general tendencies, but also show the heterogeneous impact of China's rise on the countries in the Asia-Pacific region.

To summarize, these three scenarios point to large trade potentials if China integrates into RTAs in the Asia-Pacific region. ASEAN appears to offer large mutual benefits, whereas APEC and an "Asian APEC" have more divergent effects. Nevertheless, also in the latter two scenarios regional bilateral exports are expected to increase significantly. These integration effects happen apart from the impact of economic growth[16]. Given the pattern of continuous high economic growth in the region, this will be an additional stimulus for further export growth.

5. Conclusion

China's performance in terms of economic growth and trade is astonishing. To safeguard a prosperous future, it is optimal both for China and its regional trading partners to create an economic environment based on trade liberalization and economic cooperation. The main Asia-Pacific RTAs, ASEAN and APEC, currently have only a limited impact on intra-regional trade flows, but China's entrance into the RTAs creates large export potentials for the entire region. Further trade liberalization with South Asian countries is beneficial as well.

In the short run, trade liberalization between China and the ASEAN-countries may be the most realistic option. In particular the set-up of an ASEAN+3, including Japan

[16] Estimates for importer's and exporter's GDP are significantly positive.

and Korea, is a promising strategy. Trade creation will be large for all countries, although China in particular will benefit from it. In the longer run, however, it would be worthwhile to extend this ASEAN+3 in order to include more countries. In particular the South Asian economies seem viable candidates to join the Asian RTA.

Least beneficial will be China's regionalism for Taiwan and Hong Kong, who both have a special trade relationship with China. For Russia and Latin America, except Mexico, Chinese RTA-membership will have only small or even negative consequences. Finally all advanced countries in the region will benefit from Chinese regionalism, although to a smaller extent than the emerging economies.

Given the projected benefits from RTA-membership, it is beneficial for China to combine multilateral trade liberalization as a WTO-member with continued regional liberalization. This trade policy, together with high economic growth, will propel Asia even further as a dynamic region during the coming decades.

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APPENDIX A: Export versus Import Data

The export-data from Indonesia to Thailand and Taiwan are replaced by import-values (1992-2000). This is also the case for the exports (all years) from Singapore to Indonesia; Chile to Hong Kong, Taiwan and Pakistan; from Peru to Taiwan, from Russia to Taiwan, from Bangladesh to Taiwan and from Sri Lanka to Taiwan. All export-data are replaced by import-values in the case of Russia for 1993, 1994, 1995 and 1996; Pakistan for 1994; Bangladesh for 1999 and 2000; and Sri Lanka for 1995, 1996, 1997, 1998, and 2000. The following values are missing: export from Indonesia to Nepal (1992 and 1996), in the case of Peru no data are available for Taiwan (1993), Nepal (1992,1993) and Sri Lanka (2000), for Russia no data for Bangladesh (1994), Nepal (1992, 1993, 1995), Pakistan (1994) and Sri Lanka (1995); for Nepal no data for Indonesia (1992, 1993, 1994, 1995, 1996, 2000), Thailand (1994, 1999, 2000), Australia (2000), Canada (1995, 1996, 1997, 1998, 2000), USA (1992, 1993, 1995), India (1992,1993, 1994, 1995) and Pakistan (1994, 1995, 1997, 1998, 1999); for Bangladesh no data for Taiwan (1995, 1998); for Sri Lanka no data for Russia (1995), and Nepal (1995, 1996, 1997).

TABLES

Table 1: GDP, Growth and Inflation in the Asia-Pacific Region

	APEC	ASEAN	SAARC	GDP 2003, current prices, USD billions	GDP per capita 2003, current prices, USD billions	GDP, constant prices, annual percentage change, yearly average 1992-2003	Inflation, annual percentage change, yearly average 1992-2003
Australia	x			493.359	24684.777	3.7	2.5
Brunei Darussalam	x	x		4.421	12335.264	1.6	1.5
Canada	x			859.909	27199.368	3.2	1.8
Chile	x			69.693	4407.548	5.4	6.9
People's Republic of China	x			1372.045	1061.548	9.6	6.0
Hong Kong, China	x			159.195	23125.446	3.7	3.0
Indonesia	x	x		206.542	945.535	3.8	13.5
Japan	x			4190.728	32859.177	1.2	0.2
Republic of Korea	x			515.349	10640.89	5.4	4.3
Malaysia	x	x		101.019	4041.99	5.9	3.1
Mexico	x			615.261	6006.149	2.8	15.0
New Zealand	x			73.404	18497.344	3.3	2.1
Papua New Guinea	x			3.178	568.529	3.1	10.6
Peru	x			61.244	2153.575	4.0	21.4
Philippines	x	x		81.86	1010.327	3.6	6.6
The Russian Federation	x			428.798	2991.842	-1.3	280.6
Singapore	x	x		89.737	21183.736	5.9	1.3
Chinese Taipei	x			288.797	12660.342	5.1	1.9
Thailand	x	x		130.767	2036.701	4.2	3.6
United States of America	x			10875.348	37312.45	3.2	2.5
Vietnam	x	x		36.707	454.582	6.9	8.3
Cambodia		x		3.847	279.677	5.6	19.9
Laos		x		2.097	367.102	6.4	29.1
Myanmar		x		9.605	180.371	7.8	28.4
Bangladesh			x	53.615	368.135	5.0	4.8
Bhutan			x	0.615	740.773	6.5	7.4
India			x	556.064	520.347	5.7	7.4
Maldives			x	0.669	2121.785	6.9	4.3
Nepal			x	5.932	229.51	4.2	7.8
Pakistan			x	72.766	488.261	3.7	7.5
SriLanka			x	17.774	881.365	4.6	9.7

Source: IMF (2004) – Financial Statistics

Table 2: Chinese Trade Statistics

	Chinese Exports	Chinese Imports
in billions USD		
Total Value of Trade in 1992	84.94	80.59
Total Value of Trade in 2000	249.20	225.09
Total Value of Trade in 2003	438.23	412.76
in %		
Growth 1992-2000	193.39	179.32
Average Growth per annum	24.17	22.42
Average Yearly Growth	14.98	14.33
Share APEC in Total Trade (1992)	80.81	72.41
Share APEC in Total Trade (2000)	71.34	60.54
Share ASEAN in Total Trade (1992)	5.50	5.48
Share ASEAN in Total Trade (2000)	6.96	9.85
Share SAARC in Total Trade (1992)	1.26	0.35
Share SAARC in Total Trade (2000)	1.51	0.84
Average Growth trade with APEC per annum (1992-2000)	19.88	16.69
Average Growth trade with ASEAN per annum (1992-2000)	33.93	50.33
Average Growth trade with SAARC per annum (1992-2000)	31.71	70.13

Source: based on UN (2004) - COMTRADE

Table 3: Basic Gravity Model Estimates

Dependent Variable: Exports (OLS-estimates)							
	1.1				**1.2**		
	Est. Coef.		**S.E.**		**Est. Coef.**		**S.E.**
GDP exporter	0.955	(*)	*0.073*		0.971	(*)	*0.073*
GDP importer	0.677	(*)	*0.067*		0.678	(*)	*0.067*
Pop exporter	0.148	(*)	*0.082*		0.135	(*)	*0.082*
Pop importer	0.183	(*)	*0.075*		0.181	(*)	*0.075*
RER exporter	-0.014		*0.040*		-0.011		*0.040*
RER importer	-0.029		*0.043*		-0.033		*0.043*
Distance	-0.325	(*)	*0.145*				
Scaled Distance					-0.379	(*)	*0.147*
Border-effect	0.285		*0.446*		0.240		*0.448*
Island Exporter	0.029		*0.258*		0.025		*0.258*
Island Importer	-0.051		*0.250*		-0.067		*0.249*
English	2.012	(*)	*0.205*		2.001	(*)	*0.203*
Chinese	2.488	(*)	*0.576*		2.480	(*)	*0.562*
Spanish	2.172	(*)	*0.314*		2.057	(*)	*0.319*
Constant	-2.481	(*)	*1.858*		-5.471	(*)	*1.278*
	$R^2 = 0.5072$				$R^2 = 0.5084$		
	F(13,505) = 53.26				F(13,505) = 53.29		
(*) = Significantly different from zero at 10 % level							
S.E. are Huber-White, corrected for pair-wise heteroskedasticity							

Table 4: Fixed Effect Estimates

Dependent Variable: Exports			
OLS-estimates with FE			
	2.1		
	Est. Coef.		S.E.
GDP exporter	0.240	(*)	*0.077*
GDP importer	0.279	(*)	*0.052*
Pop exporter	0.059		*0.049*
Pop importer	0.283	(*)	*0.070*
RER exporter	0.063		*0.077*
RER importer	-0.226	(*)	*0.105*
Distance	-0.797	(*)	*0.085*
English	0.624	(*)	*0.258*
Chinese	1.010	(*)	*0.306*
Spanish	1.075	(*)	*0.410*
Constant	20.916	(*)	*1.708*
Exporter Fixed Effects (sorted)			
FE exp. Japan	-0.835		*0.589*
FE exp. Singapore	-1.492	(*)	*0.565*
FE exp. Hong Kong	-1.564	(*)	*0.556*
FE exp. China	-1.695	(*)	*0.511*
FE exp. Australia	-2.201	(*)	*0.471*
FE exp. Korea	-2.318	(*)	*0.771*
FE exp. Malaysia	-2.399	(*)	*0.554*
FE exp. Canada	-2.520	(*)	*0.430*
FE exp. New Zealand	-2.800	(*)	*0.567*
FE exp. Thailand	-2.844	(*)	*0.563*
FE exp. Indonesia	-3.094	(*)	*0.793*
FE exp. Russia	-3.537	(*)	*0.490*
FE exp. India	-3.600	(*)	*0.546*
FE exp. Chili	-3.705	(*)	*0.787*
FE exp. Mexico	-4.212	(*)	*0.557*
FE exp. Philipines	-4.383	(*)	*0.639*
FE exp. Peru	-4.460	(*)	*0.605*
FE exp. Pakistan	-4.489	(*)	*0.636*
FE exp. Sri Lanka	-5.081	(*)	*0.744*
FE exp. Bangladesh	-6.242	(*)	*0.674*
FE exp. Taiwan	-8.026	(*)	*0.744*
FE exp. Nepal	-8.567	(*)	*1.060*
Importer Fixed Effects (sorted)			
FE imp. Japan	0.899		*0.698*
FE imp. Hong Kong	0.194		*0.573*
FE imp. Chili	-0.216		*0.850*
FE imp. Korea	-0.324		*0.856*
FE imp. Singapore	-0.417		*0.591*
FE imp. Indonesia	-0.960		*0.929*
FE imp. Canada	-0.991	(*)	*0.495*
FE imp. Australia	-1.160	(*)	*0.494*
FE imp. Thailand	-1.167	(*)	*0.595*
FE imp. Philipines	-1.199	(*)	*0.599*
FE imp. China	-1.321	(*)	*0.586*
FE imp. Sri Lanka	-1.530	(*)	*0.735*
FE imp. Malaysia	-1.718	(*)	*0.580*
FE imp. New Zealand	-2.005	(*)	*0.615*
FE imp. Mexico	-2.014	(*)	*0.526*
FE imp. Peru	-2.566	(*)	*0.590*
FE imp. Bangladesh	-2.863	(*)	*0.644*
FE imp. India	-3.070	(*)	*0.609*
FE imp. Pakistan	-3.185	(*)	*0.657*
FE imp. Nepal	-3.632	(*)	*0.745*
FE imp. Russia	-3.667	(*)	*0.590*
FE imp. Taiwan	-4.366	(*)	*0.805*
R^2 = 0.8143	F(54,505) = 55.39		
(*)= Significantly different from zero at 10 % level			
S.E. are Huber-White, corrected for pair-wise heteroskedasticity			

Table 5: Testing for General RTA-effects

Dependent Variable: Exports							
OLS-estimates with FE (fixed effects estimator)					GLS-estimates (random effects estimator)		
	3.1				3.2		
	Est. Coef.		White S.E.		Est. Coef.		S.E.
GDP exporter	0.236	(*)	*0.077*		0.442	(*)	*0.033*
GDP importer	0.285	(*)	*0.052*		0.293	(*)	*0.032*
Pop exporter	0.047		*0.049*		0.178	(*)	*0.027*
Pop importer	0.270	(*)	*0.067*		0.249	(*)	*0.033*
RER exporter	0.066		*0.077*		-0.024		*0.031*
RER importer	-0.225	(*)	*0.105*		-0.105	(*)	*0.031*
Distance	-0.647	(*)	*0.094*				
Scaled Distance					-0.417	(*)	*0.127*
English	0.541	(*)	*0.259*		2.120	(*)	*0.204*
Chinese	1.043	(*)	*0.311*		1.475	(*)	*0.502*
Spanish	1.329	(*)	*0.432*		1.543	(*)	*0.623*
ASEAN-membership	0.505	(*)	*0.239*		0.292		*0.529*
APEC-membership	0.997	(*)	*0.499*		2.600	(*)	*0.218*
Constant	18.830	(*)	*1.916*		2.813	(*)	*0.618*
R^2 = 0.8169					R^2 overall = 0.5444		
F(56,505) = 58.23					Chi^2 (15) = 910.25		
(*)= Significantly different from zero at 10 % level							

Table 6: Trade Creation and Trade Diversion Effects from APEC and ASEAN

Dependent Variable: Exports			
GLS-estimates (random effects estimator)			
	4.1		
	Est. Coef.		S.E.
GDP exporter	0.409369	(*)	0.03442
GDP importer	0.289095	(*)	0.034217
Pop exporter	0.165996	(*)	0.028065
Pop importer	0.216515	(*)	0.036011
RER exporter	-0.02167		0.03207
RER importer	-0.1125	(*)	0.031954
Scaled Distance	-0.56324	(*)	0.141055
Border-effect	0.524246		0.465294
Island Exporter	-0.67881	(*)	0.225886
Island Importer	-0.57075	(*)	0.232287
English	2.415256	(*)	0.218689
Chinese	1.437021	(*)	0.500781
Spanish	0.90735		0.636171
ASEAN export diversion	-0.10494		0.280667
ASEAN import diversion	-0.40853		0.281296
ASEAN intra-bloc trade creation	0.262034		0.587364
APEC export diversion	2.295662	(*)	0.571398
APEC import diversion	1.615285	(*)	0.57426
APEC intra-bloc trade creation	0.746425		0.58981
Constant	2.036256	(*)	0.813608
(*)= Significantly different from zero at 10 % level			

Table 7: Gravity Model Estimates under 3 Scenarios

Dependent Variable: Exports									
OLS-estimates with Fixed Effects									
	6.1 (APEC)			6.2 (ASEAN)			6.3 (Asian APEC)		
	Est. Coef.		S.E.	Est. Coef.		S.E.	Est. Coef.		S.E.
GDP exporter	0.405448	(*)	0.082472	0.32733	(*)	0.108835	0.153182	(*)	0.058182
GDP importer	0.412305	(*)	0.103409	0.461637	(*)	0.133054	0.198046	(*)	0.058238
Pop exporter	0.06335	(*)	0.024875	0.194009	(*)	0.074917	0.056879		0.079239
Pop importer	0.212164	(*)	0.062628	0.189744	(*)	0.062128	0.112791	(*)	0.039737
RER exporter	-0.01538		0.095939	0.215484		0.411897	0.278291		0.205376
RER importer	-0.20619	(*)	0.086272	0.456058		0.419552	-0.1058		0.318068
Distance	-0.82489	(*)	0.089806	-0.51829	(*)	0.170052	-0.90655	(*)	0.177199
English	0.176909		0.286613						
Spanish	1.23293	(*)	0.378052						
Constant	17.21427	(*)	2.020869	15.26804	(*)	2.15655	24.28829	(*)	14.45
Exporter Fixed Effects (sorted)									
FE exp. Australia	-1.22324	(*)	0.334712						
FE exp. Bangladesh							-6.35814	(*)	0.746295
FE exp. Canada	-1.50473	(*)	0.246327						
FE exp. Chili	-1.98882	(*)	0.765384						
FE exp. China									
FE exp. Hong Kong	-0.03809		0.465045				-0.77437	(*)	0.426749
FE exp. India							-3.2163	(*)	0.793788
FE exp. Indonesia	-1.38277	(*)	0.816588	-4.29268		2.925411	-3.22112	(*)	1.554435
FE exp. Japan	0.02845		0.552775				-0.76074		0.981413
FE exp. Korea	-0.95642		0.795068				-2.19933	(*)	1.323256
FE exp. Malaysia	-0.87457	(*)	0.41049	-1.46967	(*)	0.20932	-1.22795	(*)	0.325062
FE exp. Mexico	-3.10295	(*)	0.465762						
FE exp. Nepal							-8.43367	(*)	1.086757
FE exp. New Zealand	-1.51035	(*)	0.431697						
FE exp. Pakistan							-3.89482	(*)	0.698086
FE exp. Peru	-3.33526	(*)	0.513414						
FE exp. Philipines	-2.44177	(*)	0.545785	-3.56824	(*)	1.252405	-4.08321	(*)	0.730209
FE exp. Russia	-3.40018	(*)	0.382744						
FE exp. Singapore	-0.09897		0.435569						
FE exp. Sri Lanka							-5.07791	(*)	0.75861
FE exp. Taiwan	-6.62525	(*)	0.661821				-8.63968	(*)	0.753837
FE exp. Thailand	-1.38257	(*)	0.476754	-2.74746	(*)	1.218645	-2.33713	(*)	0.668304
Importer Fixed Effects (sorted)									
FE imp. Australia	-1.10257	(*)	0.515982						
FE imp. Bangladesh							-2.41098	(*)	1.072226
FE imp. Canada	-0.98767	(*)	0.494988						
FE imp. Chili	-0.38529		0.86183						
FE imp. China									
FE imp. Hong Kong	0.564697		0.616563				0.55017		0.575715
FE imp. India							-2.36377	(*)	1.001469
FE imp. Indonesia	-0.5646		0.894254	-6.59089	(*)	3.154694	-1.04959		2.240752
FE imp. Japan	0.623337		0.645564				0.814663		1.435602
FE imp. Korea	0.132207		0.736313				-0.75817		1.997915
FE imp. Malaysia	-0.69939		0.613318	-1.69642	(*)	0.285107	-1.46129	(*)	0.489463
FE imp. Mexico	-1.87772	(*)	0.555758						
FE imp. Nepal							-3.81697	(*)	1.118899
FE imp. New Zealand	-1.89569	(*)	0.684628						
FE imp. Pakistan							-2.76195	(*)	1.021776
FE imp. Peru	-2.87663		0.729626						
FE imp. Philipines	-0.92819		0.679903	-3.54979	(*)	1.173397	-0.95681		0.909067
FE imp. Russia	-3.87872	(*)	0.534941						
FE imp. Singapore	0.155096		0.659551						
FE imp. Sri Lanka							-1.39999		1.197016
FE imp. Taiwan	-4.94631	(*)	0.795521				-4.78316	(*)	1.022944
FE imp. Thailand	-0.65328		0.642913	-3.36196	(*)	1.220548	-0.79733		0.95827
	R^2 adj	0.8608		R^2 adj	0.8756		R^2 adj	0.85	
	F(41,271)	76.79		F(15,19)	112.81		F(33,181)	53.54	
(*)= Significantly different from zero at 10 % level									
S.E. are Huber-White, corrected for pair-wise heteroskedasticity									

Table 8: Trade Potentials under 3 Scenarios

	Chinese Exports Potentials (in %)				Partner's Export Potentials to China (in %)		
	Scenarios				Scenarios		
	APEC	ASEAN	"Asian APEC"		APEC	ASEAN	"Asian APEC"
Australia	176.4				216.2		
Canada	292.5				163.7		
Chili	76.4				86.3		
Hong Kong	-21.9		9.0		-36.6		-70.5
Japan	404.5		306.9		745.1		246.9
Mexico	489.9				794.8		
New Zealand	145.8				366.9		
Peru	110.4				-39.7		
Russia	-24.3				-65.0		
Taiwan	-88.3		-75.4		-71.1		-95.4
USA	191.1				446.6		
Korea	631.3		310.4		616.6		455.1
Indonesia	120.8	749.1	125.2		187.5	1799.7	131.3
Malaysia	323.9	2489.9	135.5		329.8	797.1	132.1
Philippines	532.5	2750.3	841.2		694.6	2693.9	161.8
Singapore	159.4	2573.9	206.4		373.3	1134.0	259.9
Thailand	483.5	2625.3	490.1		555.4	1840.4	240.4
Bangladesh			193.9				250.2
India			348.4				409.0
Nepal			180.4				-90.7
Pakistan			27.9				411.2
SriLanka			584.2				3461.9