International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:8, No:8, 2014

Capital Mobility in Savings and Investment across China and the ASEAN-5: Evidence from Recursive Cointegration

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***Abstract*—**This paper applies recursive cointegration analysis to examine the dynamic changes in Feldstein-Horioka saving-investment (S-I) coefficients across China and the ASEAN-5 countries over time. To the extent that the S-I coefficients measure international capital mobility, the main empirical results are as follows. The recursive trace statistics show that the investment- savings nexus varies in these six countries. There is no cointegration between investment and savings in three countries (China, Malaysia, and Singapore), which means that the mobility of the capital markets in the three is high and that domestic investment in them will be financed by the global pool of capital. As to the other three countries (Indonesia, Thailand, and Philippines), there is cointegration between investment and savings for part of the sample period in the three, including before 2002 for Thailand, before 2001 for Indonesia, and before 2002 for Philippines. This shows these three countries achieved highly mobile and open capital markets later.

***Keywords*—**Investment, savings, recursive cointegration test, ASEAN, China.

I. Introduction

EAST Asia has become more integrated through growth in cross-border trade and economic activities over the past two decades, which have also helped increase cross-border financial activities. Some important developments relating to trade and finance for regional institution building have been achieved in this region. In the financial arena, governments have encouraged cross-border financial transactions through financial market deregulation and capital account liberalization. Emerging stock markets, such as in China and ASEAN countries, has also taken on a more important spotlight for international fund managers to manage portfolio diversification. Under such a background, the aim of this paper is to examine mobile capital in China and ASEAN countries and, most notably, whether the degree of capital mobility has increased along with the deepening development of economic integration in this region.

Many academic papers have investigated international market linkages with East Asia markets. One of the frequently reported stylized facts in modern open economies is how mobile capital moves between countries. Some methods have been proposed to analyze the degree of capital mobility, with one strand in the literature advocated by [1], who estimate how closely related savings and investment are across countries. The literature on the Feldstein-Horioka (hereafter, F-H) puzzle has grown quickly, but the extensive empirical studies on this issue differ significantly in terms of applied methodology, the dataset, and the sample periods covered.

Numerous studies use cross-section regressions to examine F-H comparing the results of different countries, such as [2]-[9], etc. Another line of the literature applies time-series analysis to provide a wider dispersion of savings- investment (S-I) coefficients, including [10]-[18], etc. By using the full information of the data and improving several shortcomings of the individual time series methods, an increasing number of recent studies have chosen the panel data methodology for analysis, such as [19]-[25], etc.

The above-mentioned studies treat the relationship between savings and investment as a static concept, yet this assumption may not be warranted, because structural breaks are a common problem in the macroeconomic series. Instead, linkages between savings and investment may be time-varying and episodic. Macroeconomic series, including investment and savings, may contain a variety of structural changes in the long run, or exhibit a gradual and ongoing process, not a static concept, within a country or at the international level. Hence, due to the importance of time variation in stock market linkages, this paper employs recursive cointegration to examine the dynamic evolution of the long-run relationship between savings and investment - that is, the F-H model. Using the cointegration rank tests of [26] and [27], we apply recursive cointegration tests, which allow us to investigate the degree of convergence during different sub-sample periods of the full sample, in order to look at the implications of the time-varying behavior of these linkages in China and the ASEAN-5.

The remainder of the paper is structured as follows. Section II introduces the methodology. Section III presents and discusses the empirical results of the structural change and recursive cointegration analysis. Section IV concludes the paper.

II. Methodology

A. The Approach of Feldstein [1]

This paper studies the degree of capital mobility in China and ASEAN-5 countries. The F–H approach entails an estimation of the following regression:

$$(I/Y)_t = \alpha + \beta(S/Y) + u_t \quad (1)$$

here I is gross domestic investment, S is gross domestic

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savings, and Y is gross domestic product. Coefficient β, the so-called savings retention coefficient, measures the degree of capital mobility. As [1] indicate, (1) allows one to investigate the capital mobility hypothesis. If capital is perfectly mobile, then investors focus only on the rate of return on their investments and not on which country they invest in, implying that domestic savings could be unrelated to domestic investment under perfect international capital mobility. In such a case, β is expected to be around zero, and it suggests that savings in each country move globally in response to international investing opportunities for higher profitability. On the other hand, domestic investment in a given country is financed by the global pool of capital [1].

If β is large and near to one in this model, then it means that capital is immobile. F-H indicates that domestic savers must not be able to readily avail themselves of all investment opportunities in other countries; hence, incremental savings would be invested in the original country. Furthermore, the greater this tendency is for domestic savings to flow only into domestic investment, the less mobile capital there will be. However, these controversial results have sparked widespread debates in the economic literature, with plenty of papers offering evidence confirming these results and different results presenting a wide array of interpretations. Therefore, the F-H approach, which runs contrary to economic theory, is referred to as "the mother of all puzzles". [28].

B. The Recursive Co-Integration Test

To reveal the dynamics of the relationship between savings and investment, we apply the recursive cointegration rank tests of [26] and [27] to examine the degree of cointegration during different sub-sample periods of the full sample. The Johansen tests are based on the following vector autoregressive (VAR) system:

$$\Delta Y_t = \sum_{i=1}^{k-1} \Gamma_i \Delta Y_{t-1} + \Pi Y_{t-1} + \varepsilon_t$$
$$t = 1,...,T \quad i = 1,...,k-1 \quad \Gamma_i = -1 + \Pi_1 + ... + \Pi_i,$$
$$\Pi = -(1 - \Pi_1 - \Pi_2 - ... - \Pi_k) \tag{2}$$

here, Y_t is a vector containing two variables: savings and capital. The related hypotheses have to do with the impact matrix Π; if the rank of Π is r, where r ≤ n-1, then r is the rank of cointegration. The matrix Π can be decomposed as $\alpha\beta'$, where α is the matrix of the short-run adjustment coefficients to the cointegrating vectors (the β matrix).

There are two different test statistics for examining the rank of Π :

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{g} \ln(1 - \hat{\lambda}_i) \tag{3}$$

$$\lambda_{\max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \tag{4}$$

here, $\hat{\lambda}_i$ are the eigenvalues of the Π matrix and T is the number of observations. The first statistic of (3) is called the "trace" statistic, and the second statistic of (4) is called the "maximum eigenvalue" statistic. We use the trace statistic of the recursive cointegration test to investigate the time-varying nature of convergence between savings and investment. If this relationship is cointegrating, then the standardized trace statistics are greater than one, which means that we can reject the null hypothesis of no cointegration. On the contrary, if markets are not converging, then the standardized trace statistics are less than one.

III. Empirical Results

This empirical analysis covers China (CI) and the ASEAN-5 countries [Singapore (SG), Malaysia (MY), Thailand (TH), Indonesia (ID), and the Philippines (PH)], which are the original members of ASEAN and have the largest and most developed stock markets in ASEAN. Following the original study of [1], savings is defined as gross domestic savings as a percentage of GDP, whereas investment is measured by gross fixed capital formation divided by GDP. The datasets are collected from International Financial Statistics (IFS) published by the International Monetary Fund (IMF). The sample period runs from 1980 to 2011.

A. Unit Root Tests Results

For studying the relationship of the time series of savings and investments in China and the ASEAN-5, the first step is to test for a unit root type of non-stationarity. To test for stationarity, we use the DF-GLS [29] to examine the presence of a unit root in these variables. Table I presents the results of the DF-GLS unit root tests for the time series of savings and investments. The DF-GLS results of the model without trend confirm that these two variables in all countries are I(1) at the 1% significant level.

TABLE I
Results of the DF-GLS Unit Root

Model	Savings		Investment	
	Without trends	With trends	Without trends	With Trends
	Levels			
China	-1.557 (1)	-3.125(1) **	0.020(0)	-3.360(1)**
Malaysia	-1.846(0)*	-2.537(0)	-1.295(0)	-2.334(1)
Singapore	-1.681(0)*	-2.116(0)	-0.594(0)	-3.358(1)**
Indonesia	-2.527(0)**	-3.287(0)**	-2.002(1)**	-2.348(1)
Thailand	-1.110(0)	-1.222(0)	-2.402(1)**	-2.579(1)*
Philippines	-2.340(0)**	-4.088(0)***	-1.780(0)*	-2.217(0)
	First differences			
China	-6.266(0)***	-5.430(0)***	-3.657(0)***	-4.913(3)***
Malaysia	-5.760(0)***	-5.184(0)***	-3.659(0)***	-4.055(0)***
Singapore	-4.009(0)***	-4.168(0)***	-3.124(0)***	-3.386(0)**
Indonesia	-6.548(0)***	-6.076(1)***	-2.765(0)***	-3.166(0)**
Thailand	-4.617(0)***	-5.096(0)***	-3.166(0)***	-3.181(0)**
Philippines	-7.510(0)***	-4.991(2)***	-4.453(0)***	-4.480(0)***

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. DF-GLS is the unit root test proposed by [29]. The numbers in parentheses are the lag order, selected on the basis of SC, in the DF-GLS tests.

B. Results of the Recursive Statistics

We apply recursive cointegration to examine the long-run relationships between domestic investment and savings for China and ASEAN-5 countries. The recursive cointegration

test is from [30], and the corresponding critical values are presented in [31]. The standardized trace statistics are the ratio between the trace statistics and the corresponding 95% critical values. If the investment-savings nexus is cointegrated, then the standardized trace statistics should be consistently greater than one, implying that we can reject the null hypothesis of no cointegration. If the nexus is not cointegrated, then the standardized trace statistics are less than one.

1. China

Fig. 1 reports the recursive test of cointegration for investment-savings in China, showing that there is no cointegration from 1980 to 2011, except for 1986. The F-H theory implies that China's capital mobility is high and that domestic investment in China is financed by the global pool of capital [1]. In other words, it shows that China's capital market has a high degree of openness.

China's economy expanded through the central-planning system and the dominance of its state-owned enterprises during 1949-1978. In the past few decades, exports from East Asian countries to China have greatly increased. Having overtaken Japan, China is now the main exporting destination of East Asian countries. Huang [32] used exports/GDP as an indicator of trade openness, showing that China's indicator, 0.34, is significantly lower than Singapore's and Malaysia's. The process of financial liberalization in China started later during 1986-88. Although China's degree of trade openness is not high, there are many important policies whereby its government aggressively deregulated foreign investment, which has increased capital flows over the past 20 years. Examples include the issuance of special stocks (B-shares) in 1991 to attract international investors, and in 1993 China's domestic enterprises were allowed to list in Hong Kong. By September 2000, controls on large fixed deposits and foreign currency loans were lifted, and in recent years China has become the world largest recipient of direct overseas investment. After joining WTO in 2001, China fully satisfied its commitment to opening up its securities market before 2009. Hence, these deregulated policies of China's capital market have had a profound impact on the internationalization of its capital market.

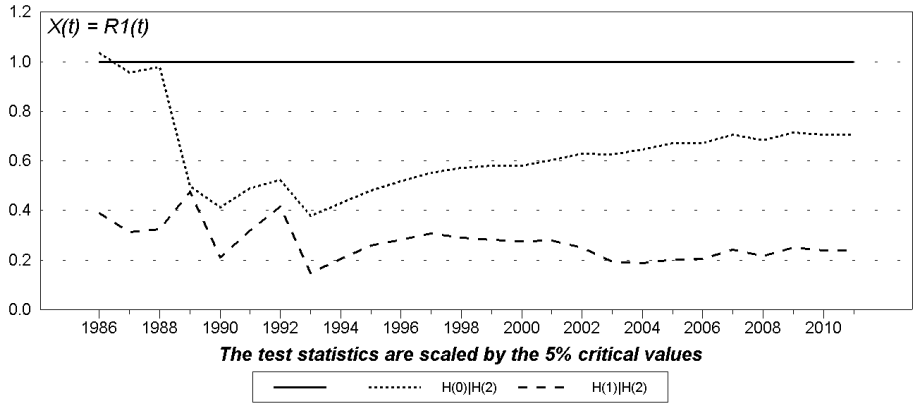

Fig. 1 Recursive standardized trace statistics test of cointegration (China)

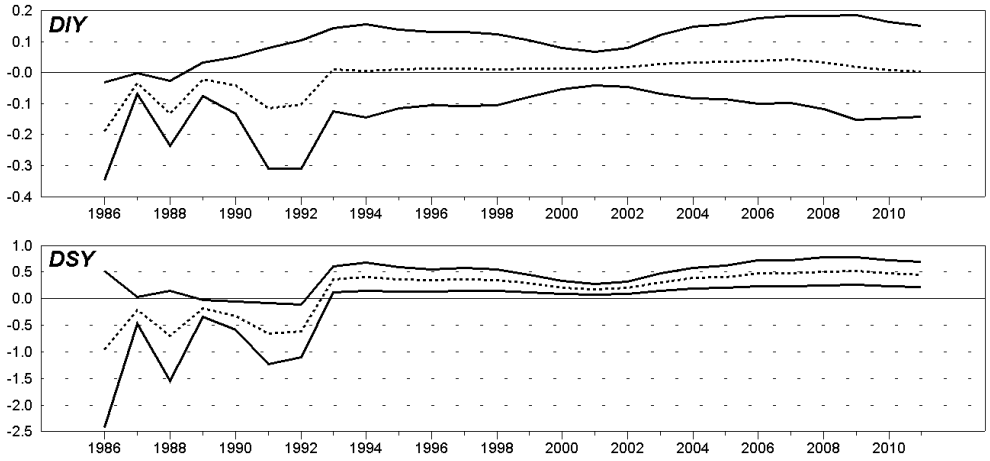

Fig. 2 Recursive estimation of the short-run adjustment coefficients α (China)

We next estimate the recursive coefficient matrix of the error correction terms (matrix α). Fig. 2 presents the recursive estimation of the short-run adjustment coefficient α . Observing the short-run adjustment coefficient α of

investment in China in the upper part of Fig. 2, α is negative before 1993 and is significant over the period from 1986 to 1988, implying that if there is a short-run deviation from the equilibrium, then investment will decrease and return to its long-run equilibrium before 1993. Conversely, α is positive but insignificant after 1993, meaning that a short-run deviation will increase investment in the next year. In other words, a short-run adjustment to investment in China could gradually return to the long-run equilibrium. This shows the system of investment is stable in China before 1993, while there is a converse adjustment that causes the system of investment to be unstable after 1993. There is a similar short-run adjustment to savings in China, as the lower part of Fig. 2 shows α to be negative before 1993 and positive after 1993, and it is significant over most of the time period.

2. Malaysia

Fig. 3 reports the recursive test of cointegration for the investment-savings nexus in Malaysia, illustrating that there is no cointegration from 1980 to 2011. According to the F-H theory, this result shows that Malaysia has a highly mobile and open capital market, and domestic investment in Malaysia is financed by foreign capital. Hence, it also means that the capital market there has a high degree of openness. According to the analysis of [32], the degree of Malaysia's trade openness exceeds 1, showing that its market openness is quite high. Therefore, Huang's study is consistent with our findings from Fig. 5. Moreover, the trace line presents a decreasing trend after 1995, especially a dramatic drop around 1998, which implies the degree of capital mobility increased after 1995.

During the 1960s most of Malaysia's economic outputs were agriculture and natural products and then its industrial structure turned into being export-led, high-tech, knowledge-based, and capital-intensive. Malaysia's economic growth persistently rose after 1987 at an average annual growth rate of around 8%, which is higher than other Southeast Asian countries. This high economic growth, mainly caused by direct investment from Malaysia's government, attracted foreign capital inflow, and the peak of this inflow, 17.6 billion Ringgit, was around 1990. After 10 years of economic prosperity, speculators massively attacked its currency during the height of the Asia financial crisis around July 1997. Speculation drove the overseas Ringgit interest rate much higher, with the overnight rate moving from under 8% to over 40%, leading to a huge sell-off in the Malaysian currency markets as its rating fell from investment grade to junk. To prevent the crisis from causing extreme damage on its economy and financial system, Malaysia's authority imposed strict capital and exchange controls in 1998, which ultimately stabilized the widely fluctuating stock and currency markets. Malaysia then experienced strong economic performance for many years, which resulted in a continuing trade surplus and a large accumulation of foreign exchange reserves. Malaysia adopted a floating exchange rate system on July 21, 2005 again, and direct capital controls were lifted in 2011 in order to attract foreign capital inflows.

Observing the short-run adjustment coefficient α of investment in Malaysia, as in the upper part of Fig. 4, α is significantly negative before the 1997 Asia financial crisis, which implies that if there is a short-run deviation from the equilibrium, then investment will decrease and return to its long-run equilibrium before 1997. Conversely, α is positive but insignificant after 1997. However, there is an large structural break in 1997, during which the system of investment turned from stable to unstable in Malaysia. As to the short-run adjustment of savings in Malaysia, as in the lower part of Fig. 4, α is significantly positive before 2007. The short-run adjustment of savings in Malaysia could gradually deviate from the long-run equilibrium, showing that the system of savings is unstable in Malaysia. There is another structural break around the 2008 global financial crisis. Overall, both the 1997 and 2008 crises caused structural breaks in the short-run adjustment of Malaysia's capital markets, investment, or savings.

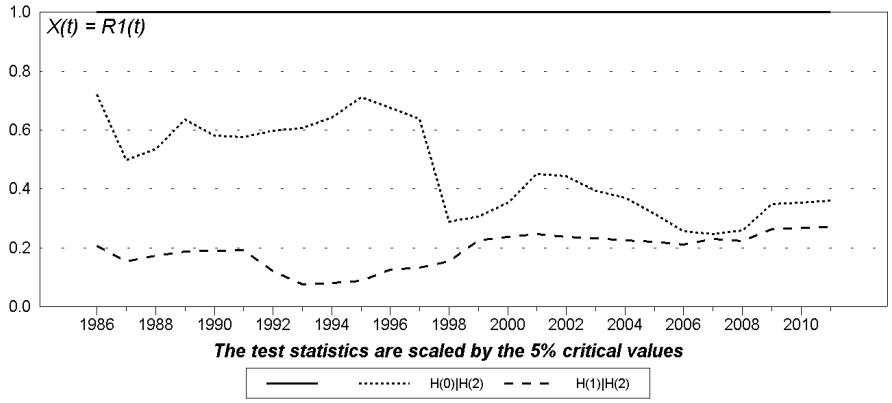

Fig. 3 Recursive standardized trace statistics test of cointegration (Malaysia)

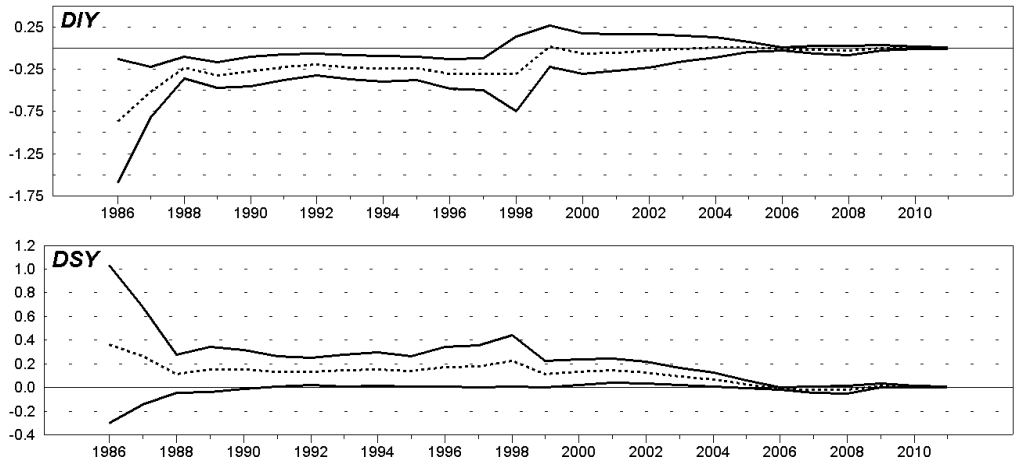

Fig. 4 Recursive estimation of the short-run adjustment coefficients α (Malaysia)

3. Singapore

Fig. 5 shows the recursive test of cointegration for the investment-savings nexus in Singapore. The results are the same as China and Malaysia, with no cointegration from 1980 to 2011. This implies that Singapore has a highly mobile and open capital market, as domestic capital and/or foreign capital is able to finance domestic investment in Singapore. It also means that the capital market in Singapore has a high degree of openness. The trace line's trend is decreasing before 1989, but is more flat after 1989, which implies the degree of capital mobility quickly increased before 1989.

In comparison with other countries, Singapore has a stronger economy and more open trade than the other Southeast Asian countries. Singapore is not only an international financial center, but also the second busiest port in the world. It has advantages of political stability, good infrastructure, and a high level of service, which form a perfect incentive system to attract foreign investment. The results of [32] show that Singapore's trade openness index is 1.66, or the highest among East Asia countries. In recent years, Singapore signed free trade agreements with New Zealand, Japan, Australia, the United States, and other countries, encouraging domestic companies to expand foreign trade. Singapore has also targeted China's market, signing an "avoidance of double taxation agreement" and "incentives agreement and investment protection agreement" in 1986, and then revised the "avoidance of double taxation agreement" in July 1996. These agreements have helped attract more foreign capital to Singapore.

Observing the short-run adjustment coefficient α of investment in Singapore, as in the upper part of Fig. 6, there is a large structural break in 1990, as α is significantly negative before 1990. This implies that if there is a short-run deviation from the equilibrium, then investment will decrease and return to its long-run equilibrium before 1990. After 1990, α is near zero, which means that there is no force revising the short-run deviation of investment. As to short-run adjustment of savings in Singapore, as in the lower part of Fig. 6, α is significantly negative before 1990 and is positive after 1990. There is a special period from 2000 to 2006 where α is significantly positive, which means that Singapore's adjustment trend of savings became unstable over the period of the two financial crises.

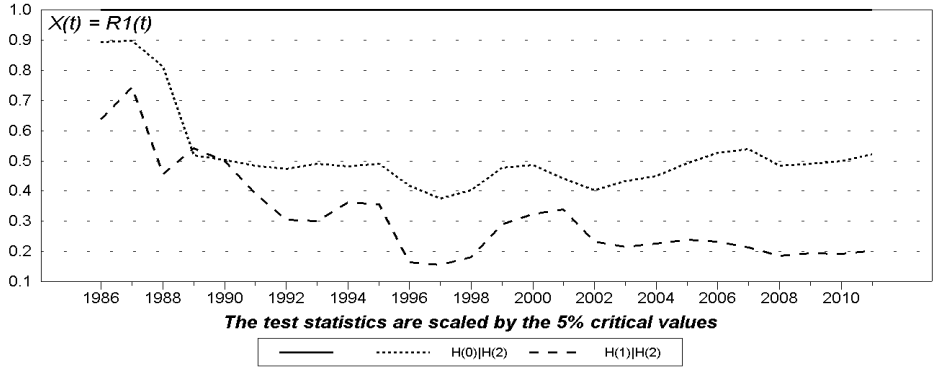

Fig. 5 Recursive standardized trace statistics test of cointegration (Singapore)

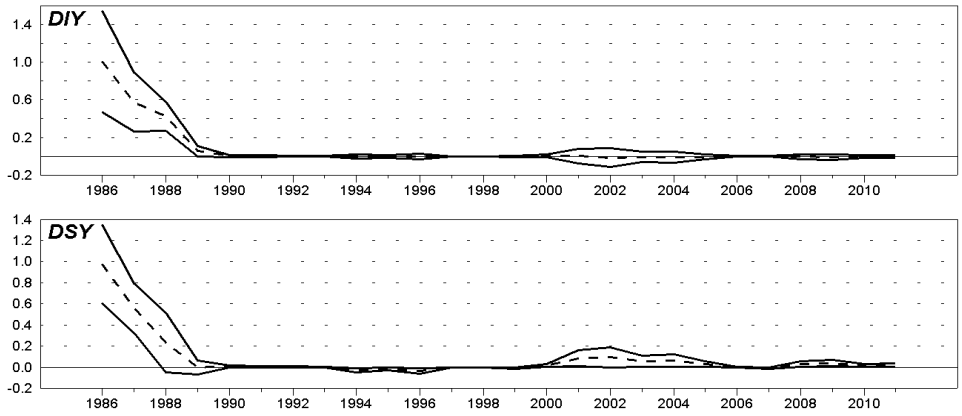

Fig. 6 Recursive estimation of the short-run adjustment coefficients α (Singapore)

4. Indonesia

The result of the recursive test of cointegration for the investment-savings nexus in Indonesia is different from China, Malaysia, and Singapore. Fig. 7 shows that there is cointegration between investment and savings in Indonesia before 2001 and shows that capital mobility is low before 2001, resulting in domestic investment having to be financed by domestic savings. However, capital mobility presents a structural change after 2001, as it went from low to high, but causing no cointegration to exist after 2001. In other words, Indonesia has highly mobile and open capital market after 2001, and domestic investment is able to be financed by foreign counties. The trace line is a decreasing trend and close to 1 around 2008, which implies the degree of capital mobility turned lower again at that time.

The economic growth of ASEAN counties has been uneven but strong, with an average annual economic growth rate of around 5% over the past twenty years (and which has been maintained through two major financial crises). Indonesia's economic system is less international and global than the other ASEAN-5 countries and its financial market is also smaller. Compared to 2011 average stock market indices globally, the market capitalizations as a percentage of GDP are 128.6% for Singapore, 137.2% for Malaysia, 77.7% for Thailand, and 73.58% for the Philippines. These percentages are higher than the global average percentage of 68.3%, yet Indonesia's 46.1% is lower than this average. During the 1997 Asian financial crisis, Indonesia suffered from a severe economic recession, depreciated currency, and political disorder. However, a remarkable upswing in economic growth took place after 2000, caused by several wide-ranging political and economic reforms implemented during the Asian financial crisis. Indonesia's government implemented incentive policies to attract foreign investment. While many countries were affected by the Eurozone crisis getting worse in 2011, the impact was lighter for Indonesia, because of its raw material products and export-oriented economy. Furthermore, Indonesia's GDP exposure to U.S. and European banks fell due to various policies that relied more on relatively stable foreign direct investment (FDI) inflows, helping the country be somewhat exempt from large credit exposures to sub-prime loans and securities in the U.S. These changes to Indonesia's economic and financial development caused capital mobility in Indonesia to turn from low to high and for no cointegration to exist after 2001.

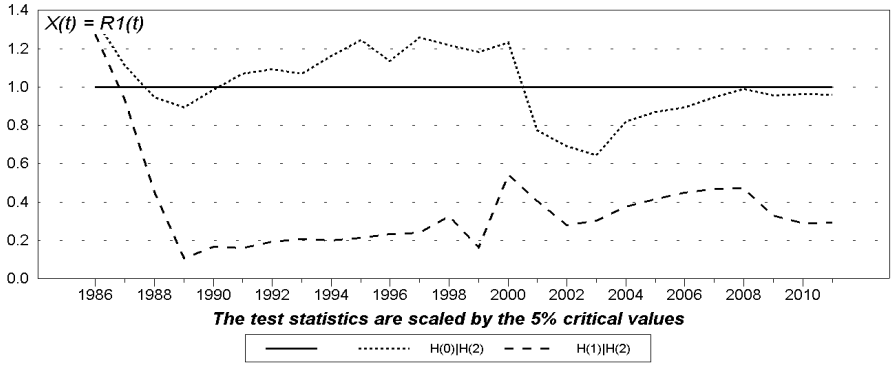

Fig. 7 Recursive standardized trace statistics test of cointegration (Indonesia)

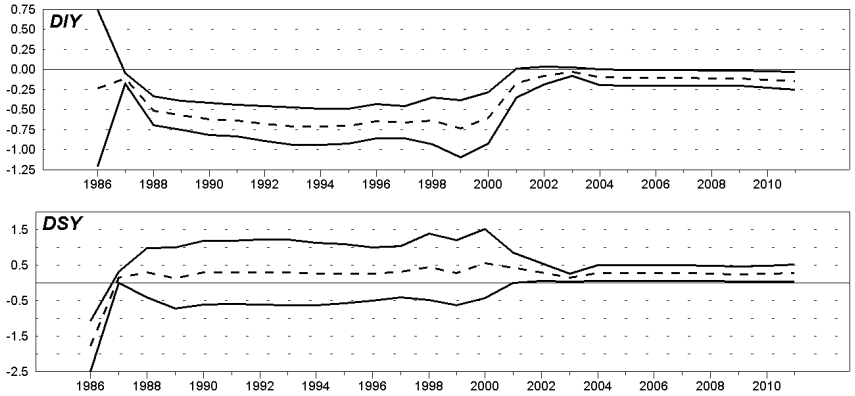

Fig. 8 Recursive estimation of the short-run adjustment coefficients α (Indonesia)

As to the recursive estimation of the short-run adjustment coefficient α for investment in Indonesia, as in the upper part of Fig. 8, α is significantly negative over most of the empirical period, implying that a short-run deviation of investment will decrease and return to its long-run equilibrium. As to the short-run adjustment of savings in Indonesia, as in the lower part of Fig. 8, α is positive over most of the empirical period and is significant after 2001, which means that the adjustment trend in savings turned unstable after the Asian financial crisis for Indonesia.

5. Thailand

The result of the recursive test of cointegration for the investment-savings nexus in Thailand, as in Fig. 9, is similar to the results of Indonesia, with a cointegration between investment and savings during the earlier period. Fig. 9 shows cointegration between investment and savings in Thailand before 1992 and that capital mobility is low before 1992. The structural break timing of capital mobility in Thailand is around 1992, which is 10 years earlier than Indonesia, and means its deregulation of economic and capital controls were implemented at a earlier period. After 1992, Thailand illustrates a highly mobile and open capital market in which domestic investment is able to be financed by foreign countries.

Thailand was the place that triggered the 1997 Asian financial crisis. By the mid-1980s, interest rate liberalization along with economic progress had resulted in positive and stable real interest rates in Thailand and other ASEAN countries. Thai authorities regarded interest rate stability as an important policy variable to promote a stable financial system and to help in their monetary policy transmission mechanism. The positive and stable real interest rates contributed to an increase in the volume of resources available to the financial system and also raised domestic savings to a high level. Actually, these high levels of domestic savings, to a great extent, sustained Thailand's high investment levels prior to the 1997 crisis. Thailand abolished interest rate ceilings in the late 1980s, which caused capital mobility to be low before 1992. From 1990 to 1995, Thailand's economic growth was fast at an average annual rate of up to 8%. For Thailand and many East Asia countries, market liberalization aligned with other major reforms prior to the 1997 Asia crisis. Compared to Singapore, Thailand made some progress in broadening the scope of financial liberalization, but still has a relatively large number of capital account restrictions following the 1997 Asia crisis.

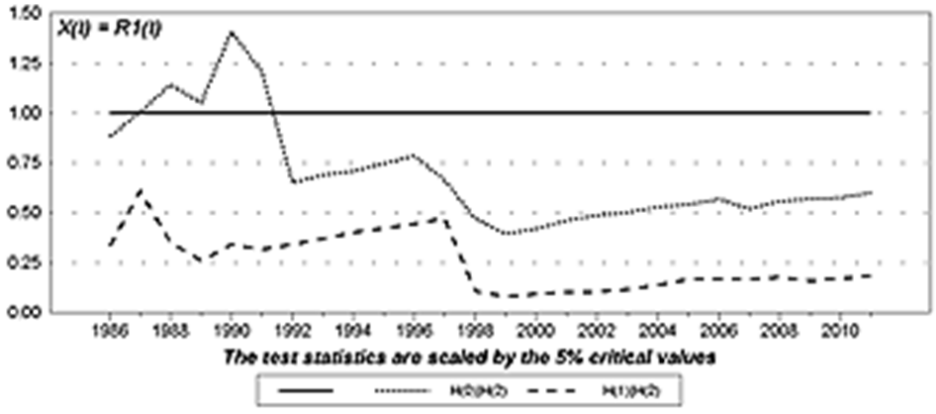

Fig. 9 Recursive standardized trace statistics test of cointegration (Thailand)

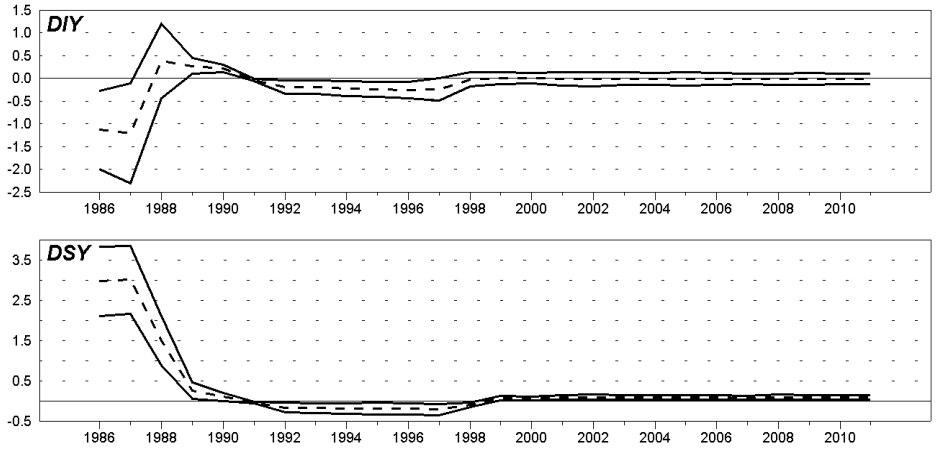

Fig. 10 Recursive estimation of the short-run adjustment coefficients α (Thailand)

Fig. 10 illustrates the recursive estimation of the short-run adjustment coefficient α in Thailand. In the upper part of Fig. 10, α is significantly negative from 1991 to 1998, implying that a short-run deviation of investment will decrease and return to its long-run equilibrium. After 1998, α is insignificantly. As to the short- run adjustment of savings in Thailand, as in the lower part of Fig. 10, α is significantly negative from 1991 to 1998, meaning that a short-run deviation of investment will decrease and return to its long-run equilibrium. After 1998, α is insignificant but positive, which implies that the adjustment trend in savings became unstable after the Asian financial crisis in Thailand.

6. Philippines

The result of the recursive test of cointegration for the investment-savings nexus in Philippines, as in Fig. 11 shows there is a cointegration between investment and savings from 1989 to 2002 except for 1998. Compared to China and other ASEAN-5 countries, it presents a longer period of existence for cointegration between investment and savings for the Philippines. In other words, capital mobility there is lower for a longer time. After 2002, similar to Indonesia, the Philippines has a highly mobile and open capital market and domestic investment is able to be financed by foreign countries.

As with other ASEAN-5 countries, foreign exchange controls as well as ceilings on deposits and lending rates in the Philippines were removed at different times during 1977-1985. Singapore (1975) and Malaysia (1978) were among the first countries to liberalize their interest rate controls, while in the Philippines, interest rates were fully deregulated in the early 1980s. Since the 1997 financial crisis, the Philippines, as with other East Asia emerging economies, has embraced market-oriented financial reforms, to varying degrees, with an emphasis on fostering and opening capital markets. However, it is also true that financial market opening has been intermittent and marked by relapses and backslidings in the Philippines. In fact, for the Philippines, there has been little progress in recent years and it has a long way to go before reaching the level of Singapore. In terms of FDI flows into the Philippines, they relented significantly in the early 2000s, but rebounded somewhat in 2005, and picked up in the following years. This explains why capital mobility in the Philippines is lower for a longer time until 2002.

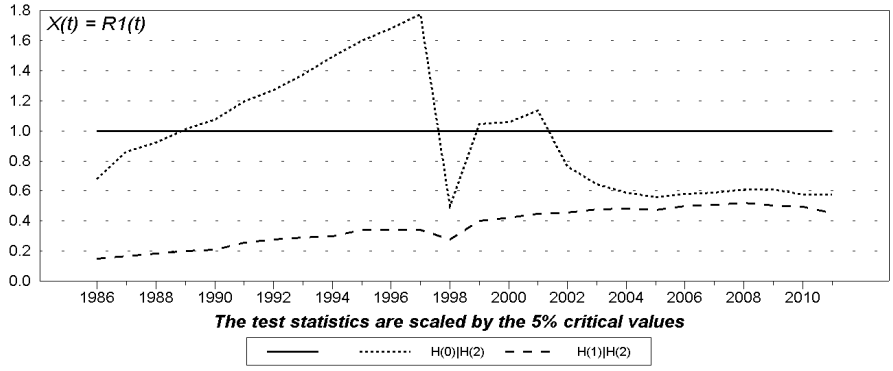

Fig. 11 Recursive standardized trace statistics test of cointegration (Philippines)

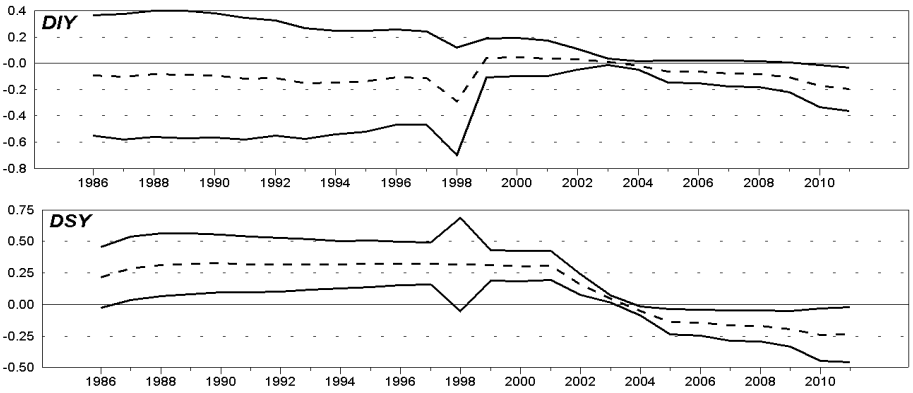

Fig. 12 Recursive estimation of the short-run adjustment coefficients α (Philippines)

As to the recursive estimation of the short-run adjustment coefficient α for investment in Philippines, as in the upper part of Fig. 12, it is insignificant over the full sample period; no matter whether α is negative or positive. The short-run adjustment of savings in Philippines, as in the lower part of Fig. 12 illustrates that the adjustment coefficient of savings is significantly positive before 2003. In other words, when there is a short-term deviation from the equilibrium, the upward adjustment will move far away from its long-run equilibrium before 2003, whereas α is significantly negative after 2003, meaning that the adjustment trend in savings has become stable after 2003 in the Philippines.

IV. Conclusions

This paper applies recursive cointegration analysis to examine the dynamic changes in [1] savings-investment (S-I) coefficients across China and the ASEAN-5 countries over time. Considering the implications of the time-varying behavior of the (S-I) nexus in China and the ASEAN-5 countries, we initiate recursive cointegration rank tests of [26] and [27] to trace pictures of the possible dynamic linkages of the six capital markets.

To the extent that the S-I coefficients measure international capital mobility, the main empirical results are as follows. The results of the recursive trace statistics show that the investment-savings nexus varies in these six countries. There is no cointegration between investment and savings in three countr - China, Malaysia, and Singapore - which means that the mobility of their capital markets is high and domestic investment in these three countries can be financed by the global pool of capital. For the other three countries (Indonesia, Thailand and Philippines), there is cointegration between investment and savings for part of the sample period, including before 2002 for Thailand, before 2001 for Indonesia, and before 2002 for the Philippines. It means these three countries achieved highly mobile and open capital markets later than China, Malaysia, and Singapore.

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