

The Effects of International Capital Flows on Domestic Savings, Investment and Growth in Emerging Economies

OHTA, Hideaki

Abstract

This paper analyses the overall changes in the saving/investment/capital inflows relationship as well as economic growth under increasing international capital flows in emerging economies during the period from 1980 to 2022. This paper attempts to examine whether the 'Feldstein-Horioka (FH) puzzle' would still hold in emerging countries during the period. Originally, Feldstein-Horioka (FH) (1980) could not find any fact that domestic savings and investment had less association during capital account liberalization, but they found that domestic savings maintained a significant association/ correlation with domestic investment in major OECD countries during the period 1960 and 1974. This paper also focuses on the association/ correlation between domestic savings and capital flows, as well as GDP growth in 22 emerging economies during the 'Post' F-H puzzle period until recently.

The analysis in this paper shows that (1) the correlation between domestic savings and investment did not change significantly over the whole period in emerging economies, although it has been affected by capital account liberalisation in the past decades; (2) after the Global Financial Crisis (2010-22), the correlation between savings and investment generally recovered in emerging economies, higher than in the 2000s; (3) capital inflows were not positively and significantly correlated with domestic investment or GDP growth except during the 'boom' period; (4) the correlation between domestic savings and investment is significant in emerging economies, including seven major economies (China, India, Indonesia, Argentina, Brazil, Mexico and Korea) but the correlation between each capital account item (FDI, portfolio and other investment) and GDP growth is limited.

The analysis in this paper suggests that despite the dramatic increase in capital and financial liberalization over the past few decades, domestic savings and investment rates have remained relatively highly correlated in emerging economies, and that domestic savings rates are still an important driver of domestic investment and economic growth.

Keywords: F-H puzzle, Domestic Savings, Domestic Investment, Capital Account Liberalization, Capital Management and Controls, GDP growth

JEL: F21, E22, F38, F43

Introduction

This paper analyses the overall changes in the savings/ investment/ capital inflows relationship as well as economic growth under increasing international capital flows in emerging economies during the period from 1980 to 2022. In general, the domestic investment-saving nexus has become weaker in recent decades both in advanced economies (OECD) and emerging economies.

Domestic saving and investment ratios are closely related in principle in any country; however, the correlation is not always clear under the increasing global capital flows. Increased domestic savings may not result in higher domestic investment in the real economy, since investment in the financial sector for short-term speculative investment is commonly observed in many countries recently, including advanced and emerging countries when investment in non-productive sectors such as financial investment real estates. As a result, growth in capital inflows have not contributed to the economic growth in many countries.

The pioneering work done by Feldstein-Horioka (1980) (hereafter, FH) analysed the relationship between domestic savings and investment during the period which capital flows were relatively limited between 1960 and 1974. The FH analysis indicated that the correlation between domestic savings and investment in OECD countries was still high during the period, which is contrary to the assumed hypothesis that the correlation between domestic savings and investment was expected to become lower under the capital account liberalization. The result was explained by some institutional constraints as well as home bias of each country among the OECD. This is called 'Feldstein-Horioka (hereafter F-H) puzzle.

The results of FH analyses are plausible if we consider the period covered in the analysis is 1960-1974, during which most of the OECD nations had not liberalized capital account in the covered period, and it was only after the mid-1980s that major advanced economies including European countries and Japan undertook capital and financial account liberalization. However, the F-H puzzle might have already been solved since the correlation between saving and investment has steadily declined with increasing capital flows under the capital account liberalization in the past decades.

This paper will examine whether such a hypothesis of FH has become valid in explaining the changes in relationships between domestic savings and investment as well as GDP growth rate under increasing capital flows in emerging economies during the past decades. It is also shown that the importance of capital management and controls in several countries in attaining positive correlation between domestic savings and investment for stable growth.

It should be noted that very few relevant literatures have analysed the FH hypothesis covering emerging economies in recent period after 2000. The variables taken up by several research papers are complicated, which may not necessarily be applicable in many countries.

Although financial inflows were not used as one of the explanatory variables in the F-H hypothesis, it is useful to explain how the domestic investment has become dependent on the imported financial capital. This is because capital flows in the global market have increased in the past three decades, which would justify using the variable of capital flows

(FDI, portfolio, other investment and financial derivatives) in the regression equations.

In this paper, the analyses include multiple regression equations which include those variables as domestic savings, total trade (exports/imports as the share among GDP), as well as financial inflows (net, percent of GDP), covering the period between 1980 and 2022. This paper also takes up the nexus of domestic savings and GDP growth, together with other variables as domestic investment, trade and capital flows (net, percent of GDP) in 22 emerging economies, including major 7 emerging countries.

Among the explanatory variables, trade (exports/imports) variables could be significance in the regression equations, during the period which international trade was the major element in the international transactions. However, the correlation between domestic savings and investment ratios in the selected emerging countries become insignificant since late 1990s until 2000s, while the trend has reversed recently¹.

The capital inflows generally put positive effects on domestic savings in those countries with capital management and controls, and naturally an increase in savings could contribute to achieve higher GDP growth rate. In this paper the analysis shows that domestic savings are not always correlated with domestic savings and GDP growth, and that this could be because capital flows between the countries have increased significantly. The analysis also found that the positive correlation between domestic savings and investment has become significant, while that of financial flows and GDP growth insignificant in recent years in emerging economies. In the post-Lehman shock period during 2010-22, the management and control of capital flows might have been worked effectively though several prudential controls in emerging countries. Major results of the analysis are as follows:

Firstly, the correlation between savings and investment has been significantly affected by the capital account liberalization in the past decades, however, the correlation of domestic savings and investment has not been changed significantly in emerging economies during the whole period. This would indicate that Feldstein-Horioka puzzle of home bias somehow still hold even in recent decades when capital account openness in each country has drastically increased in emerging economies.

Secondly, in the post-Global Financial Crisis period (2010-22) the correlation between savings and investment has recovered; the nexus of savings and investment has been generally significant. This could be explained by the fact that several countries have introduced several capital management and controls through prudential monitors and controls after the Global Financial Crisis.

Thirdly, capital flows have no more significant correlation with domestic investment and growth in emerging economies since 1995 to date. This may indicate that capital flows have not contributed to productive investment nor GDP growth in emerging economies due to possibly massive non-productive (e.g. financial investment) undertaken recently.

Fourthly, there are significant differences between major emerging countries (EM7) and other smaller emerging economies in the sense that the degree of home bias in terms of

1 The countries include Korea, Israel, Korea, Singapore which are now advanced economies, but these countries had been categorized 'emerging' economies until 1990s, so that these are included in the 22 countries.

domestic savings and investment/ GDP Growth, has been larger in the former countries than the latter. This indicates that domestic savings have had a significant impact on domestic investment in the major emerging economies in the past 2 decades.

Fifth, FDI cannot be regarded as the major GDP growth factor. As claimed by Calderón et al. (2004), economic growth depends on a multitude of factors that cannot be fully captured by developments in FDI or domestic investment.

Sixth, domestic investment nexus domestic savings as well as GDP growth are still valid in the sense that there has been correlation between them in the past decades, while the significance is larger in larger emerging countries (EM7) than smaller nations.

Finally, major emerging economies (EM7) has significant correlation between domestic savings and investment, however, capital flows (FDI, Portfolio, Other investment) have had only significant correlation with the domestic investment nor GDP growth during 1980s, 1990s and 2000s. The results indicate that major emerging economies (EM7) are no more dependent on external capital and financial resources but utilize more on domestic resources.

The results of analyses in this paper suggest that accumulation of domestic savings is important for a country to attain stable growth, and cautious approach towards capital account liberalization would be required to maximize the benefit of resources.

1. The Roles of Savings and Investment under Increased Capital Flows in Economic Development

1.1 Feldstein-Horioka Puzzle: Pioneering Research on the nexus of Savings and Investment

The original hypothesis proposed by F-H was the correlation between national saving and investment would become less apparent as capital account liberalization in 21 OECD countries taken place, and the analysis was made based on the regression equation, and the model assumes that the coefficient (β) should become smaller towards zero under the condition that capital account liberalization of country i is totally undertaken and capital flows among the nations are fully realized.

$$(I/Y)_{it} = \alpha + \beta(S/Y)_{it} + u_{it} \quad (1)$$

$(I/Y)_i$: domestic investment as percentage of GDP

$(S/Y)_i$: domestic savings as percentage of GDP

u_{it} : error term

The coefficient (β) during 1960-74 is 0.89 (standard error: 0.07) indicated that capital mobility among the advanced nations was still limited, and that domestic investment is mostly explained by the domestic savings in OECD (Table 1). This indicates that there still existed strong 'home bias' in the sense that domestic savings (resources) to be utilized for investment in advanced countries until mid-1970s. The results shown by F-H (1980) may be natural outcome since the covered period was 1960-1974 when capital account liberalization was not commonly adopted in many OECD countries.

Table 1 : Domestic Investment and Savings (F=H)[1980]

【Dependent Variable】	①Gross Domestic Investment			②Net Domestic Investment		
	Constant	S/Y (β)	R ²	Constant	S/Y (β)	R ²
1960-74	0.035 (0.018)	0.887 (0.074)	0.91	0.017 (0.014)	0.938 (0.091)	0.87
1960-64	0.029 (0.015)	0.909 (0.060)	0.94	0.017 (0.011)	0.936 (0.072)	0.91
1965-69	0.039 (0.025)	0.872 (0.101)	0.83	0.022 (0.020)	0.908 (0.133)	0.75
1970-74	0.039 (0.024)	0.871 (0.092)	0.85	0.018 (0.018)	0.932 (0.107)	0.83

Note: Countries covered are OECD member nations (21).
Source: M. Feldstein; C. Horioka (1980) Table 2

The F-H study also included the trade openness variable (as measured by the sum of exports and imports of goods and services) in the regression equation as follows:

$$(I/Y)_{it} = \alpha + (\beta_0 + \beta_1 X_{it}) (S/Y)_{it} + u_{it} \quad (2)$$

(I/Y)_i : domestic investment as percentage of GDP

(S/Y)_i : domestic savings as percentage of GDP

X_{it} : total trade amount of country *i* [percentage of GDP]

u_{it} : error term

The result of the above also shows that the trade openness (trade [Xi] is measured by the sum of exports and imports of goods and services) is not a major factor to explain the domestic investment, and that it is almost correlated with domestic saving rate.

The above results show that there exists strong home bias of domestic resources in investment even in those countries of OECD which are expected to be opening the capital and financial markets, and it is contrary to the hypothesis that free capital flows would result in insignificant association between the domestic savings and investment. It is now commonly called as ‘F-H puzzle’ in the context of international finance.

The home bias that was identified by the F-H paper (1980) is probably due to the fact that most of the advanced nations during the covered period (1960-1974) still maintained capital management and control regimes, so that domestic investment was mostly financed by domestic resources (savings), which shows high correlation between the domestic savings and investment in 21 OECD countries. However, the close correlation between savings and investment has become changed in the past decades, along with the capital account liberalization. Particularly, this trend is more applicable to smaller countries among the OECD members. In the case of emerging economies, dependency of domestic investment resources on domestic savings had kept until 1980s, but it has become changed since the 1990s, when capital and financial account liberalization was universally undertaken in many emerging countries.

Therefore, the next section will examine the changes the relationship between domestic savings and investment in the process of capital account liberalization in the past decades.

1.2 ‘Feldstein-Horioka Puzzle’ and Relevant studies

Several studies have confirmed integration of global financial markets, and many studies

have undertaken on the ‘F-H puzzle’ and several papers have already pointed out the ‘puzzle’ has been solved.

Singh (2016) surveyed the literature on saving–investment (SI) correlations and international mobility of capital (IMC) generated over more than three decades since the 1980s. He pointed out that several studies have shown the presence of high SI correlations for the developed countries with higher IMC, and low SI correlations for the developing countries.

The analysis by Giannone & Lenza (2008) has shown the fact that correlation between the domestic savings and investment has become insignificant for 23 OECD countries between 1970 and 2004.² Likewise, Kumar & Rao (2011) also show that the coefficient of correlation on domestic savings and investment among 13 OECD countries during 1960-2007 steadily declined, while they claim that too much focus on the domestic saving and investment may not appropriate in understanding the current globalization. Likewise, There is some argument that robustness could not be maintained if regression exercises were based on the pooled panel data.³

On the other hand, Wahid et al. (2011) pointed out that the association between domestic savings and investment is still high based on the analysis covering both advanced and emerging/developing countries. However, the countries selected (21 countries) include those countries with lower capital account openness.⁴ Some research results of Ventura (2003) and Obstfeld & Rogoff (2000) tried to explain the F-H hypothesis by frictions in the global financial market.

Some comprehensive study by N. Bibi and A. Jalil (2016) covering 88 countries including both advanced and developing economies also confirmed the FH puzzle that shows a lack of international mobility among large group of countries. However, the study includes those countries which are not so much integrated in the global market especially developing countries, so that the result may not confirm the FH puzzle in true sense.

The study by Misztal (2011) utilized the VAR model in the analysis of domestic savings and investment nexus and concluded that emerging and developing countries have relatively higher correlation between domestic savings and investment, as compared with that of advanced economies industrial countries.⁵

The study on F-H puzzle by Chang et al. (2014) also confirms two puzzles, namely the commonly understood one of positive saving–investment correlations in advanced and emerging economies (the ‘FH1 puzzle’) and significantly higher saving–investment

2 The analysis by Ginnone and Lenza (2008) made their conclusion, taking account of the effects of external shocks including the global financial crises.

3 Kitamura and Fujiki (1995) suggested that robustness may be affected by the pooled data, without considering specific conditions of each country.

4 The countries covered in the analysis by Wahid et al. (2011) include Bangladesh, Indonesia, Kenya, Lesotho, Niger, Togo, Zambia, Bolivia, China, Colombia, Dominican Republic, Egypt, Peru, South Africa, Sri Lanka, Swaziland, Turkey, Hungary, Oman, and Uruguay.

5 Misztal (2011) insisted that the varied result in terms of correlation between domestic saving and investment could be explained by the differences in economic policies which usually reflect the fiscal balance and current account in each country.

correlations in advanced economies than in emerging economies (the 'FH2 puzzle'). They showed that there should be some features of the model including long-run risk, and endogenous world interest rate, and cross-correlations of national and global shocks.

Furthermore, Ford & Horioka (2016) point out that the F-H Puzzle may not always follow the theory of international financial capital due to various market obstacles that prevent the net movement of financial capital in real financial markets. On the other hand, Filipe et al. (2022) argue that the F-H Puzzle is a natural consequence of the fact that the F-H regression itself deals with the domestic savings rate in the national income accounts.

Ohta (2008) states that in advanced economies (21 OECD countries) and some emerging economies, the correlation between savings and investment has become insignificant in the decades between 1975 and 2005, and the F-H puzzle no longer applies. Furthermore, it shows that FDI is closely related to domestic investment in capital flows and was positively and significantly correlated with domestic savings between 1975 and 1980 in both advanced and emerging economies. The study covers the period before the Global Financial Crisis (2008) and therefore does not consider important changes in the world economy and financial markets. Ohta (2015) analyses the OECD and emerging economies and points out that the correlation between domestic investment and savings rates is recovering compared to the 2000s, although the link between domestic savings and investment is still maintained in the period covered until 2013. In this sense, the paper shows that the F-H Puzzle still holds.

In the analysis on BRICS countries, T.J. Mosikari et al. (2017) has tested the validity of F-H puzzle and show that investment and savings are cointegrated during the period 2001-2014. Thus, even in emerging economies F-H puzzle has generally been proved in several research papers.

It is important to study more recent years since several important changes in the global economy and financial markets have been emerged in recent years. In this respect, Ohta (2015) analysed both OECD and emerging economies but the covered period was until 2013. Therefore, it is still necessary to analyse the latest situation in emerging economies until today. In this respect, we may have to consider the capital management and prudential controls after the Global Financial Crisis in 2008, which might have resulted in significant changes in the capital flows and economy policies in several countries in both advanced and emerging economies.

This paper shows that the above-mentioned 'FH puzzles' in emerging economies also confirmed in the recent period by extending the covered period from 1980 to 2017. It should be noted that a variable of capital inflows (net) is included in the regression equations to test the effects on the overall savings and investment, as well as the effect on GDP growth. In this study not only a larger group of emerging countries are taken up, but also major 7 emerging countries are analysed separately.

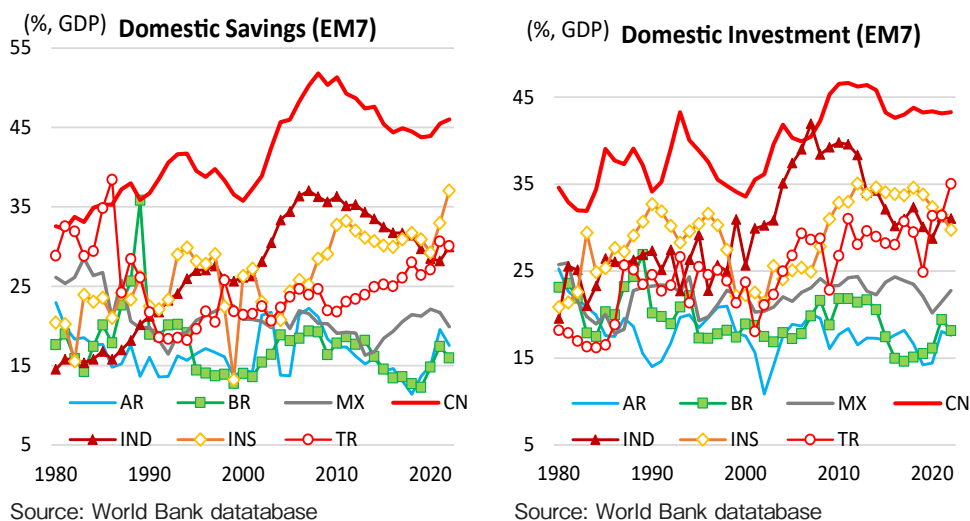
One of the major implications of the analysis would be the fact that domestic savings are still important for domestic investment, as a factor for stable economic growth in emerging countries where capital flows have significantly influenced on the economies.

2. Capital Flows and Domestic Savings and Investment

2.1 The effects of capital flows on domestic savings and investment on economic growth

One of the important aspects of increase in national savings rate for domestic investment and less dependent on external financial resources is that it may facilitate stable economic growth in a country. Dependency on external financial resources could increase vulnerability of domestic economies in those small open economies, which are easily affected by the global economic and market conditions. In this respect, capital flows in the global market should be focused in the analyses of the effects of investment and savings on economic growth in general.⁶ Rajan et al. (2006) has already pointed out the fact that capital inflows in developing and emerging economies has not always contributed to increase GDP growth, and that those countries which are not dependent on external capital are likely to have higher growth.

This paper not only analyses recent trends of investment-saving nexus, but also focus on the overall effects of domestic savings / investment and capital inflows (net) on GDP growth in advanced and emerging economies during the period 1980-2022 in the following sections.⁷



Source: World Bank database

Source: World Bank database

Fig.1 Domestic Savings and Investment in Major Emerging Economies (EM7)

6 Dar and Amirkhalkhali (2003) found that crowding out in the domestic financial sector has been relieved gradually with capital account liberalization in the selected 19 OECD countries during the period of 1971 and 1999.

7 The capital and financial account figures are net inflows of all financial flows including FDI, portfolio investment and other investment (short-term loans, etc.).

2.2 Capital Account Liberalization and Domestic Savings/Investment

The analysis by F-H (1980) was focused on the relationship between domestic investment and domestic savings as well as trade in OECD countries. In the FH analysis, only trade variable (sum of exports and imports as percentage of GDP) was used to measure openness of the economies as explanatory variable in the equations. However, capital and financial account is to be considered if the effects of openness of the economy should be considered in the nexus of domestic investment and savings, since domestic saving rates are not necessarily high if external financial resource are mobilised under the massive capital flows between the regions and economies in the past decades. Therefore, capital flows (net inflows) should be considered as important variables in the analysis of domestic savings and investment since domestic financial resources in emerging market economies could be easily substituted to capital and financial resources in the global market.

This paper analyses 22 countries which include: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, China, India, Indonesia, Korea, Malaysia, Philippines, Pakistan, Thailand, Singapore, Turkey, Egypt, Israel, Morocco, South Africa and Tunisia. Although Korea and Singapore are no more emerging countries, they are typical successful emerging economies in the past decades. Venezuela is not included since the latest figures since 2015 are not available.

2.3 Capital Account Openness (KAOPEN) in regional basis

Before analytical work in the regression exercises in saving and investment correlation, some survey on the general feature of the changes in the capital account openness in major emerging and some advanced countries is conducted. The indicators to show the capital account openness should be available for everyone easily, so that the Chinn-Ito Index is adopted to show the changes of capital account openness in Emerging countries(Fig.1)⁸.

As shown in Fig.2, most of the countries had not liberalized capital account transactions in both OECD and emerging economies before 1970s⁹.

This fact shows that the assumption of F-H was not met in most of the emerging countries during which the analysis by F-H covered between 1960 and 1974.

It is to be noted that several countries including advanced and emerging economies have introduced some capital management and controls after the Global Financial Crisis (2008). As we have already confirmed in the F-H study (1980), trade openness (sum of exports and imports, percentage of GDP) is not generally statistically significant variable in the equations. Therefore, it would be important to include net capital inflows in the regression equations in the analysis on saving and investment correlations as shown in the following sections¹⁰.

8 The latest figures are available from the site (http://web.pdx.edu/~ito/Chinn-Ito_website.htm).The data for 1970-2021 are available for all the major countries of both advanced and emerging/developing economies.

9 Latin American is the only region that liberalized financial account, especially short-term investment of bank loans during 1970s. This has resulted in the heavy external borrowings in late 1970s, which lead to external debt crises in Latin America in the 1980s.

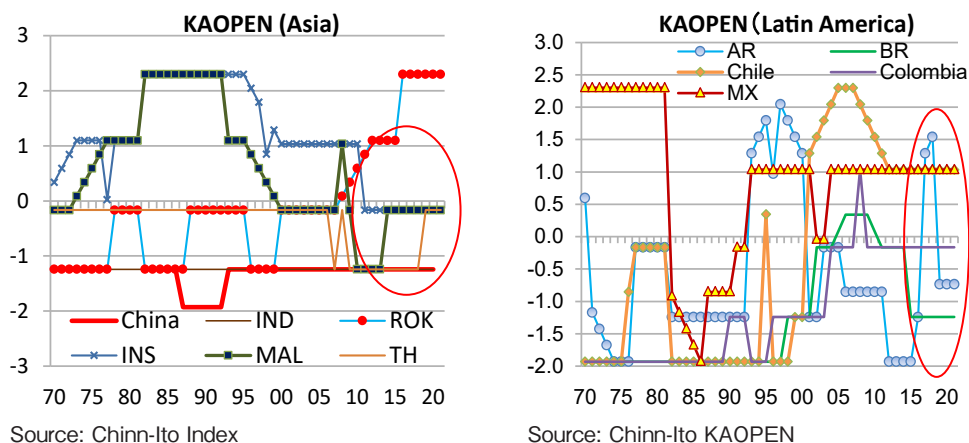


Fig.2 Capital Account Openness (KAOPEN)

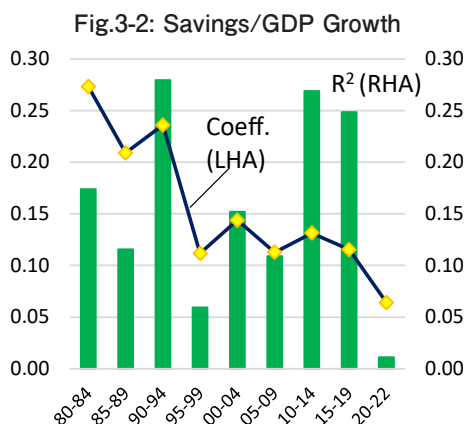
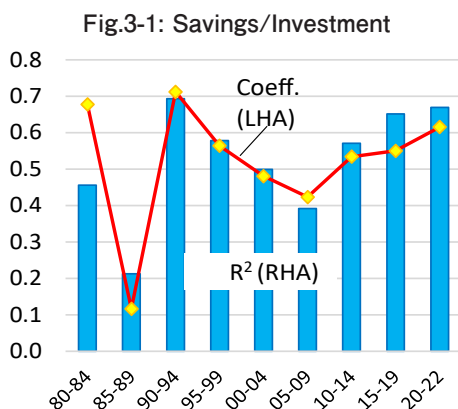
The reason why this paper takes up the period from 1980 is that most of the emerging countries had not liberalized capital account, so that there is no significant meaning to cover the period of 1970s.

3. The Effects of Capital Account Openness on the Domestic Investment/Savings and GDP Growth Savings

As already mentioned above, the ‘F-H puzzle’ may not be actually ‘puzzle,’ since the period (1970-1974) covered by the F-H analysis is during the period when capital account liberalization had not been fully undertaken even in major advanced economies. Therefore, we should examine the effects of capital account liberalization on domestic investment as well as growth in the emerging economies in the past decades

In fact, the correlation between the domestic savings rate and the domestic investment rate shows that the correlation has not necessarily declined over the past few decades, but rather has maintained a close positive correlation (Figure 3-1). The domestic savings rate is also positively correlated with GDP growth exceptintimes of crises (Fig. 3-2), and in this regard, the relationship between domestic savings and the investment rate and GDP growth will be analysed not only in terms of trade, but also in terms of capital inflows as a whole and by individual financial account items (FDI, portfolio and other investment).

10 This paper analyses 22 countries.22 countries include: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, China, India, Indonesia, Korea, Malaysia, Philippines, Pakistan, Thailand, Singapore, Turkey, Egypt, Israel, Morocco, South Africa and Tunisia. Although Korea and Singapore are no more emerging countries, they are typical successful emerging economies in the past decades. Venezuela is not included since the latest figures since 2015 are not available.



Sources: WB database

Sources: World Bank Database

Fig.3: Domestic Savings / Investment / GDP Growth in Emerging Economies

3.1 Models of the Analysis

3.1.1 Domestic Savings/ Domestic Investment / GDP Growth

In addition to the Original F-H paper included the trade variable to show the ‘openness,’ in the equation (2) the regression equation including net capital/financial account equation. In addition, GDP growth rates will be analysed using similar trade and capital inflow items as explanatory variables as follows¹¹:

$$(I/Y)_{it} = \alpha + (\beta_0 + \beta_1 X_{it}) (S/Y)_{it} + W_{it} \quad (3)$$

$$(\Delta Y) = \alpha + (\beta_0 + \beta_1 X_{it}) (S/Y)_{it} + W_{it} \quad (4)$$

$(I/Y)_{it}$: Domestic Investment rate (per GDP)

$(S/Y)_{it}$: Domestic saving rate as percentage of GDP

S^*X_{it} : $(S/Y)_{it} \times$ (total trade amount of country i [% of GDP])

X_{it} is replaced by the following capital inflow indicators:

$S^*[CapFin]_{it}$: $(S/Y)_{it} \times$ (total capital inflows of country i [% of GDP])

$S^*[FDI]_{it}$: $(S/Y)_{it} \times$ (total FDI inflows of country i [% of GDP])

$S^*[Portfolio]_{it}$: $(S/Y)_{it} \times$ (total Portfolio inflows of country i [% of GDP])

$S^*[Other]_{it}$: $(S/Y)_{it} \times$ (total Other Investment inflows of country i [% of GDP])

$S^*[CapFin]_{it}$: $(S/Y)_{it} \times$ (total capital inflows of country i [% of GDP])

W_{it} : control variables that may affect domestic investment and GDP growth, including FDI, KAOPEN index

¹¹ Variables used for calculation of investment/saving regression for emerging countries are mainly based on the World Bank/ IMF database. Capital and financial account balance (% of GDP) data are based on the IMF Database. GDP Growth rate (real GDP growth rate, Trade figures [exports and imports], Gross Savings (% of GDP): gross national income less total consumption, plus net transfers, Gross Capital Formation (gross domestic investment) (% of GDP) are based the World Bank database.

AS shown in Table 2-1 and 2-2, domestic savings (S) are relatively highly correlated with domestic investment and GDP growth, and more so than capital flow variables (Camp, FDI, portfolio, other investment) as a whole.

Table2-1 : Correlation between Domestic Investment and other variables

	80-84	85-89	90-94	95-99	00-04	05-09	10-14	15-19	20-22
I	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
S	0.668	0.692	0.832	0.760	0.648	0.237	0.632	0.809	0.774
TRADE	1.000	0.442	0.473	0.430	0.328	0.245	0.305	0.077	0.038
CAPFIN	0.697	0.236	0.272	0.233	-0.130	0.042	0.192	-0.169	0.003
FDI	0.579	0.384	0.405	0.262	-0.035	0.086	0.201	-0.045	-0.106
PORTFOLIO	0.645	0.190	-0.169	-0.249	0.261	-0.031	-0.199	-0.078	0.141
OTHER	0.199	0.038	0.277	0.148	-0.218	0.049	-0.076	-0.048	0.029
DERIVATIVE	—	—	—	—	0.328	-0.095	0.081	-0.042	-0.217
KAOPEN	0.490	0.307	0.377	0.087	0.422	0.149	0.229	-0.084	0.017
GDPGROWTH	0.411	0.423	0.626	0.427	0.389	0.055	0.270	0.556	0.208

Table2-2 : Correlation (GDP Growth / Savings and Other Variables)

	80-84	85-89	90-94	95-99	00-04	05-09	10-14	15-19	20-22
GDP Growth	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
S	0.420	0.340	0.529	0.244	0.459	0.245	0.458	0.245	0.070
I	0.411	0.423	0.626	0.427	0.389	0.055	0.270	0.055	0.208
TRADE	0.244	0.157	0.346	0.036	0.369	0.154	0.261	0.154	0.032
CAPFIN	0.331	0.256	0.263	0.098	-0.032	-0.144	0.375	-0.144	0.136
FDI	0.214	0.183	0.451	0.060	0.163	0.330	0.297	0.330	0.139
PORTFOLIO	0.055	0.107	-0.099	-0.072	0.203	-0.155	-0.105	-0.155	-0.016
OTHER	0.172	0.157	0.170	0.448	-0.193	-0.072	-0.134	-0.072	-0.022
DERIVATIVE	—	—	—	—	0.292	-0.006	0.013	-0.006	-0.175
KAOPEN	0.217	0.144	0.313	-0.010	-0.043	0.031	0.138	0.031	0.035

Notes: 1 All the variables are % of GDP, except GDP growth rate. CAP: Net financial Inflows.

2 Countries include Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, China, India, Indonesia, Korea, Malaysia, Philippines, Pakistan, Thailand, Singapore, Turkey, Egypt, Israel, Morocco, South Africa, Tunisia. China's savings rate is from 1982; Indonesia from 1981. EM7: Argentina, Brazil, China, India, Indonesia, Mexico, Turkey.

3 Domestic Savings= Gross Savings; gross national income less total consumption, plus net transfers (% of GDP). Domestic Investment= Gross capital formation (% of GDP)

Sources: World Bank database, WEO database (IMF)

3.2 Analysis of Savings and Investment and Capital Financial Openness in Emerging Countries

In general, smaller emerging countries have been more affected by international capital flows due to the relatively open financial/ capital account than relatively large economies¹².

The regression exercises are undertaken to show the relationship between the domestic savings and investment as well as GDP growth, together with trade and net capital flows (total, FDI, portfolio, other investment, financial derivatives) in Table 3 and Table 4.

The results of the analysis should be treated with caution because of the possibility of multicollinearity in the correlations among the explanatory variables due to the inclusion of domestic savings and cross terms between the domestic savings rate and each of the capital inflows (FDI, portfolio, and other investment) in each regression equation. However, this is the same method adopted in the original F-H model of analysis which includes the variable

12 This paper has also discussed the major emerging countries to study whether the correlation between domestic savings and investment is different in the sense that weaker association between domestic savings and investment in smaller emerging economies.

of domestic savings and cross term of trade and savings (Trade*Savings) in the same equation.

3.2.1 General Results

As indicated above, most of the emerging economies had kept close association between domestic investment and savings during the 1980s. The coefficients of determination (R^2) of the regression equations between domestic savings and investment are high, which shows high correlation between them during 1980-1999.

Almost all the variables of savings with trade, net capital inflows have significantly correlated with domestic investment. In Asian countries, almost all the equations show positive and significant correlation between domestic savings and investment, while that in Latin American countries were negative and insignificant.

The capital controls had worked for effective investment activities as the dummy of KAOPEN was significantly positive in domestic investment during 1980-84, 1990-94, while it has become negative since 1995, possibly due to capital account crises (equations 2,3,4 **Table 3-1, 2, 3, 4, 5 (2)**). In particular, KAOPEN has been negatively correlated with domestic investment rates since the 2000s until recently. This relationship indicates that capital controls are effective and that the higher the level of financial and capital openness, the lower the domestic investment rate, and conversely, tighter controls increase the domestic investment rate.

3.2.2 The Effects of Trade and Capital / Financial Openness on Domestic Savings and Investment

[Domestic Savings and Investment]

The correlation between domestic savings and investment in the emerging countries has become slightly weaker during 2000s, when the coefficient was 0.4809 with R^2 of 0.499 during 2000-04 and 0.4234 with 0.3914, respectively (Table 3-3 4 equation 1), as compared with that during 1990s (e.g. coefficient 0.712 with R^2 0.693 during 1980-84) (Fig.3-1, Table 3-1, 2, 3, 4,5 (1)).

[Trade and Domestic Investment]

The cross term of trade (sum of export and import as percentage of GDP) and domestic savings (Trades) has significantly negative correlation with domestic investment since 1990-94 (Table3-2 (5)), Fig.4-1), while the correlation was positive during 1980s (Table 3-1 (5)). This trend is also shared by the correlation between the cross term of trade and savings [Trade*Savings] and domestic investment. These results may explain why trade itself has not become an important factor for domestic investment and why the explanatory variable of domestic savings has played an important role in domestic investment in emerging economies.

[Capital Inflows and Domestic Investment]

It is to be noted that the fact that capital and financial liberalization has facilitated dependence of many emerging countries on the external financial resources for domestic

investment rather than domestic savings (Table 3-1, 2, 3, 4, 5 Fig.4-2). The coefficient of determination (R^2) in regression equations cross term of capital flows and domestic savings ($Capfin*S$) indicates positive correlation between savings and investment during the 1980-1994, when several emerging countries had not yet liberalized capital account (Table 3-2 (6)). However, in the late 1990s, the correlation between capital inflows ($CapFlow*S$) and domestic investment (but not with domestic investment) was not positive and the regression variables were negatively correlated (Table 3-2(6)). This might reflect the fact that several capital account crises emerged during the period (e.g. Asian Crisis). However, the positive correlation has subsequently recovered since 2000s.

The results of each regression equation suggest the fact that in many emerging economies, domestic investment is not necessarily driven by capital inflows.

[FDI and Domestic Investment]

FDI is positively and significantly correlated with the domestic investment rate only for the period 1980-84. From the late 1990s (1995 to 2022) to more recent periods, the cross term of FDI and domestic savings ($FDI*S$) and domestic investment have shown a significant negative correlation (Tables 3-2 (7), Table 3-3, 3-4, 3-5 (6) Figure 4-3). This may suggest that foreign investment does not promote domestic investment in emerging economies in general. This result may differ from the general understanding of the contribution of FDI in the economic development of developing countries. This may be due to the fact that in recent years, investment in emerging economies has become more oriented towards unproductive financial investment and has not contributed to domestic investment in general.

[Portfolio Investment and Domestic Investment]

The variable including portfolio investment in emerging economies ($S*Portfolio$) has long been significantly positively correlated to the domestic investment rate except the period 1985-89. Since the beginning of the 2010s, the domestic investment rate has shown a stronger positive correlation with portfolio investment. (Tables 3-1, 2(8), Tables 3, 4, 5 (7) and Figure 4-4). This is mainly due to the introduction of foreign exchange and capital controls after the Global Financial Crisis (and in Asian countries since the late 2000s, when the early repayment of the IMF programme ended), and the generalisation of a crisis avoidance regimes in emerging economies.

[Other Investment and Domestic Investment]

In the emerging economies, the domestic investment rate and other investment inflows (cross term $Other*S$) showed a negative relationship in the 1980s (Table 3-1 (9), Fig.3-6). However, since the 1990s, they have shown a positive and significant correlation (Table 3-2 (9) Table 3, 4, 5 (8), This means that the contribution of foreign borrowing to domestic investment has gradually increased. In other words, emerging economies as a whole can be considered to have become more dependent on domestic financing, including borrowing from domestic financial institutions.

[Financial Derivatives and Domestic Investment]

The analysis of financial derivatives is limited to the period from 2000 onwards, as many emerging economies have not fully developed the market for financial derivatives. There is no significant correlation between the cross term of financial derivatives and the domestic savings rate (Deriv*S) and domestic investment in almost all periods (Fig. 3-7, Table 3-3, 4, 5(9)).

3.2.3 Overall Summary on Domestic Savings and Investment

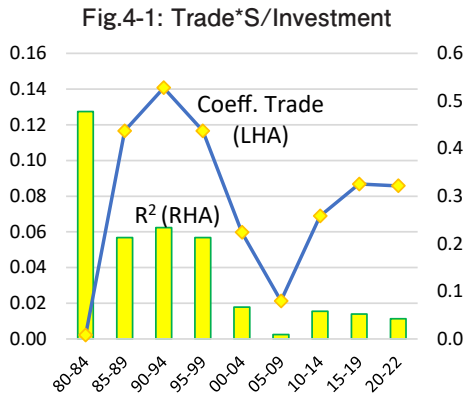
The above results largely confirm the fact that many emerging economies have increased their capital flows and accelerated their dependence on foreign resources for domestic investment until the 2000s. This is precisely the situation envisaged in the discussion of the F-H hypothesis. However, the nexus between domestic savings and investment has changed since the 2010s, especially in the period 2015-19, when the correlation between domestic savings and investment was significantly positive with an R^2 variable of 0.6517 and a coefficient of 0.5502 (Table 3-4 (1)). It is also noteworthy that there is a positive and significant correlation between capital inflows (including coefficient Capflow*S) (Table 3-4 (7), (8)).

This may be partly due to the recent recovery of the positive correlation between domestic savings and investment, as several types of capital and financial regulations, as well as prudential regulations, have become common in emerging economies since the 2000s. This could be due to several capital and financial account regulations introduced in emerging economies, particularly in Asia.

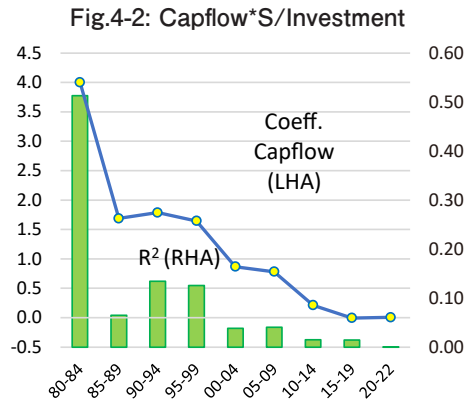
The recent 'recovery' trend in the correlation between domestic savings and investment is more pronounced than before the Global Financial Crisis (2008/9) up to 2007. After the Global Financial Crisis, the link between domestic savings and investment has shown a positive and significant correlation with the correlation between domestic savings and investment over the period 2010-19. It is also noteworthy that there is a positive and significant correlation between capital inflows (including coefficient Capflow* S) and domestic investment (Table 3-2 (6) Table 3,4,5 (5)).

The nexus between domestic savings and investment may be different from the whole emerging economies (EM22) in the case of major / larger emerging countries. It is therefore necessary to examine the cases of larger emerging economies, namely Argentina, Brazil, Mexico, China, India, Indonesia, Turkey (hereafter, EM7), whether any substantial change has been taken place in those countries. The dummy variable for EM7 has become positive and significant since the 2000s. This indicates that domestic savings have had a significant impact on domestic investment in the major emerging economies in the past 2 decades (Table 3-1, 2, 3, 4, 5 (3)).

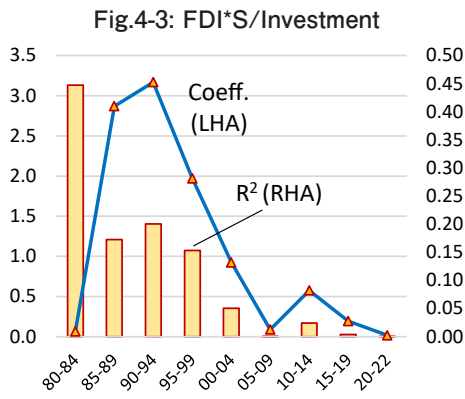
As shown in the above, the original FH puzzle seems to have been realised during the period of active capital flows, especially in the 2000s. However the correlation between domestic savings and investment has become significantly positive in recent periods (with an R^2 variable of 0.6694 and a coefficient of 0.6155 during the period 2020-22).



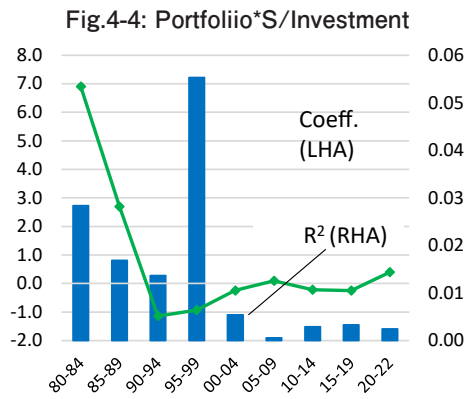
Sources: World Bank / IMF database



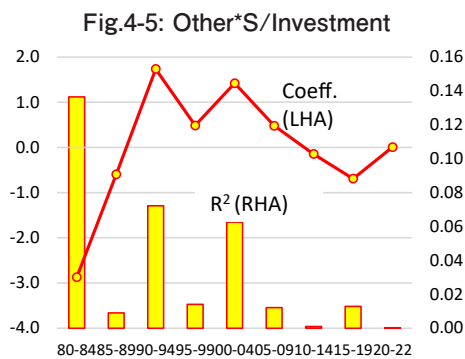
Sources: World Bank / IMF Database



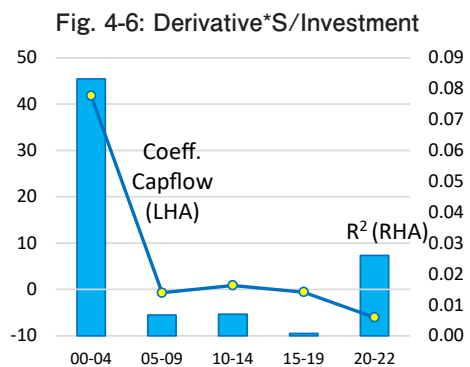
Sources: World Bank / IMF Database



Source: World Bank / IMF Database



Sources: World Bank / IMF Database



Source: World Bank Database

Fig.4 Domestic Savings/ Investment/ Trade/ Capital Inflow/ FDI/Portfolio/Other Investment

Tab 3-1: Domestic Savings / Investment [1980-89]

[Dependent Variable: Domestic Investment]										
1980-84	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.67769 *** (0.071) (9.514)	0.59644 *** (0.070) (8.514)	0.72123 *** (0.067) (10.77)	0.62534 *** (0.078) (7.970)	0.38592 *** (0.079) (4.859)	0.42922 *** (0.068) (6.301)	0.41187 *** (0.075) (5.508)	0.64094 *** (0.077) (8.316)	0.51412 *** (0.078) (6.586)	
Trade*S [% , GDP]					0.13452 *** (0.023) (5.908)					
CapFlow*S						2.793 *** (0.364) (7.663)				
FDI*S							4.325 *** (0.677) (6.388)			
Portfolio*S								6.767 ** (2.846) (2.378)		
Other*S									-2.291 *** (0.559) (-4.10)	
KAOPEN		6.274 *** (1.600) (3.920)								
EM7			-5.355 *** (1.033) (-5.19)							
Asia				2.388 * (1.228) (1.945)	1.203 (1.087) (1.107)	0.931 (1.006) (0.926)	1.441 (1.057) (1.363)	2.088 * (1.208) (1.728)	2.103 ** (1.147) (1.833)	
Latin America				-0.005 (1.386) (-0.00)	-0.649 (1.211) (-0.54)	0.93143 (1.006) (0.926)	-0.826 (1.188) (-0.70)	0.184 (1.358) (0.135)	-1.961 (1.378) (-1.42)	
C	11.0798 *** (1.700) (6.517)	11.16 *** (1.597) (6.985)	11.48 *** (1.583) (7.255)	11.30 *** (2.088) (5.411)	15.59 *** (1.957) (7.966)	13.69 *** (1.709) (8.010)	15.35 *** (1.890) (8.122)	10.70 *** (2.059) (5.198)	13.92 *** (2.050) (6.790)	
R ²	0.4560	0.5243	0.5346	0.4800	0.6097	0.6665	0.6255	0.5066	0.5518	
No. of Variables	110	110	110	110	110	110	110	110	110	
[Dependent Variable: Domestic Investment]										
1985-89	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.58146 *** (0.058) (9.972)	0.56922 *** (0.064) (8.916)	0.56157 *** (0.060) (9.313)	0.5081 *** (0.065) (7.805)	0.46808 *** (0.077) (6.093)	0.50601 *** (0.066) (7.686)	0.46868 *** (0.073) (6.396)	0.50788 *** (0.066) (7.737)	0.49607 *** (0.068) (7.346)	
Trade*S [% , GDP]					0.02228 (0.023) (0.982)					
CapFlow*S						0.1379 (0.506) (0.273)				
FDI*S							0.63667 (0.547) (1.164)			
Portfolio*S								0.05796 (1.449) (0.040)		
Other*S									-0.321 (0.462) (-0.69)	
KAOPEN		0.7304 (1.524) (0.479)								
EM7			1.208 (0.968) (1.249)							
Asia				2.168 * (1.081) (2.005)	2.058 * (1.087) (1.893)	2.149 * (1.089) (1.974)	2.054 * (1.084) (1.894)	2.165 * (1.090) (1.986)	2.173 ** (1.084) (2.005)	
Latin America				-0.458 (1.140) (-0.40)	-0.503 (1.141) (-0.44)	-0.364 (1.195) (-0.30)	-0.627 (1.147) (-0.55)	-0.456 (1.146) (-0.40)	-0.724 (1.205) (-0.60)	
C	10.73 *** (1.487) (7.217)	10.85 *** (1.514) (7.168)	10.83 *** (1.485) (7.293)	11.77 *** (1.728) (6.809)	12.48 *** (1.874) (6.659)	11.78 *** (1.736) (6.784)	12.57 *** (1.857) (6.768)	11.77 *** (1.740) (6.765)	12.05 *** (1.778) (6.774)	
R ²	0.47938	0.48049	0.48686	0.5079	0.51237	0.50825	0.51417	0.50791	0.51015	
No. of Variables	110	110	110	110	110	110	110	110	110	

Notes: Statistics available from 1982 for China and 1981 for Indonesia.
Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab3-2: Domestic Savings / Investment [1990-99]

1990-94	Dependent Variable: Domestic Investment								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Savings [% , GDP]	0.712 *** (0.046) (15.62)	0.67606 *** (0.047) (14.50)	0.69905 *** (0.045) (15.46)	0.61326 *** (0.058) (10.65)	0.69818 *** (0.070) (9.961)	0.63222 *** (0.052) (12.21)	0.65326 *** (0.068) (9.63)	0.63705 *** (0.058) (10.91)	0.69528 *** (0.055) (12.71)
Trade*S [% , GDP]					-0.0414 * (0.020) (-2.06)				
CapFlow*S						1.227 *** (0.236) (5.187)			
FDI*S							-0.510 (0.458) (-1.11)		
Portfolio*S								0.94882 * (0.516) (1.839)	
Other*S									1.662 *** (0.337) (4.940)
KAOPEN		3.312 ** (1.294) (2.560)							
EM7			1.859 * (0.856) (2.171)						
Asia				3.240 *** (1.073) (3.018)	3.293 *** (1.058) (3.114)	1.732 * (1.005) (1.723)	3.271 *** (1.073) (3.049)	3.105 *** (1.064) (2.918)	1.284 (1.049) (1.224)
Latin America				0.49602 (1.040) (0.477)	0.6913 (1.029) (0.672)	0.15162 (0.935) (0.162)	0.67143 (1.051) (0.639)	0.39695 (1.030) (0.385)	1.04682 (0.948) (1.104)
C	8.805 *** (1.190) (7.397)	8.539 *** (1.166) (7.326)	8.531 *** (1.177) (7.247)	9.757 *** (1.468) (6.648)	8.240 *** (1.622) (5.081)	9.081 *** (1.322) (6.869)	9.010 *** (1.612) (5.589)	9.203 *** (1.482) (6.209)	8.235 *** (1.364) (6.040)
R ²	0.6930	0.71075	0.70599	0.7183	0.72927	0.77572	0.72159	0.72709	0.77143
No. of Variables	110	110	110	110	110	110	110	110	110
1995-99	Dependent Variable: Domestic Investment								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Savings [% , GDP]	0.5640 *** (0.046) (12.17)	0.56534 *** (0.047) (12.04)	0.5565 *** (0.046) (12.02)	0.54389 *** (0.063) (8.666)	0.73103 *** (0.085) (8.570)	0.67197 *** (0.079) (8.509)	0.68564 *** (0.082) (8.331)	0.6187 *** (0.070) (8.876)	0.57628 *** (0.058) (9.933)
Trade*S [% , GDP]					-0.075 *** (0.024) (-3.10)				
CapFlow*S						-0.986 ** (0.384) (-2.56)			
FDI*S							-1.138 ** (0.442) (-2.57)		
Portfolio*S								0.64299 ** (0.281) (2.286)	
Other*S									1.103 *** (0.241) (4.574)
KAOPEN		-0.320 (1.476) (-0.22)							
EM7			1.489 (0.946) (1.574)						
Asia				0.96607 (1.268) (0.762)	0.67642 (1.223) (0.553)	0.63076 (1.243) (0.507)	0.74158 (1.239) (0.599)	0.66157 (1.251) (0.529)	1.21343 (1.165) (1.042)
Latin America					0.94573 (1.180) (0.451)	1.35095 (1.143) (0.828)	1.55932 (1.194) (1.132)	0.8462 (1.165) (0.726)	0.72256 (1.083) (0.667)
C	11.20 *** (1.229) (9.113)	11.30 *** (1.316) (8.588)	10.91 *** (1.234) (8.840)	11.14 *** (1.582) (7.042)	7.860 *** (1.853) (4.242)	8.748 (1.803) (4.851)	8.379 *** (1.879) (4.459)	9.420 *** (1.725) (5.459)	10.36 *** (1.462) (7.084)
R ²	0.57822	0.57841	0.58777	0.58068	0.61592	0.60539	0.60557	0.60056	0.65034
No. of Variables	110	110	110	110	110	110	110	110	110

Notes: 1. Upper parenthesis shows standard error and t-value in lower one. *** shows significant at the 1%, ** at the 5%, * at the 10% levels.

2. Financial Derivative is included in the regression since 2000 (Tables 3, 4, 5 (9)).

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab3-3: Domestic Savings / Investment [2000-09]

[Dependent Variable: Domestic Investment]										
2000-04	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.4809 *** (0.046) (10.37)	0.4793 *** (0.046) (10.38)	0.4512 *** (0.040) (11.34)	0.6197 *** (0.069) (9.042)	0.5479 *** (0.054) (10.20)	0.5404 *** (0.072) (7.494)	0.5223 *** (0.064) (8.144)	0.4671 *** (0.059) (7.882)	0.4794 *** (0.197) (2.429)	
Trade*S				-0.085 *** (0.020) (-4.30)						
CapFlow*S					1.831 *** (0.262) (6.984)					
FDI*S						-0.674 * (0.331) (-2.04)				
Portfolio*S							0.6728 * (0.234) (2.870)			
Other*S								1.433 *** (0.366) (3.909)		
Derivativ*S									15.44 (19.54) (0.790)	
KAOPEN		-1.857 (1.312) (-1.41)								
EM7			4.738 *** (0.734) (6.457)							
Asia				0.8774 (1.045) (0.840)	0.3094 (0.927) (0.334)	0.1107 (1.103) (0.100)	0.3123 (1.080) (0.289)	0.2099 (1.048) (0.200)	-0.2434 (2.988) (-0.08)	
Latin America				0.2704 (1.016) (0.266)	0.1169 (0.906) (0.129)	0.2473 (1.095) (0.226)	0.1020 (1.060) (0.096)	-0.3459 (1.024) (-0.34)	1.2210 (1.742) (0.701)	
C	10.50 *** (1.216) (8.638)	11.40 *** (1.368) (8.338)	9.731 *** (1.043) (9.329)	8.206 *** (1.616) (5.079)	9.080 *** (1.364) (6.656)	9.460 *** (1.727) (5.479)	9.544 *** (1.625) (5.873)	11.30 *** (1.522) (7.423)	9.652 *** (4.117) (2.345)	
R ²	0.4990	0.5082	0.6395	0.5745	0.6583	0.5186	0.5360	0.5632	0.4734	
No. of Variables	110	110	110	110	110	110	110	110	42	
[Dependent Variable: Domestic Investment]										
2005-09	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.4234 *** (0.051) (8.334)	0.4170 *** (0.048) (8.633)	0.3711 *** (0.043) (8.715)	0.4227 *** (0.065) (6.457)	0.5814 *** (0.052) (11.12)	0.5393 *** (0.070) (7.715)	0.4655 *** (0.065) (7.161)	0.4502 *** (0.063) (7.159)	0.2588 ** (0.097) (2.668)	
Trade*S				-0.062 *** (0.018) (-3.38)						
CapFlow*S					2.235 *** (0.246) (9.068)					
FDI*S						-1.111 *** (0.307) (-3.62)				
Portfolio*S							0.8911 *** (0.308) (2.895)			
Other*S								1.095 *** (0.319) (3.433)		
Derivativ*S									0.528 (1.245) (0.424)	
KAOPEN		-5.333 *** (1.499) (-3.56)								
EM7			6.443 *** (0.899) (7.169)							
Asia				-0.549 (1.391) (-0.39)	0.3534 (1.052) (0.336)	-1.043 (1.325) (-0.79)	-0.640 (1.346) (-0.48)	-0.362 (1.327) (-0.27)	-2.132 (1.702) (-1.25)	
Latin America				-0.820 (1.332) (-0.62)	0.1190 (1.008) (0.118)	-0.476 (1.266) (-0.38)	-0.931 (1.289) (-0.72)	-0.650 (1.270) (-0.51)	-1.514 (1.504) (-1.01)	
C	13.06 *** (1.471) (8.873)	16.00 *** (1.625) (9.848)	12.43 *** (1.218) (10.21)	13.54 *** (1.838) (7.368)	8.360 *** (1.497) (5.586)	11.83 *** (1.805) (6.555)	12.52 *** (1.812) (6.909)	12.91 *** (1.761) (7.332)	17.44 *** (2.697) (6.466)	
R ²	0.3914	0.4557	0.5889	0.3937	0.6600	0.4609	0.4385	0.4549	0.1870	

Notes: 1. Upper parenthesis shows standard error and t-value in lower one. *** shows significant at the 1%, ** at the 5%, * at the 10% levels.

2. Financial Derivative is included in the regression since 2000 (Tables 3, 4, 5 (9)).

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab3-4: Domestic Savings / Investment (OLS) [2010-19]

Dependent Variable: Domestic Investment										
2010-14	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.5340 *** (0.045) (11.99)	0.5352 *** (0.044) (12.05)	0.4557 *** (0.037) (12.16)	0.8231 *** (0.062) (13.27)	0.7695 *** (0.061) (12.61)	0.7965 *** (0.063) (12.58)	0.7243 *** (0.060) (12.12)	0.6474 *** (0.060) (10.76)	0.3233 *** (0.086) (3.756)	
Trade*S				-0.122 *** (0.020) (-6.06)						
CapFlow*S					-0.580 *** (0.110) (-5.27)					*
FDI*S						-1.290 *** (0.244) (-5.29)				
Portfolio*S							1.151 *** (0.246) (4.671)			
Other*S								0.8226 *** (0.307) (2.682)		
Derivater*S									-0.0138 (0.970) (-0.01)	
KAOPEN		-1.872 (1.426) (-1.31)								
EM7			6.332 *** (0.832) (7.608)							
Asia				-2.864 ** (1.204) (-2.38)	-3.591 *** (1.250) (-2.87)	-3.725 *** (1.251) (-2.98)	-3.414 ** (1.276) (-2.67)	-2.391 ** (1.368) (-1.75)	1.348 (1.881) (0.717)	
Latin America				-0.116 (1.026) (-0.11)	0.1381 (1.061) (0.130)	0.7586 (1.070) (0.709)	-0.0080 (1.084) (-0.01)	0.08857 (1.154) (0.077)	0.8694 (1.478) (0.588)	
C	11.80 *** (1.238) (9.533)	12.62 *** (1.381) (9.133)	11.81 *** (1.00181) (11.7846)	7.918 *** (1.388) (5.71)	8.191 *** (1.433) (5.71)	7.712 *** (1.462) (5.27)	8.439 *** (1.464) (5.76)	10.024 *** (1.494) (6.71)	15.49 *** (2.098) (7.38)	
R ²	0.5710	0.5778	0.7216	0.6967	0.6763	0.6769	0.6611	0.6170	0.3814	
No. of Variables	110	110	110	110	110	110	110	110	78	
Dependent Variable: Domestic Investment										
2015-19	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.5502 *** (0.039) (14.22)	0.5727 *** (0.038) (15.23)	0.4836 *** (0.036) (13.33)	0.8101 *** (0.048) (16.93)	0.7889 *** (0.043) (18.16)	0.7604 *** (0.047) (16.06)	0.7139 *** (0.048) (14.98)	0.7335 *** (0.052) (14.16)	0.6940 *** (0.068) (10.19)	
Trade*S				-0.1795 *** (0.022) (-8.32)						
CapFlow*S					0.0195 *** (0.002) (9.504)					
FDI*S						-1.211 *** (0.160) (-7.56)				
Portfolio*S							1.478 *** (0.225) (6.579)			
Other*S								1.918 *** (0.345) (5.557)		
Derivater*S									4.695 *** (1.272) (3.691)	
KAOPEN		-3.790 *** (1.134) (-3.34)								
EM7			4.315 *** (0.776) (5.559)							
Asia				-2.046 ** (0.90) (-2.27)	-1.696 * (0.85) (-1.98)	-2.866 *** (0.94) (-3.06)	-2.162 ** (0.98) (-2.21)	-2.488 ** (1.02) (-2.44)	-1.486 (1.37) (-1.08)	
Latin America				-0.757 (0.781) (-0.97)	-0.081 (0.740) (-0.12)	-0.261 (0.811) (-0.32)	-0.512 (0.847) (-0.60)	0.2183 *** (0.899) (0.243)	0.884 (1.219) (0.726)	
C	10.98 *** (1.010) (10.87)	12.24 *** (1.036) (11.81)	11.21 *** (0.895) (12.53)	8.538 *** (1.014) (8.42)	6.011 *** (1.046) (5.748)	8.358 *** (1.061) (7.88)	8.514 *** (1.111) (7.66)	7.878 *** (1.215) (6.49)	7.658 *** (1.775) (4.31)	
R ²	0.6517	0.6846	0.7298	0.7980	0.8198	0.7829	0.7627	0.7410	0.6940	
No. of Variables	110	110	110	110	110	110	110	110	92	

Notes: 1. Upper parenthesis shows standard error and t-value in lower one. *** shows significant at the 1%, ** at the 5%, * at the 10% levels.

2. Financial Derivative is included in the regression since 2000 (Tables 3, 4, 5 (9)).

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab3-5: Domestic Savings / Investment [2020-22]

2020-22	[Dependent Variable: Domestic Investment]									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% GDP]	0.6155 *** (0.054) (11.38)	0.6249 *** (0.055) (11.27)	0.5511 *** (0.053) (10.37)	0.8426 *** (0.061) (13.87)	0.7101 *** (0.063) (11.25)	0.8147 *** (0.052) (15.59)	0.7065 *** (0.062) (11.37)	0.7116 *** (0.064) (11.07)	0.6319 *** (0.083) (7.594)	
Trade*S				-0.191 *** (0.030) (-6.39)						
CapFlow*S					0.8187 *** (0.209) (3.921)					
FDI*S						-1.351 *** (0.170) (-7.94)				
Portfolio*S							2.220 *** (0.537) (4.133)			
Other*S								0.1435 *** (0.039) (3.643)		
Derivative*S									-2.677 (3.15) (-0.85)	
KAOPEN		-3.983 ** (1.623) (-2.45)								
EM7			4.104 *** (1.174) (3.497)							
Asia				-0.693 (1.172) (-0.59)	-1.197 (1.347) (-0.89)	-1.577 (1.054) (-1.50)	-1.198 (1.332) (-0.90)	-1.452 (1.363) (-1.07)	0.3939 (1.819) (0.217)	
Latin America				-0.139 (1.103) (-0.126)	-0.082 (1.274) (-0.06)	0.3127 (1.001) (0.312)	0.0832 (1.262) (0.066)	0.1419 (1.296) (0.110)	1.3961 (1.882) (0.742)	
C	9.019 *** (1.371) (6.577)	10.635 *** (1.423) (7.474)	9.406 *** (1.270) (7.408)	7.072 *** (1.372) (5.156)	7.360 *** (1.595) (4.615)	6.316 *** (1.257) (5.022)	8.103 *** (1.545) (5.243)	7.466 *** (1.615) (4.622)	7.539 *** (2.487) (3.031)	
R ²	0.6694	0.6720	0.7231	0.8058	0.7410	0.8406	0.7467	0.7337	0.6455	
No. of Variables	66	66	66	66	66	66	66	66	57	

Notes: 1. Upper parenthesis shows standard error and t-value in lower one. *** shows significant at the 1%, ** at the 5%, * at the 10% levels.

2. Financial Derivative is included in the regression since 2000 (Tables 3, 4, 5 (9)).

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

3.3 Analysis of Domestic Savings and GDP Growth in Emerging Economies

This section examines how the domestic savings rate affects the GDP growth rate of each country. Since the majority of the selected emerging economies are small countries, the share of external trade and capital inflows are larger than that of large countries.

As mentioned above, the results of nexus domestic savings and GDP Growth show that the correlation between the domestic savings rate and the growth rate is not simply positive and significant depending on a number of factors in emerging economies. As can be seen from the national income inequality compared to the correlation between the domestic savings rate and the domestic investment rate, a positive and significant relationship between the domestic savings rate and the GDP growth rate does not simply arise due to various factors. This section examines whether the expansion of international capital flows from the 1980s to more recent times has affected GDP growth rates in emerging market countries. The model in the analysis uses fixed-effect panel data which include the covered period (e.g. each country's data on domestic savings [per GDP] for the covered period is used for the panel data).

3.3.1 Emerging Economies (22)

[Domestic Savings and GDP growth]

Single regression between domestic savings and GDP growth shows there is significant correlation between the variables since 1980s to the latest period (Table 4-1, 2, 3, 4, 5 (1)). However, in the period from the 1980s to the early 1990s, not only the correlation between the domestic savings rate and GDP growth rate was high, but the coefficient itself was high, and after 1995 the coefficient declined (Fig.3-2, Table 4-1, 2, 3 (1)). However, in the 2010s, an increasing number of emerging economies reflected their experience of capital account crises and introduced foreign currency trading and capital controls, which in turn reduced the risk of crises in emerging economies. As a result, the correlation coefficient between the domestic savings rate and GDP growth has increased. However, in the period including the Covid-19 (2020-22), the correlation between domestic savings and investment rates lost its significance (Table 4-4, 5 (1)). The above trend is also confirmed in Fig.5 (the following descriptions are to be also referred to the same figure).

[Trade and GDP growth]

Regression equations involving variable of cross term of trade and domestic savings (Trade*Savings) show negative correlation with GDP growth in most periods (Table 4-1, 2, 3, 4, 5 (5) and (6)). This clearly shows that trade alone cannot contribute to the expansion of domestic investment rates and growth rates in emerging economies.

[Capital Inflow and GDP Growth]

There was a positive and significant correlation between capital inflows to EMs and GDP growth in the 1990-94, 2000-2009 and 2015-19 periods (Fig.5-2, Table 4-1, 2 (6), Table4-3, 4 (5)). In other words, these periods were periods of the so-called investment boom in the emerging economies. However, correlation was negative and not significant in any of the

periods when the crises occurred during the period of full-blown capital account crises, including the Asian crisis (1995-99, Table 4-2 (6)). The fact that the correlation between the two again became positive and significant in 2015-19 may be related to the generalisation of capital transactions and foreign currency restrictions in emerging economies and prudential regulations in advanced economies following the Global Financial Crisis (Table 4-4(5)).

[FDI and GDP Growth]

The equations involving cross term of FDI and domestic savings do not have significant and positive correlation with GDP Growth during the whole period (Table 4-1, 2 (7), 3, 4, 5(6)). This suggests that FDI does not necessarily contribute to GDP growth, including in the major emerging economies (EM7). This fact indicates that recent capital inflows may have been invested in unproductive financial and other investments in the major emerging economies and not in the real economy. Furthermore, in Latin America, trade, capital inflows and FDI have shown little significant correlation with GDP growth in almost all periods. This is in contrast to Asian countries.

[Portfolio Investment and GDP Growth]

In emerging economies, portfolio investment did not show a significant relationship with GDP growth until 2000-04 (Tables 4-1, 4-2 (6), 4-3 (5)). However, after the Global Financial Crisis, a positive and significant correlation between the cross term a portfolio investment and domestic savings and GDP growth was observed in the 2010s (2010-14 and 2015-19) (Table 4-3 (5)), lost.

[Other Investment and GDP Growth]

Other investment, which is mainly bank loans, did not show a significant correlation with GDP growth in the 1980s in the emerging economies as a whole, but became positively and significantly correlated in the 1990s (1990-94, 95-99) (Table 4-1, 4-2 (9)). However, since the 2000s, when financial investment expanded rapidly, other investments have lost their significant correlation with GDP growth (Tables 4-3, 4 and 5(8)). This appears to be due to the rapid expansion of financial investment unrelated to the real economy.

[Financial Derivatives and GDP Growth]

In the 2000s, the inflow of financial derivatives into emerging economies was still small and the cross term between financial derivatives and domestic savings rate was not significantly correlated with GDP growth. However, in the 2010s, they began to show a negative and significant relationship with GDP growth during 2015-19 (Tables 4-3, 4 (9)). This clearly shows that financial derivative inflows clearly do not contribute to the real economy for emerging economies.

3.3.2 Major Emerging Economies

In seven major countries (EM7: Brazil, Mexico, China, India, Indonesia, Korea and Turkey) the correlation between the domestic savings rate and GDP growth rate is consistently non-significant over the whole period (Table 4-1, 2, 3, 4, 5 (3)). This fact indicates a

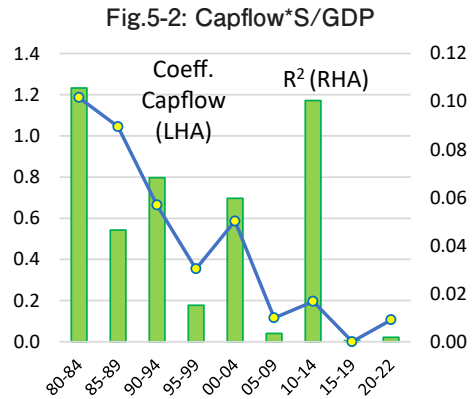
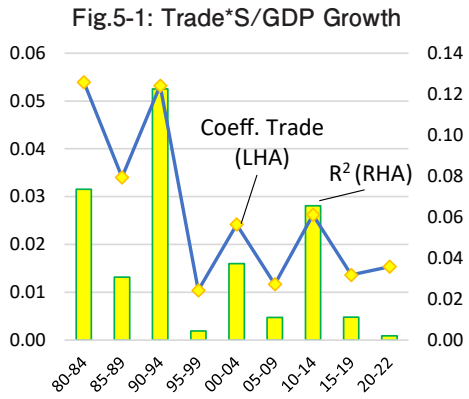
tendency for growth rates to be determined by other domestic and external factors in emerging economies above a certain size of the national economy. This may also mean that in emerging economies where the domestic savings rate is insufficient, growth may be financed by capital inflows. Moreover, it should be noted that the size of individual countries' economies varies widely.

3.3 Summary: Domestic Savings and GDP growth

Overall capital inflows had significantly positive correlation with domestic investment and GDP Growth during the 'boom' periods since 1980s until recently, while during the periods of crises (e.g. 1995-99, 2005-09) it has shown insignificant or negative correlation.

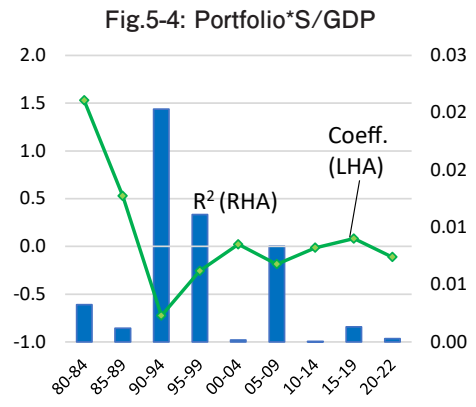
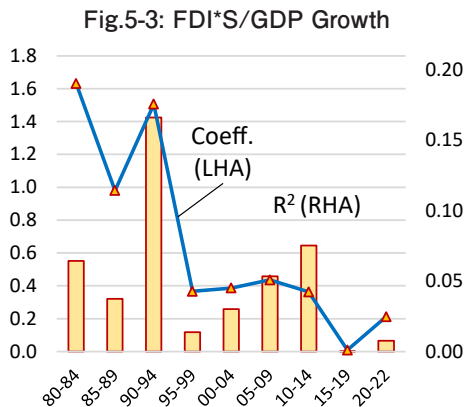
FDI (net inflows) has been non-significantly correlated with GDP growth over most of the period, making it difficult to say that overall it is a long-term contributor to growth in emerging economies. Of course, gross FDI inflows may show a different result. While it is true that FDI has contributed to the establishment and development of industrial infrastructure in large emerging economies such as China and India, they have not necessarily relied on FDI inflows for their economic growth. Short-term investment inflows, such as Portfolio and Other investments, are not positively and significantly correlated with GDP growth in most periods. This indicates that short-term capital inflows do not promote sustainable growth in emerging economies.

The above results show that domestic savings would be still important factor for sustainable economic growth in emerging economies.



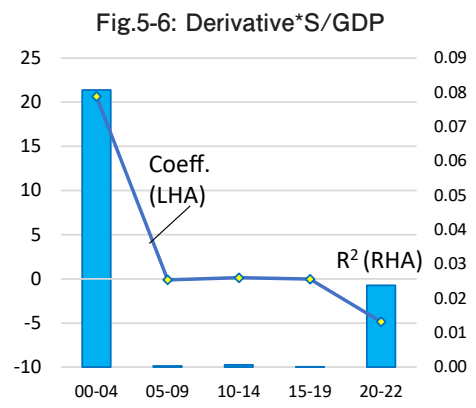
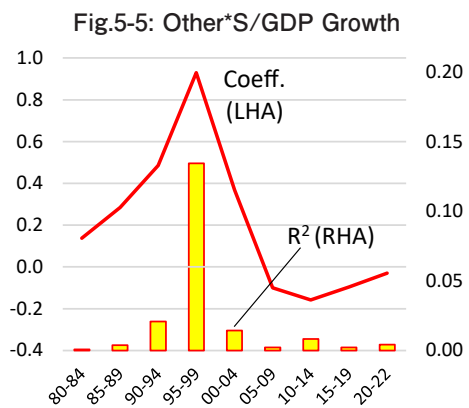
Sources: World Bank / IMF Database

Sources: World Bank / IMF Database



Sources: World Bank / IMF Database

Source: World Bank / IMF Database



Sources: World Bank / IMF Database

Sources: WB IMF

Fig.5: GDP Growth/Savings/ Trade/ Capital Inflow/FDI/Portfolio/Other Investment

Tab4-1: Domestic Savings / GDP Growth [1980-89]

		[Dependent Variable: GDP Growth]								
1980-84	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% GDP]	0.2734 *** (0.057) (4.768)	0.2530 *** (0.060) (4.221)	0.2641 *** (0.058) (4.555)	0.1687 *** (0.060) (2.808)	0.1615 *** (0.070) (2.302)	0.1435 *** (0.065) (2.214)	0.1496 *** (0.067) (2.222)	0.1696 *** (0.061) (2.800)	0.1756 *** (0.064) (2.729)	
Trade*S [% GDP]					0.0040 (0.020) (0.200)					
CapFlow*S						0.3588 (0.347) (1.035)				
FDI*S							0.3867 (0.610) (0.634)			
Portfolio*S								0.3889 2.2362 (0.174)		
Other*S									0.1765 (0.457) (0.386)	
KAOPEN		1.5753 (1.369) (1.151)								
EM7			0.9257 (0.891) (1.039)							
Asia				1.8948 ** (0.940) (2.016)	1.8594 * (0.961) (1.936)	1.7078 * (0.957) (1.785)	1.8102 * (0.952) (1.902)	1.8776 * (0.949) (1.978)	1.9093 ** (0.944) (2.022)	
Latin America				-2.2795 ** (1.061) (-2.15)	-2.2987 ** (1.070) (-2.15)	-2.2601 ** (1.061) (-2.13)	-2.3529 ** (1.070) (-2.20)	-2.2686 ** (1.067) (-2.13)	-2.1280 * (1.135) (-1.87)	
C	-1.919 (1.368) (-1.40)	-1.900 (1.366) (-1.39)	-2.004 (1.370) (-1.46)	0.373 (1.598) (0.233)	0.501 (1.729) (0.290)	0.680 (1.625) (0.418)	0.735 (1.702) (0.432)	0.339 * (1.618) (0.209)	0.211 (1.689) (0.125)	
R ²	0.1739	0.1840	0.1822	0.2855	0.2858	0.2928	0.2883	0.2858	0.2862	
No. of Variables	110	110	110	110	110	110	110	110	110	
		[Dependent Variable: GDP Growth]								
1985-89	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% GDP]	0.2089 *** (0.056) (3.755)	0.2065 *** (0.061) (3.387)	0.1936 *** (0.058) (3.356)	0.1242 ** (0.061) (2.023)	0.1490 ** (0.073) (2.050)	0.1200 * (0.062) (1.934)	0.1160 (0.070) (1.668)	0.1271 ** (0.062) (2.056)	0.1328 * (0.064) (2.083)	
Trade*S [% GDP]					-0.0138 (0.021) (-0.64)					
CapFlow*S						0.2806 (0.476) (0.589)				
FDI*S							0.1324 (0.519) (0.255)			
Portfolio*S								-0.7560 (1.365) (-0.55)		
Other*S									0.2291 (0.436) (0.525)	
KAOPEN		0.1423 (1.455) (0.098)								
EM7			0.9301 (0.926) (1.005)							
Asia				2.262 ** (1.020) (2.217)	2.330 ** (1.029) (2.265)	2.222 ** (1.026) (2.167)	2.238 ** (1.029) (2.175)	2.306 ** (1.027) (2.246)	2.258 ** (1.024) (2.206)	
Latin America				-0.810 (1.075) (-0.75)	-0.782 (1.079) (-0.72)	-0.619 (1.126) (-0.55)	2.238 (1.029) (2.17)	-0.835 (1.080) (-0.77)	-0.620 (1.138) (-0.54)	
C	-0.376 (1.419) (-0.27)	-0.352 (1.446) (-0.24)	-0.299 (1.421) (-0.21)	1.006 (1.630) (0.617)	0.567 (1.772) (0.320)	1.032 (1.636) (0.631)	1.172 (1.762) (0.665)	0.945 (1.639) (0.576)	0.807 (1.679) (0.480)	
R ²	0.1155	0.1155	0.1237	0.1829	0.1861	0.1856	0.1834	0.1853	0.1850	
No. of Variables	110	110	110	110	110	110	110	110	110	

Notes: 1. Upper parenthesis shows standard error and t-value in lower one ***coefficients significant at the 1% level, ** at the 5% level, * at the 10% level.

2. Statistics available from 1982 for China; from 1981 for Indonesia

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab4-2: Domestic Savings / GDP Growth [1990-99]

		[Dependent Variable: GDP Growth]								
1990-94	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [%, GDP]	0.2360 *** (0.036) (6.471)	0.2132 *** (0.038) (5.653)	0.2359 *** (0.037) (6.438)	0.2252 *** (0.047) (4.752)	0.2328 *** (0.059) (3.956)	0.2327 *** (0.047) (4.993)	0.1880 *** (0.056) (3.374)	0.2232 *** (0.049) (4.570)	0.2512 *** (0.049) (5.096)	
Trade*S [%, GDP]					-0.004 (0.017) (-0.22)					
CapFlow*S						0.4850 ** (0.213) (2.277)				
FDI*S							0.4751 (0.377) (1.262)			
Portfolio*S								-0.0818 (0.431) (-0.19)		
Other*S									0.5255 * (0.303) (1.733)	
KAOPEN		2.1033 ** (1.046) (2.010)								
EM7			-0.0667 (0.725) (-0.09)							
Asia				1.2409 (0.884) (1.404)	1.2456 (0.888) (1.403)	0.6446 (0.905) (0.712)	1.2120 (0.881) (1.375)	1.2525 (0.890) (1.408)	0.6226 (0.945) (0.65869)	
Latin America				1.2528 (0.856) (1.463)	1.2701 (0.864) (1.470)	1.117 (0.842) (1.326)	1.090 (0.864) (1.261)	1.261 (0.862) (1.464)	1.4269 * (0.854) (1.670)	
C	-0.428 (0.952) (-0.45)	-0.597 (0.943) (-0.63)	-0.408 (0.981) (-0.42)	-1.048 (1.208) (-0.87)	-1.182 (1.361) (-0.87)	-1.315 (1.191) (-1.10)	-0.352 (1.325) (-0.27)	-1.000 (1.239) (-0.81)	-1.5287 (1.228) (-1.24)	
R ²	0.2794	0.3056	0.2795	0.2995	0.29983	0.3325	0.3100	0.2998	0.3190	
No. of Variables	110	110	110	110	110	110	110	110	110	
		[Dependent Variable: GDP Growth]								
1995-99	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [%, GDP]	0.1117 ** (0.043) (2.612)	0.1143 ** (0.043) (2.640)	0.1079 ** (0.043) (2.507)	0.1219 * (0.058) (2.105)	0.2371 *** (0.081) (2.940)	0.1367 * (0.075) (1.822)	0.1487 * (0.078) (1.903)	0.1255 * (0.066) (1.905)	0.1533 *** (0.053) (2.895)	
Trade*S [%, GDP]					-0.046 ** (0.023) (-2.02)					
CapFlow*S						-0.114 (0.365) (-0.31)				
FDI*S							-0.216 (0.420) (-0.51)			
Portfolio*S								0.031 (0.266) (0.117)		
Other*S									1.070 *** (0.220) (4.863)	
KAOPEN		-0.6219 (1.361) (-0.46)								
EM7			0.754 (0.880) (0.857)							
Asia				-0.8185 (1.170) (-0.70)	-0.9969 (1.156) (-0.86)	-0.8574 (1.181) (-0.73)	-0.8611 (1.177) (-0.73)	-0.8333 (1.182) (-0.71)	-0.5785 (1.063) (-0.54)	
Latin America				-0.746 (1.088) (-0.69)	-0.491 (1.080) (-0.45)	-0.651 (1.134) (-0.57)	-0.552 (1.156) (-0.48)	-0.731 (1.101) (-0.66)	-0.561 (0.989) (-0.57)	
C	1.346 (1.134) (1.187)	1.538 (1.213) (1.268)	1.200 (1.148) (1.045)	1.654 (1.460) (1.133)	-0.368 (1.752) (-0.210)	1.376 (1.714) (0.803)	1.130 (1.785) (0.633)	1.570 (1.630) (0.963)	0.890 (1.334) (0.667)	
R ²	0.0594	0.0612	0.0658	0.0657	0.1007	0.0666	0.0680	0.0658	0.2375	
No. of Variables	110	110	110	110	110	110	110	110	110	

Notes: Upper parenthesis shows standard error and t-value in lower one ***coefficients significant at the 1% level, ** at the 5% level, * at the 10% level.

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab4-3: Domestic Savings / GDP Growth [2000-09]

		[Dependent Variable: GDP Growth]								
2000-04	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% GDP]	0.1439 *** (0.033) (4.402)	0.1434 *** (0.033) (4.372)	0.1398 *** (0.033) (4.251)	0.1207 ** (0.051) (2.344)	0.1337 ** (0.042) (3.215)	0.0934 * (0.051) (1.831)	0.1186 ** (0.046) (2.595)	0.0934 ** (0.044) (2.138)	-0.0892 (0.115) (-0.7748)	
Trade*S				-0.015 (0.015) (-0.99)						
CapFlow*S					0.887 *** (0.203) (4.370)					
FDI*S						0.0070 (0.234) (0.030)				
Portfolio*S							0.2929 * (0.167) (1.754)			
Other*S								0.4060 (0.270) (1.503)		
Derivatives*S									14.6646 (10.46) (1.402)	
KAOPEN		-0.5686 (0.932) (-0.61)								
EM7			0.6506 (0.607) (1.072)							
Asia				0.8920 (0.784) (1.137)	0.8098 (0.718) (1.128)	0.7866 (0.782) (1.005)	0.8085 (0.770) (1.051)	0.7813 (0.772) (1.012)	4.11736 ** (1.611) (2.556)	
Latin America				-0.6727 (0.763) (-0.88)	-0.6038 (0.702) (-0.86)	-0.7566 (0.777) (-0.97)	-0.6254 (0.755) (-0.83)	-0.8016 (0.755) (-1.06)	0.34382 (1.219) (0.28)	
C	0.795 (0.857) (0.928)	1.071 (0.972) (1.103)	0.689 (0.862) (0.800)	1.481 (1.213) (1.220)	1.090 (1.057) (1.032)	1.946 (1.222) (1.593)	1.378 (1.157) (1.190)	2.091 (1.123) (1.863)	4.10114 (2.700) (1.519)	
R ²	0.1521	0.1550	0.1611	0.1826	0.3020	0.1750	0.1985	0.1924	0.37112	
No. of Variables	110	110	110	110	110	110	110	110	38	
		[Dependent Variable: GDP Growth]								
2005-09	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% GDP]	0.1126 *** (0.031) (3.632)	0.1117 *** (0.031) (3.594)	0.1121 *** (0.032) (3.545)	0.1546 *** (0.046) (3.363)	0.1561 *** (0.041) (3.774)	0.1013 ** (0.045) (2.273)	0.1208 *** (0.041) (2.930)	0.1225 *** (0.041) (3.013)	0.27866 ** (0.111) (2.506)	
Trade*S				-0.019 (0.013) (-1.47)						
CapFlow*S					0.4974 ** (0.195) (2.551)					
FDI*S						0.1919 (0.195) (0.985)				
Portfolio*S							0.0018 (0.195) (0.009)			
Other*S								0.0568 (0.207) (0.274)		
Derivatives*S									0.81989 (0.911) (0.900)	
KAOPEN		-0.796 (0.965) (-0.83)								
EM7			0.0653 (0.667) (0.098)							
Asia				0.210 (0.851) (0.247)	0.266 (0.832) (0.320)	0.158 (0.855) (0.185)	0.065 (0.854) (0.076)	0.074 (0.854) (0.087)	-2.6208 (1.911) (-1.37)	
Latin America				0.530 (0.810) (0.655)	0.686 (0.797) (0.860)	0.420 (0.816) (0.515)	0.477 (0.818) (0.583)	0.487 (0.818) (0.595)	0.64654 (1.687) (0.38)	
C	1.701 * (0.898) (1.894)	2.141 * (1.045) (2.048)	1.695 * (0.905) (1.874)	0.743 (1.182) (0.629)	0.157 (1.184) (0.133)	1.589 (1.158) (1.373)	1.309 (1.150) (1.138)	1.270 (1.137) (1.117)	-3.294 (3.230) (-1.02)	
R ²	0.1089	0.1145	0.1089	0.1298	0.1638	0.1201	0.1120	0.1126	0.14036	
No. of Variables	110	110	110	110	110	110	110	110	49	

Notes: Upper parenthesis shows standard error and t-value in lower one ***coefficients significant at the 1% level, ** at the 5% level, * at the 10% level.

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab4-4: Domestic Savings / GDP Growth [2010-19]

[Dependent Variable: GDP Growth]										
2010-14	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.1314 *** (0.021) (6.304)	0.1308 *** (0.021) (6.290)	0.1249 *** (0.022) (5.767)	0.1772 *** (0.034) (5.233)	0.1441 *** (0.032) (4.447)	0.1581 *** (0.034) (4.686)	0.1760 *** (0.031) (5.767)	0.1568 *** (0.029) (5.330)	0.1450 *** (0.044) (3.266)	
Trade*S				-0.014 (0.011) (-1.27)						
CapFlow*S					0.0460 (0.058) (0.787)					
FDI*S						-0.023 (0.130) (-0.18)				
Portfolio*S							0.2553 ** (0.126) (2.029)			
Other*S								0.0802 (0.150) (0.535)		
Derivatives*S									-0.194 (0.500) (-0.39)	
KAOPEN		0.7880 (0.668) (1.179)								
EM7			0.5253 (0.481) (1.093)							
Asia				-0.3276 (0.657) (-0.50)	-0.2854 (0.664) (-0.43)	-0.3506 (0.667) (-0.53)	-0.4409 (0.652) (-0.68)	-0.2828 (0.669) (-0.42)	-0.445 (0.970) (-0.46)	
Latin America				0.6518 (0.560) (1.164)	0.6408 (0.563) (1.138)	0.6719 (0.570) (1.178)	0.6707 (0.554) (1.211)	0.67257 (0.564) (1.192)	0.320 (0.762) (0.42)	
C	1.294 ** (0.579) (2.234)	0.950 (0.647) (1.468)	1.294 ** (0.579) (2.236)	0.321 (0.758) (0.423)	0.807 (0.761) (1.060)	0.570 (0.779) (0.732)	0.1549 (0.748) (0.207)	0.5705 (0.731) (0.781)	0.8853 (1.082) (0.818)	
R ²	0.2690	0.2784	0.2771	0.2962	0.2895	0.2855	0.3123	0.2873	0.2048	
No. of Variables	110	110	110	110	110	110	110	110	78	
[Dependent Variable: GDP Growth]										
2015-19	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Savings [% , GDP]	0.1154 *** (0.019) (5.978)	0.1217 *** (0.019) (6.276)	0.1196 *** (0.021) (5.835)	0.0978 *** (0.027) (3.670)	0.0992 *** (0.025) (4.046)	0.0734 *** (0.026) (2.773)	0.0758 *** (0.026) (3.088)	0.0639 ** (0.027) (2.366)	0.0826 ** (0.031) (2.644)	
Trade*S				-0.0483 *** (0.012) (-4.02)						
CapFlow*S					0.0060 *** (0.001) (5.226)					
FDI*S						-0.2334 ** (0.090) (-2.60)				
Portfolio*S							0.4569 *** (0.116) (3.947)			
Other*S								0.2993 (0.180) (1.662)		
Derivatives*S									1.079 * (0.584) (1.848)	
KAOPEN		-1.078 * (0.585) (-1.84)								
EM7			-0.276 (0.439) (-0.63)							
Asia				1.321 ** (0.503) (2.627)	1.442 *** (0.482) (2.991)	1.139 ** (0.524) (2.172)	1.297 *** (0.504) (2.576)	1.217 ** (0.533) (2.284)	1.389 ** (0.631) (2.201)	
Latin America				-1.336 *** (0.435) (-3.07)	-1.131 *** (0.418) (-2.71)	-1.237 *** (0.454) (-2.72)	-1.262 *** (0.436) (-2.89)	-1.178 ** (0.469) (-2.51)	-0.605 (0.559) (-1.08)	
C	0.615 (0.503) (1.222)	0.973 * (0.534) (1.820)	0.600 (0.505) (1.188)	1.641 *** (0.565) (2.906)	0.774 (0.590) (1.311)	1.762 *** (0.594) (2.968)	1.553 ** (0.572) (2.713)	1.7676 *** (0.634) (2.790)	0.8853 (1.082) (0.818)	
R ²	0.2486	0.2717	0.2514	0.4560	0.5018	0.4104	0.4534	0.3884	0.4479	
No. of Variables	110	110	110	110	110	110	110	110	92	

Notes: Upper parenthesis shows standard error and t-value in lower one ***coefficients significant at the 1% level, ** at the 5% level, * at the 10% level.

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

Tab4-5: Domestic Savings / GDP Growth [2020-22]

2020-22	[Dependent Variable: GDP Growth]								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Savings [% of GDP]	0.0640 (0.075) (0.850)	0.0683 (0.082) (0.832)	0.0568 (0.085) (0.667)	0.1007 (0.110) (0.916)	0.1070 (0.099) (1.085)	0.0805 (0.104) (0.772)	0.0957 (0.098) (0.972)	0.0879 (0.099) (0.886)	0.0444 (0.116) (0.383)
Trade*S				-0.006 (0.054) (-0.11)					
CapFlow*S					0.1906 (0.326) (0.584)				
FDI*S						0.1221 (0.340) (0.360)			
Portfolio*S							0.0419 (0.852) (0.049)		
Other*S								-0.018 (0.061) (-0.30)	
Derivatives*S									-4.763 (4.388) (-1.09)
KAOPEN		-0.150 (2.405) (-0.06)							
EM7			0.3342 (1.797) (0.186)						
Asia				-1.142 (2.122)	-1.083 (2.107)	-1.170 (2.105)	-1.164 (2.112)	-1.186 (2.106)	0.5676 (2.538)
Latin America				-0.54 (-0.54) (1.997) (-0.09)	-0.152 (-0.08) (1.992) (-0.08)	-0.235 (-0.12) (2.000) (-0.12)	-0.180 (-0.09) (2.001) (-0.09)	-0.233 (-0.12) (2.002) (-0.12)	0.873 (2.625) (0.333)
C	0.8496 (1.908) (0.445)	0.8335 (2.109) (0.395)	0.9116 (1.951) (0.467)	0.6136 (2.483) (0.247)	0.3428 (2.493) (0.137)	0.8883 (2.511) (0.354)	0.6554 (2.450) (0.268)	0.8299 (2.496) (0.332)	0.4140 (3.469) (0.119)
R ²	0.0112	0.0113	0.0117	0.0167	0.0220	0.0186	0.0166	0.0179	0.0289
No. of Variables	66	66	66	66	66	66	66	66	57

Notes: Upper parenthesis shows standard error and t-value in lower one ***coefficients significant at the 1% level, ** at the 5% level, * at the 10% level.

Sources: World Bank database, BOP statistics (IMF), Chinn-Ito Index (2023)

5. Concluding remarks

The results of analysis in this paper show that domestic savings is still one of the major factors for domestic investment and GDP growth, and that capital inflows and external trade would not guarantee domestic investment and GDP growth in emerging countries. The results indicate that while the correlation between domestic saving and investment has constantly declined in emerging countries during 1990s and 2000s, the nexus of saving and investment as well as GDP growth has regained significance in the post-Global Financial Crisis since 2010. On the other hand, trade and capital inflows have not always had positive correlation with domestic investment and GDP growth during the covered period. Some implications from the analyses and discussion in this paper could be given as follows:

Firstly, the correlation between savings and investment has been significantly affected by the capital account liberalization in the past decades, however, the correlation of domestic savings and investment has not been changed significantly in emerging economies during the whole period. This would indicate that Feldstein-Horioka puzzle of home bias somehow still hold even in recent decades when capital account openness in each country has drastically increased in emerging economies.

Secondly, in the post-Global Financial Crisis period (2010-19) the correlation between

savings and investment has recovered; the correlation between savings and investment has been generally higher as compared with the during the early in emerging countries. This could be explained by the fact that several countries have introduced several capital management and controls through prudential monitors and controls after the Global Financial Crisis.

Thirdly, capital inflows have generally significant correlation with domestic investment and growth in emerging economies except crises periods (e.g. 1995-99). This may indicate that capital flows have not contributed to productive investment nor GDP growth in emerging economies during the crisis periods (e.g. capital account crises).

Fourthly, domestic investment nexus domestic savings as well as GDP growth are still valid in the sense that there has been correlation between them in the past decades, while the significance is larger in larger emerging countries (EM7) than smaller nations.

The above results in this paper show that domestic savings is still one of the major factors for domestic investment and GDP growth in emerging countries. Many countries have recovered the domestic savings and investment nexus during 2010s. It could be explained by the fact that several emerging economies have been stabilized and expanded domestic resources. Besides, most of the countries have now realized that dependence of domestic economic activities on external capital could increase risk in terms of stability of their economies. It is to be noted that capital management and controls as well as stronger prudential controls and regulations have been introduced in many Asian countries, especially since mid-2000s¹³.

In many countries dependence on external financial resources for domestic economic activities, including investment generally could have relatively high risks in balance of payments, especially capital and financial account, which includes short-term capital flows, which could easily affect stable economic growth. This is because economic growth in those countries which are heavily dependent on capital inflows are more likely to have higher volatility in the markets and the economy with pro-cyclical nature and vulnerable to the external shocks of global markets, which is quite common in Latin America. Some countries may be exempted from such higher risks, like the USA where the dollar is the key currency so that the country could easily be financed by imports of capital through issuing government bonds (e.g. T-bills). However, small open emerging economies are highly vulnerable to global developments and, in such circumstances, 'sudden stops' of capital inflows or large capital outflows and short periods of time can occur. The lack of financial resources could be a serious issue especially for those countries with lower domestic savings. Thus, there should be absolute needs for sustainable domestic investment for stable economic growth and development.

As shown in the results of analysis in this paper, increase in domestic saving rates would be one of the most important issues for any country to achieve more stable and sustainable economic growth, avoiding pro-cyclical capital flows which are influenced by the global financial markets. In this respect, there should be several measures to strengthen

13 Several measures for management and controls in capital/financial account are shown in several literatures (e.g. Chapter 6 of Ohta [2012], Kawai & Takagi [2010]), Fernandez et al. [2015]).

management and controls in capital and financial transactions in the global market. The results of the analysis shown in this paper would justify several measures to strengthen management and controls in capital and financial transactions in the global market, to achieve more stable growth.

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* Written in Japanese

[Appendix] 1: Domestic Savings/ Investment

	Domestic Savings (% GDP)													
	75-79	80-84	85-89	90-94	95-99	00-04	05-09	10-14	15-19	20-22	80-89	90-99	00-09	10-22
Argentina	30.42	19.47	15.78	15.03	16.02	17.09	19.36	16.40	13.42	17.36	17.62	15.53	18.22	15.72
Brazil	19.45	16.82	24.41	19.39	13.76	15.65	18.30	17.67	13.30	16.05	20.615	16.58	16.97	15.67
Chile	11.41	7.38	17.19	22.18	24.10	23.31	25.86	23.24	20.61	17.50	12.28	23.14	24.59	20.45
Mezico	21.84	26.48	22.75	18.50	21.78	20.70	20.74	18.08	20.19	21.24	24.612	20.14	20.72	19.84
Colombia	19.13	15.89	20.66	19.98	14.71	14.51	18.86	18.50	16.90	13.68	18.274	17.34	16.69	16.36
Peru	18.97	24.98	17.28	14.04	17.41	17.11	22.17	22.26	20.54	19.13	21.132	15.73	19.64	20.64
Costa Rica	13.74	14.72	21.37	15.10	15.79	14.99	15.77	14.21	14.64	14.16	18.045	15.44	15.38	14.34
China	33.29	36.31	39.81	38.59	40.00	49.33	48.84	44.59	45.14	34.8	39.20	44.66	46.19	
India	15.06	15.46	17.57	23.25	26.62	28.86	35.93	34.89	31.40	28.88	16.516	24.93	32.40	31.72
Indonesia		20.62	23.63	25.34	24.12	23.59	26.56	31.94	30.70	33.07	22.125	24.73	25.08	31.90
Korea	29.08	27.64	37.35	38.46	36.53	33.15	33.34	34.84	36.16	35.82	32.499	37.50	33.24	35.61
Malaysia	27.31	26.70	28.93	32.23	37.22	34.18	37.25	31.45	27.16	25.47	27.813	34.73	35.72	28.03
Philippines	27.71	25.55	17.14	22.06	21.07	19.07	17.42	20.46	25.01	21.09	21.346	21.56	18.25	22.19
Pakistan	14.52	17.49	17.70	19.22	16.57	17.65	13.86	14.37	13.08	12.98	17.595	17.89	15.76	13.48
Thailand	21.73	21.94	28.16	34.62	32.97	28.60	30.17	28.94	30.69	27.38	25.046	33.80	29.39	29.00
Singapore	31.57	38.52	40.67	45.63	50.41	40.98	46.00	47.89	43.57	42.18	39.591	48.02	43.49	44.55
Turkey	32.69	30.28	30.38	19.06	21.89	21.67	23.75	23.40	26.12	29.25	30.331	20.48	22.71	26.26
Egypt	22.59	24.23	24.57	31.53	19.32	18.87	21.77	14.65	13.01	12.35	24.4	25.42	20.32	13.34
Israel	20.34	17.72	19.94	22.71	25.02	23.81	26.09	25.22	26.87	29.68	18.831	23.87	24.95	27.26
Morocco	16.52	23.61	26.48	26.36	27.80	37.51	38.87	31.62	27.93	27.56	25.05	27.08	38.19	29.04
Tunisia	24.81	25.06	22.29	21.65	21.85	21.17	20.86	16.91	11.30	7.66	23.674	21.75	21.01	11.96
South Africa	26.51	24.68	19.37	15.08	15.29	16.64	17.30	14.85	13.85	15.23	22.024	15.19	16.97	14.64
	Domestic Investment (% GDP)													
	75-79	80-84	85-89	90-94	95-99	00-04	05-09	10-14	15-19	20-22	80-89	90-99	00-09	10-22
Argentina	28.95	22.11	17.75	17.00	19.56	15.14	18.66	17.43	16.75	16.70	19.93	18.28	16.90	16.96
Brazil	23.39	20.79	22.94	20.37	17.58	17.97	19.05	21.46	15.52	17.89	21.863	18.97	18.51	18.29
Chile	16.11	17.74	21.44	25.72	27.72	23.32	23.92	26.57	24.23	23.66	19.594	26.72	23.62	24.82
Mezico	23.68	22.39	20.40	23.40	21.05	21.17	22.91	23.39	23.51	21.47	21.396	22.22	22.04	22.79
Colombia	17.95	19.81	19.80	22.15	20.30	17.26	22.75	22.63	22.22	19.81	19.804	21.22	20.01	21.56
Peru	23.63	30.04	23.09	18.53	23.00	18.02	21.02	22.26	21.84	20.80	26.563	20.76	19.52	21.63
Costa Rica	23.67	25.43	25.85	21.59	20.22	19.72	21.28	19.71	18.05	17.67	25.644	20.90	20.50	18.48
China	33.17	38.08	38.36	36.17	37.35	41.67	46.33	43.18	43.27	35.624	37.26	39.51	44.26	
India	21.26	22.92	26.30	25.79	26.71	30.35	39.21	37.20	31.14	30.34	24.606	26.25	34.78	32.89
Indonesia		23.8	28.00	30.52	28.38	23.17	26.84	33.87	34.00	31.18	25.915	29.45	25.00	33.02
Korea	31.65	32.59	33.80	39.14	34.87	32.08	32.33	31.37	30.99	32.46	33.193	37.00	32.21	31.61
Malaysia	24.93	34.77	26.58	37.18	35.43	24.37	21.56	24.65	24.38	21.76	30.67	36.30	22.97	23.60
Philippines	31.19	26.05	17.14	22.06	21.07	19.07	17.42	20.46	25.01	21.09	21.593	21.56	18.25	22.19
Pakistan	17.25	18.55	18.63	19.61	17.75	15.65	17.53	15.13	16.13	15.02	18.591	18.68	16.59	15.43
Thailand	26.60	28.96	29.93	40.94	31.98	23.53	26.36	26.31	23.09	26.72	29.443	36.46	24.94	25.37
Singapore	38.72	45.89	36.33	35.05	34.25	25.59	24.90	28.60	25.69	22.54	41.111	34.65	25.25	25.61
Turkey	17.87	17.09	21.93	23.71	24.07	22.03	27.26	28.88	28.25	32.60	19.509	23.89	24.65	29.91
Egypt	26.47	29.95	30.01	22.52	19.79	17.93	19.83	16.10	17.05	16.06	29.982	21.16	18.88	16.40
Israel	12.91	20.89	17.60	23.62	27.78	24.09	23.00	22.65	22.98	25.44	19.248	25.70	23.54	23.69
Morocco	27.40	30.59	27.60	27.65	24.61	25.41	30.77	31.88	31.31	29.87	29.095	26.13	28.09	31.02
Tunisia	29.88	32.56	24.97	27.23	24.74	24.50	23.72	24.94	21.18	14.95	28.77	25.98	24.11	20.35
South Africa	26.93	27.09	19.68	16.48	16.53	15.46	18.94	18.54	16.84	13.65	23.389	16.51	17.20	16.34

Notes: 1. Countries include Argentina, Brazil, Chile, Colombia, Costa Rica, Peru, Venezuela, China, India, Indonesia, Korea, Malaysia, Philippines, Pakistan, Thailand, Singapore, Turkey, Egypt, Israel, Morocco, South Africa, Tunisia China's savings rate is from 1982; Indonesia from 1981.

2. Savings and Investment are Gross savings and Gross capital formation (% of GDP), respectively.

Sources: World Bank database

3: GDP Growth

	GDP Growth (y/y, %)													
	75-79	80-84	85-89	90-94	95-99	00-04	05-09	10-14	15-19	20-22	80-89	90-99	00-09	10-22
Argentina	2.12	0.30	-0.92	5.73	2.25	0.35	4.81	3.00	-0.23	1.92	-0.31	3.99	2.58	1.56
Brazil	6.42	1.65	4.39	1.38	2.13	3.15	3.64	3.39	-0.50	1.54	3.02	1.75	3.39	1.48
Chile	3.50	0.52	6.62	6.78	5.41	4.55	3.95	4.67	2.00	2.68	3.57	6.10	4.25	3.11
Mexico	6.44	3.44	0.98	4.01	3.29	1.82	0.73	3.06	1.61	0.36	2.21	3.65	1.27	1.68
Colombia	5.01	2.45	4.36	4.31	1.41	3.27	4.54	5.00	2.43	3.67	3.40	2.86	3.91	3.70
Peru	1.51	0.89	-0.11	2.85	3.56	3.58	6.51	5.81	3.19	1.74	0.39	3.20	5.04	3.58
Costa Rica	5.55	0.42	4.02	5.33	4.47	3.90	4.68	4.14	3.41	2.74	2.22	4.90	4.29	3.43
China	6.73	9.59	9.89	10.87	9.12	9.22	11.48	8.65	6.71	4.56	9.74	9.99	10.35	6.64
India	3.71	5.47	5.91	4.70	6.84	5.65	6.92	6.60	6.67	3.49	5.69	5.77	6.28	5.59
Indonesia	6.99	6.27	5.33	6.91	1.68	4.57	5.64	5.80	5.03	2.32	5.80	4.29	5.11	4.38
Korea	3.36	1.82	3.29	1.13	1.88	1.51	-0.43	-0.48	1.03	1.02	2.55	1.51	0.54	0.52
Malaysia	7.22	6.87	4.88	9.31	5.19	5.47	4.11	5.78	4.92	2.16	5.87	7.25	4.79	4.29
Philippines	6.12	1.44	2.78	1.92	3.70	4.56	4.51	6.24	6.58	1.26	2.11	2.81	4.54	4.69
Pakistan	5.02	7.30	6.43	4.54	3.41	4.75	4.67	3.14	4.77	3.32	6.86	3.98	4.71	3.74
Thailand	7.96	5.55	9.04	8.81	1.59	5.51	3.13	3.85	3.42	-0.66	7.29	5.20	4.32	2.20
Singapore	7.12	9.08	6.59	9.14	5.30	5.28	5.48	6.78	3.21	2.88	7.83	7.22	5.38	4.29
Turkey	4.38	3.53	4.67	3.60	4.40	4.64	3.40	7.57	4.15	6.28	4.10	4.00	4.02	6.00
Egypt	8.88	8.42	4.95	3.63	5.35	3.92	6.05	2.85	4.76	4.48	6.69	4.49	4.98	4.03
Israel	1.52	1.91	2.68	0.06	3.43	3.01	1.23	2.48	2.61	2.30	2.30	1.75	2.12	2.46
Morocco	6.29	3.73	5.94	3.68	2.87	4.96	4.77	3.79	3.18	0.70	4.83	3.27	4.86	2.55
Tunisia	6.29	4.57	2.54	5.01	5.16	4.15	4.54	2.13	1.71	-0.66	3.56	5.08	4.35	1.06
South Africa	2.13	2.97	1.50	0.19	2.58	3.62	3.58	2.50	0.99	0.22	2.24	1.39	3.60	1.24
	Per capita GDP Growth (y/y, %)													
	75-79	80-84	85-89	90-94	95-99	00-04	05-09	10-14	15-19	20-22	80-89	90-99	00-09	10-22
Argentina	0.49	-1.26	-2.40	4.27	1.01	-0.71	3.75	2.03	-1.26	0.96	-1.83	2.64	1.52	0.76
Brazil	3.94	-0.64	2.32	-0.30	0.61	1.86	2.57	2.46	-1.29	0.98	0.8379	0.15	2.22	0.60
Chile	1.93	-0.92	4.98	5.11	4.03	3.42	2.92	3.64	0.51	1.69	2.0298	4.57	3.17	2.42
Mexico	3.36	1.22	-0.78	2.03	1.51	0.28	-0.60	1.69	0.56	-0.27	0.2209	1.77	-0.16	1.37
Colombia	2.71	0.12	2.15	2.23	-0.38	1.71	3.25	3.91	0.96	2.56	1.1367	0.92	2.48	2.56
Peru	-0.99	-1.55	-2.37	0.75	1.70	2.33	5.68	4.85	1.59	0.52	-1.9611	1.22	4.00	3.54
Costa Rica	2.79	-2.31	1.30	2.73	2.16	2.13	3.21	2.90	2.41	2.10	-0.5058	2.44	2.67	2.78
China	5.17	8.11	8.24	9.47	8.04	8.48	10.88	8.00	6.16	4.45	8.1746	8.76	9.68	7.25
India	1.43	3.10	3.60	2.54	4.81	3.81	5.35	5.20	5.48	2.66	3.3523	3.68	4.58	5.62
Indonesia	4.39	3.9	3.30	5.09	0.08	3.15	4.28	4.51	3.97	1.58	3.5764	2.59	3.72	4.26
Korea	8.88	6.00	9.11	7.51	5.09	5.34	3.32	3.26	2.41	2.16	7.5551	6.30	4.33	2.94
Malaysia	4.53	4.09	1.83	6.28	2.43	2.88	1.88	4.07	3.48	1.02	2.96	4.35	2.38	3.85
Philippines	3.38	-1.10	0.41	-0.45	1.25	2.41	2.57	4.42	4.77	-0.27	-0.3439	0.40	2.49	4.62
Pakistan	1.77	3.21	2.82	1.53	0.41	2.04	2.44	1.28	3.32	1.45	3.0171	0.97	2.24	2.46
Thailand	5.51	3.39	7.09	7.17	0.31	4.56	2.35	3.21	3.02	-0.84	5.2406	3.74	3.46	3.26
Singapore	5.70	6.15	5.05	5.83	2.26	4.22	1.77	4.83	2.35	3.40	5.6023	4.05	2.99	3.97
Turkey	2.21	1.32	2.54	1.76	2.73	3.18	2.15	6.09	2.75	5.27	1.9312	2.24	2.66	4.98
Egypt	6.37	5.58	2.13	1.20	3.11	1.79	3.99	0.58	2.69	2.76	3.8597	2.15	2.89	1.41
Israel	0.94	0.76	2.07	3.13	1.73	0.85	2.03	2.50	1.90	2.66	1.4157	1.73	1.44	2.21
Morocco	3.63	1.06	3.79	1.99	1.35	3.59	3.39	2.38	1.96	-0.36	2.4262	1.67	3.49	2.21
Tunisia	3.49	1.97	-0.01	2.88	3.73	3.11	3.57	0.95	0.64	-1.48	0.98	3.31	3.34	0.82
South Africa	-0.59	0.27	-1.81	-2.03	1.17	2.67	2.50	1.13	-0.20	-0.80	-0.7675	-0.43	2.58	0.63

Note: Countries include Argentina, Brazil, Chile, Colombia, Costa Rica, Peru, Venezuela, China, India, Indonesia, Korea, Malaysia, Philippines, Pakistan, Thailand, Singapore, Turkey, Egypt, Israel, Morocco, South Africa, Tunisia
 Source: World Bank database.

(OHTA, Hideaki, Professor, College/ Graduate School of International Relations, Ritsumeikan University)

新興国における国内貯蓄、投資、成長に与える国際資本フローの影響

本稿では、過去 40 年余り（1980～2022）に国際資本移動が大幅に拡大してきた増加した中で新興国における貯蓄・投資率および経済成長に与える貿易、資本・金融収支項目（外国直接投資、証券投資、その他投資、金融デリバティブ）の変化の影響を分析する。Feldstein-Horioka (FH)(1980) は、OECD 諸国が資本自由化をするにつれて国内貯蓄と投資の相関性が低下するという予想に反し、実際には 1960 年から 1974 年の間に国内貯蓄が国内投資と正で有意な関連性・相関性を維持していた 'Feldstein-Horioka Puzzle'（あるいは Paradox）ことを指している。本稿は、Feldstein-Horioka Puzzle が最近に至るまで新興国で成立するかどうか、さらに資本移動の影響をより本格的に検証するものである。本稿では F-H が対象とした期間以降から最近まで（1980-2022）22 ヶ国における国内貯蓄と国内投資率のみならず金融収支における資本流入項目（FDI、証券投資、その他投資、金融デリバティブ）別にそれぞれ国内投資率および GDP 成長率との関連・相関性を分析している。

本稿の分析結果は（1）新興国では貯蓄と投資の相関関係は過去数十年の資本勘定自由化による影響は受けているものの、全期間を通じて国内貯蓄と投資の相関関係に大幅な変化はなかった；（2）世界金融危機後（2010～22 年）の新興国では、貯蓄と投資の相関関係は概ね回復し、2000 年代よりも高くなった；（3）資本流入は「好況」期を除いて持続的な国内投資や GDP 成長率と正の有意な相関関係はなかった；（4）新興国では国内貯蓄と投資の相関関係は有意であるが、各金融収支項目（外国直接投資、証券投資、その他投資、金融デリバティブ）と GDP 成長率との相関性は限定的である。

本稿の分析結果は、新興国において各国の資本・金融開放度が飛躍的に高まった過去数十年間においても、国内貯蓄・投資率は比較的高い相関性が維持されており、さらに国内貯蓄率の上昇は依然として国内投資率および経済成長率の重要な促進要因であり、対外貿易や資本流入が当該国の持続的な国内投資や成長を保証するものではないことを示唆している。

（大田 英明，立命館大学国際関係学部・研究科教授）