ECONOMIC INTEGRATION BETWEEN CHINA AND ASEAN

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Abstract:

With the signing in November 2001 of a China-ASEAN free trade agreement due for completion in 2010, the question of the current degree of economic integration between China and ASEAN becomes important. This papers uses international parity conditions to investigate this issue. The results indicate that China is already highly integrated with ASEAN with respect to trade in goods and services. Financial integration however remains significantly incomplete. Given that external bodies such as the WTO will increasingly dictate the pace of China's future financial liberalization, the main implication of these findings is that complimentary reforms, such as the upgrading of prudential frameworks, need to be completed as a matter of urgency in both China and ASEAN.

Key Words – China, ASEAN, economic integration, international parity conditions

JEL Classifications – F02

1. INTRODUCTION

Economic integration is typically considered in terms of real and financial integration. That is, to what extent are goods and services on the one hand, and financial capital on the other, free to move between countries? The study of China's international economic integration has burgeoned since it began to undertake the final phases of WTO ascension in the late 1990s. From the perspective of the Association of South-East Asian Nations (ASEAN), China's entry has been of particular interest given that it would place many of its members in more direct competition with China in export markets and in terms of attracting foreign investment (Voon, 1998). However, despite these concerns, Tongzon (2001) illustrated using a computable general equilibrium (CGE) model that there were likely to be net benefits for ASEAN members from China's ascension and there has been no clear evidence to the contrary since China became a WTO member in November 2001. Indeed, both China and ASEAN appear to have come to the consensus that their joint development is best served through an even closer degree of integration than that mandated by the WTO. In the same month that China formally joined the WTO, both parties announced the signing of a China-ASEAN free-trade area (FTA) due to be completed by 2010. This proposal has already begun to attract research attention, with Chirathivat (2002) presenting evidence based on the same CGE model used by Tongzon (2001) that such an FTA would likely produce net gains for both China and ASEAN.

This paper seeks to shed light on the precursory question of "To what extent are China and ASEAN already integrated?". This is an important question to ask for several reasons. For one, formal tests of China's international economic integration are few, particularly with respect to financial linkages. It has become common practice to refer

to the increased volume of trade and investment between China and other countries as evidence of increased international economic integration (Wong, 1995). However, this methodology provides only circumstantial evidence of integration. It also lacks a rigorous theoretical basis. If followed strictly, it could even lead to erroneous conclusions being drawn. For example, during 1997-1998, the rate of export growth from China and the ASEAN economies fell significantly, as did foreign direct investment (FDI) flowing into these countries. To interpret such falls as being indicative of increased barriers to trade and investment ignores the far more obvious demand-side impact of the Asian crisis over the same period. Volume-based measures also provide no benchmark of what could be expected if barriers to trade and investment were low. While Japan and the more developed economies of Asia have been included in numerous formal studies of economic integration (Hung and Tong, 1995, Moosa and Bhatti, 1997; de Brouwer, 1999; Aggawal, et al., 2000; Azali, et al., 2001), China has rarely been included in the sample. In excluding China from his study of financial integration in East Asia, de Brouwer (1999, p.2) states "China, in particular, presents an interesting and important case in financial development and warrants a separate study". The primary reason for China's exclusion from previous studies has been due to issues relating to data availability. However, as will be described later, this constraint has eased considerably since the mid-1990s. Therefore, one aim of this paper is to use formal tests of economic integration that are well established in macroeconomic theory and the broader empirical literature to consider the extent to which the Chinese economy and ASEAN are integrated.

Understanding the extent to which China is already integrated with ASEAN is also fundamental to gauging the implications of China's WTO entry and the proposed

China-ASEAN FTA. If it can be shown that China is relatively integrated / not integrated with ASEAN, then the impact of future liberalizations mandated through these external bodies are likely to be small / large. Lardy (2002), for example, argues that the predictions of some models regarding the impact of China's WTO ascension almost certainly overstate the actual adjustment process because they do not take into account the liberalization undertaken by China in the years immediately prior to joining WTO. This factor adds significant conjecture to simulations produced by CGE models, where the researcher must specify a benchmark year and degree of integration against which the impact of proposed policy changes can be compared. This conjecture is over and above those regarding the static nature and the neo-classical assumptions underlying most CGE models, along with the marginalized role of the financial sector. In many CGE models, barriers to the free flow of goods, services and financial capital between countries are portrayed solely in tariff form. However, given the importance of other barriers such as capital controls, export promotion strategies, non-tariff barriers (quotas, voluntary export restraints and the like) and institutional restrictions on foreign participation in the services sector, their abstraction has obvious implications for the accuracy of the simulation process. Alternatively, some attempt is made to account for these other barriers by estimating their tariff equivalents and / or through exogenously introducing ad hoc changes in technology and / or the expected return on investment (McKibbon and Tang, 2000). In any case, simulations are a necessarily imprecise endeavour. Therefore, it is another aim of this paper to contribute to a more accurate assessment of the current integration between China and ASEAN in order that better informed simulations may be conducted in the future.

2. METHODOLOGY AND DATA

Despite their mixed performance in capturing the generating process of historical data (Makin, 1994), the standard analytical tools used in macroeconomic theory and empirical work to consider such questions are the international parity conditions; the hypotheses of Real Interest Parity (RIP), Uncovered Interest Parity (UIP) and Purchasing Power Parity (PPP). The fact that the testing of these hypotheses uses data that is available in high frequency adds to their empirical appeal. Within the parity condition framework, this paper follows the specific methodology devised by Cheung, et al (2002) in the context of economic integration within the Greater China region (China, Hong Kong SAR and Taiwan, China). The following is a brief overview of that approach.

RIP is an encompassing relation that combines both UIP and PPP. This can be shown as follows. The ex-ante real interest differential between two economies can be expressed as,

$$r_t^{ke} - r_t^{k*e} = \left(i_t^k - \pi_{t+k}^e\right) - \left(i_t^{k*} - \pi_{t+k}^{*e}\right) \qquad (1)$$

where r_t^{ke} is the expected *k*-period real interest rate in the domestic country with the superscripts *e* and *k* indicating that the variable is expected and the maturity of the debt instrument respectively. The superscript * refers to the variables for the foreign country and calculations proceed along the same lines as the domestic country throughout. Equation (1) states that the real interest rate for the domestic country in time period *t* is equal to the k-period nominal interest rate, i_t^k minus the expected

inflation rate in k-periods, π^{e}_{t+k}. Expected inflation for the domestic country is given by,

$$\pi^{e}_{t+k} = p^{e}_{t+k} - p_t \tag{2}$$

where p^{e}_{t+k} is the expected price level in time period $t+k$ and p_t is the current price level, expressed in log form. The right-hand side of equation (1) can be rearranged and expected exchange rate deprecation subtracted and added to give,

$$r^{ke}_t - r^{k*e}_t = \left(i^{k}_t - i^{k*}_t - \Delta s^{e}_{t+k}\right) - \left(\pi^{e}_{t+k} - \pi^{*e}_{t+k} - \Delta s^{e}_{t+k}\right) \tag{3}$$

Expected depreciation is calculated as,

$$\Delta s^{e}_{t+k} = s^{e}_{t+k} - s_t \tag{4}$$

where s^{e}_{t+k} is the expected exchange rate in time period $t+k$, where the exchange rate is calculated as the domestic currency price of foreign exchange, expressed in log form. The term s_t refers to the current spot rate. In equation (3), the first term on the right-hand side is the uncovered interest differential and the second is the deviation from ex ante relative purchasing power parity. If financial capital is free to flow between countries, the Uncovered Interest Parity (UIP) hypothesis contends that arbitrage in financial markets will ensure that,

$$i^{k}_t = i^{k*}_t + \Delta s^{e}_{t+k} \tag{5}$$

The Purchasing Power Parity (PPP) hypothesis contends that arbitrage in goods and services markets will ensure that,

$$\pi^{e}_{t+k} = \pi^{*e}_{t+k} + \Delta s^{e}_{t+k} \tag{6}$$

If both of these parity conditions hold then the two terms on the right-hand side of equation (3) collapse to zero, implying the real interest rate differential between the two countries would disappear. Thus, the Real Interest Parity hypothesis is a stringent parity condition that implies both UIP and PPP hold. While equation (3) provides the theoretical relationship between the parity conditions, it is not testable in its present form because expected exchange rates and prices are not observable in the current period. The standard approach in the empirical literature is to assumption rational expectations, in which case an operational version of equation (3) based on ex-post differentials can be written as follows,

$$r^{k}_{t} - r^{k*}_{t} = \left(i^{k}_{t} - i^{k*}_{t} - \Delta s_{t+k}\right) - \left(\pi_{t+k} - \pi^{*}_{t+k} - \Delta s_{t+k}\right) \tag{7}$$

where $\Delta s_{t+k} = s_{t+k} - s_{t}$ and $\pi_{t+k} = p_{t+k} - p_{t}$. The use of equation (7) is justified because under the rational expectations hypothesis, the ex post values are unbiased predictors of the ex ante counterparts. The test of economic integration therefore becomes whether in fact the calculated UIP differential and the PPP differential are zero-mean reverting, stationary series. The reason stationarity is relevant is because any differentials away from the mean should be transitory and random in nature. If a series was determined to be non-stationary, this implies that movements away from

parity can be permanent and there is no built in mechanism (in this case arbitrage) to restore the parity condition in the long run. In testing for stationarity, this paper presents the Phillips and Perron (1988) non-parametric z^* test statistics, which were calculated both with a constant term only (z_c^*) and with a constant and trend term (z_{ct}^*). The Phillips – Perron test statistics are used in preference to standard Augmented Dickey-Fuller tests because there is some evidence that they tend to have more power in finite samples (Bodman, 1995).

While international parity conditions suggest that UIP and PPP differentials should be zero-mean series if real and financial capital can flow freely between countries, the existence of factors such as transaction costs can inhibit this process from taking place even in the absence of artificially constructed barriers to trade and investment. Therefore, it is worthwhile to include in the analysis a third benchmark-country that is known *a priori* to be highly integrated with one of the countries under investigation. In the case of China, it is logical to use Hong Kong SAR as a practical benchmark against which the extent of China's integration with the ASEAN countries can be gauged. In this study, China's integration with the five largest ASEAN economies is considered; those being Indonesia, Malaysia, Philippines, Singapore and Thailand.

Monthly observations over the period 1996:01 – 2002:12 are used to test for economic integration between China and ASEAN. The start date is determined solely by data availability. UIP tests require that a comparable financial asset in all countries be identified upon which a differential can be calculated. Furthermore, the market should determine the return on the asset otherwise interpreting the results is difficult (Montiel, 1994). It is presumably for this reason that China has not been included in

previous studies examining the international performance of the UIP hypothesis. However, in January 1996 a unified national interbank market was formed in China and in June 1996 the central bank announced that there would be no administrative ceiling on the interbank interest rate (*ACFB 1997*, p.31). The interbank market is one of the first officially sanctioned financial markets in China where interest rates are determined by market forces. A data set was therefore formed consisting of monthly observations of the three-month interbank rate in China and the ASEAN countries listed above. This data was sourced from the ARIC database of the Asian Development Bank. The only exception was with respect to China over the period 1996:01 – 1999:12, which was sourced from ACFB (various years). The ARIC database provides data in end-of-period form while that from ACFB (various years) is in average-of-period form. Availability issues dictated the differing sources. The ARIC data for the three-month interbank rate in Indonesia is also available only from 1997:04 and hence this is the start date for UIP calculations between China and Indonesia. The three-month interbank rate for Hong Kong SAR was obtained from the Hong Kong Monetary Authority. Monthly, seasonally adjusted consumer price indices (CPI) were used to measure price level changes. In the case of China and the ASEAN countries these were sourced from the ARIC database. The CPI for Hong Kong SAR was sourced from IMF (various issues). This series was not seasonally adjusted in its raw form and this was undertaken using the ratio-to-moving-average (multiplicative) method. Finally, exchange rate data for all countries was obtained in end-of-period form from IMF (various issues).

3. EMPIRICAL INVESTIGATION

Based on equation (7), the calculated UIP and PPP mean differentials between China and the ASEAN countries are presented in Table 1, along with unit root test statistics. The results are presented in terms of the entire period, along with two sub-samples from 1996:01-1998:12 and 1999:01-2002:12. The logic for dividing the range into two sub-samples is that plots of the estimated differentials displayed considerable volatility during 1997-1998. This period corresponded to the Asian financial crisis and it could be argued that this negatively impacted upon the ability of the UIP and PPP hypotheses to capture the data generating process. In particular, the suitability of the ancillary rational expectations assumption is dubious in light of subsequent research that highlighted the role played by herding behaviour and self-fulfilling exchange rate fluctuations. This period may also represent a structural break in the data generating process as monetary authorities re-evaluated their position with respect to international capital flows. Other reasons that justify running separate calculations for the most recent period include the return of Hong Kong SAR to Chinese sovereignty in 1997, an increase in the pace of financial reform in China leading up to WTO entry and increased liquidity in China's interbank market.

The unit root test statistics indicate that in the case of the PPP series, the null hypothesis of a unit root is rejected in all cases at high levels of statistical significance. In the majority of UIP series, this conclusion also holds. However, in several cases, the acceptance or rejection of the null hypothesis is dependent upon whether a trend term is included in the regression and the degree of statistical

Table 1. China-ASEAN UIP and PPP Differentials

	Mean		Unit root test statistics			
			UIP		PPP	
	UIP	PPP	z_c^*	z_{ct}^*	z_c^*	z_{ct}^*
China_Hong Kong						
96:01-02:12	1.52**	0.11	-2.67*	-3.00	-9.15**	-9.39**
96:01-98:12	3.40**	-0.11	-1.53	-2.76	-5.71**	-5.62**
99:01-02:12	0.05	0.28**	-3.35**	-3.39*	-8.33**	-8.69**
China_Philippines						
96:01-02:12	-4.86**	0.45	-4.08**	-4.28**	-6.66**	-6.65**
96:01-98:12	-4.02**	0.57	-1.83	-3.20*	-4.00**	-3.99**
99:01-02:12	-5.50**	0.36	-4.66**	-4.62**	-6.06**	-6.00**
China_Thailand						
96:01-02:12	-0.93	0.47	-4.13**	-4.23**	-6.64**	-6.65**
96:01-98:12	-3.75**	0.73	-2.79*	-3.19	-4.26**	-4.24**
99:01-02:12	1.23**	0.27	-5.17**	-5.24**	-5.08**	-5.13**
China_Indonesia						
97:04-02:12	-15.16**	0.45	-4.18**	-4.18**	-7.43**	-7.47**
97:04-98:12	-20.38**	1.81	-2.31	-3.13	-4.81**	-4.75**
99:01-02:12	-12.82**	-0.59	-3.35**	-3.35*	-5.69**	-5.62**
China_Malaysia						
96:01-02:12	2.04**	0.34	-5.86**	-6.50**	-7.70**	-7.78**
96:01-98:12	3.23**	0.93	-3.82**	-4.35**	-5.01**	-4.94**
99:01-02:12	1.12**	-0.12	-5.80**	-6.86**	-8.64**	-8.51**
China_Singapore						
96:01-02:12	4.41**	0.26	-4.07**	-6.19**	-7.99**	-8.16**
96:01-98:12	6.75**	0.54	-2.89*	-4.31**	-5.09**	-5.02**
99:01-02:12	2.62**	0.05	-4.75**	-5.17**	-6.46**	-6.42**

Note - *, **, indicates statistical significance at the 10% and 5% level respectively.

significance used. Therefore, while the expected effects of arbitrage are evident in both cases, they appear stronger in goods and services markets. This conclusion is reinforced when the numerical mean values for the UIP and PPP series are considered. In nearly all cases, the null hypothesis that the PPP differential is equal to zero cannot be rejected. This is in stark contrast to the UIP series, where the null hypothesis is rejected in nearly all cases. Thus, there is strong evidence that goods and services markets are the primary linkage between China and ASEAN at present. This

is not surprising given China's relatively long history of external trade liberalization (Lardy, 2002) compared with external financial liberalization (Laurenceson and Chai, 2003). It could be speculated that the results do provide some evidence that the degree of financial integration has increased during recent years. However, this interpretation should be made cautiously in light of the effects of the Asian financial crisis during the first sub-sample. In all countries apart from the Philippines the mean UIP differential was smaller in the second sub-sample than in the first. In the case of Hong Kong SAR the mean UIP differential in the second sub-sample was just 0.05%, which was not statistically different to zero.

With respect to the integration of China with individual countries, there is strong evidence that it is greatest with respect to Hong Kong SAR. This of course is not unexpected and underpins the rational of using Hong Kong SAR as a benchmark of China's international economic integration with other ASEAN countries. Over the entire range, China's PPP differential with Hong Kong SAR was just 0.11%. This was followed by Singapore at 0.26% and Malaysia at 0.34%. China's customs statistics for 2001 on trading volumes also show that Singapore is the leading ASEAN country with respect to trade with China, followed by Malaysia (SSB, *CSY 2002*). Turning to financial linkages, the extremely low UIP differential with Hong Kong SAR in the most recent period has already been noted. This was followed by Malaysia and Thailand. The relatively high differential with Singapore is somewhat surprising given its role as an important regional financial centre and the leading source of foreign investment from ASEAN into China. However, Hong Kong SAR also fulfils the role of financial centre and it is not unexpected that the data indicates China's international financial integration has proceeded through Hong Kong SAR rather than Singapore.

Despite being the leading ASEAN contributor of foreign investment into China, according to official statistics in 2001 the volume from Singapore was still just 12% of that from Hong Kong SAR (SSB, CSY 2002). It should also be noted that Singapore's differential did decline substantially in the latter period. Finally, on balance the results indicate that China's integration with the Philippines and Indonesia is the least amongst the largest ASEAN countries, particularly with respect to financial linkages.

4. CONCLUSION

This paper used international parity conditions to analyse the extent of economic integration between China and ASEAN. This methodology has distinct advantages over using the volume of international trade and investment as a measure of economic integration. In particular, parity conditions have a strong grounding in macroeconomic theory and provide a benchmark of what could be expected if barriers to trade and investment between countries were low. The analysis conducted indicated that China and ASEAN are already highly integrated with respect to goods and services markets. In contrast, barriers to financial integration remain significant. Even after allowing for potential transaction cost differences, it can be concluded that all ASEAN countries remain relatively far from the Hong Kong SAR benchmark.

There are two main implications of these findings. Firstly, they indicate that the financial sector and international capital flows must be explicitly addressed in CGE models if they are to produce relevant simulations and policy guidance in the future.

Thus, the relevance of previous simulations conducted using static CGE models that focus almost solely on trade are highly questionable. It is worth noting that several recent draft papers (Ianchovichina, et al., 2002; McKibbon and Woo, 2002) have made important progress in this area. Secondly, given that goods and services markets already appear quite integrated, the impact of future liberalization mandated through the WTO and the China-ASEAN FTA will likely be most pronounced in financial markets. It is important to recognize that the scope of the WTO and the China-ASEAN FTA extend well beyond trade issues and tariff liberalization. For example, WTO ascension commits the Chinese government to providing foreign banks with full national treatment within five years. This is in stark contrast with historical policy, where until recently foreign banks have not been permitted to engage in local currency RMB services. Such liberalization poses major challenges for both China and ASEAN. The standard view of China's domestic financial sector is that it is extremely fragile and the worst in Asia (Lardy, 1998; *The Economist*, 2 May 1998). Furthermore, of the ASEAN economies most seriously affected by the Asian financial crisis, it is often conjectured that only limited progress has been made in reforming their own fragile financial systems (*Asia Times On-line*, 30 April 2002). One clear lesson from the Asian financial crisis was that greater external financial liberalization must be associated with accompanying reforms to the prudential framework if it is to be conducive to economic development. The fact that the pace of China's international financial integration will now be increasingly dictated by external bodies such as the WTO means that the need for China and its ASEAN neighbours to undertake such complimentary reforms is all the more urgent.

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