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Big elephants in small ponds:
Risk absorption, risk diversification and management of capital flows

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สายนโยบายการเงิน

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บทสรุป

ข้อคิดเห็นที่ปรากฏในบทความนี้เป็นความเห็นของผู้เขียน
ซึ่งไม่จำเป็นต้องสอดคล้องกับความเห็นของธนาคารแห่งประเทศไทย

บทความนี้นำเสนอแนวโน้มการเปลี่ยนแปลงที่สำคัญของกระแสเงินทุนเคลื่อนย้ายในกลุ่มประเทศตลาดเกิดใหม่ในภูมิภาคเอเชียและไทย ศึกษาวรรณกรรมปริทัศน์เพื่อประเมินประโยชน์ต่อการเจริญเติบโตของเศรษฐกิจและความเสี่ยงผ่านช่องทางต่าง ๆจากการเชื่อมโยงในภาคการเงินที่มากขึ้น รวมทั้งนำเสนอกรอบนโยบายที่จะช่วยให้เศรษฐกิจไทยได้รับประโยชน์อย่างเต็มที่จากกระแสโลกาภิวัฒน์ด้านเงินทุนในขณะที่สามารถสร้างภูมิคุ้มกันต่อความเสี่ยงที่อาจจะเกิดขึ้นได้ แนวนโยบายที่จะสร้างประโยชน์ให้ประเทศไทยได้ทั้งในระยะสั้นและระยะยาวนั้นควรจะเน้นความสำคัญของการเปิดเสรีอย่างเป็นขั้นตอน การบริหารการไหลเข้าออกของเงินทุนสะท้อนประสิทธิภาพของการลงทุนมากขึ้นภายใต้กรอบอัตราแลกเปลี่ยนที่มีความยืดหยุ่น ควบคู่ไปกับการเสริมสร้างกลไกการบริหารความเสี่ยงของเศรษฐกิจไทยให้มีประสิทธิภาพ ด้วยการพัฒนาตลาดการเงิน เพิ่มความหลากหลายและลดต้นทุนของนวัตกรรมทางการเงินที่จำเป็นในการบริหารความเสี่ยงและยกระดับความรู้ความเข้าใจทางการเงิน การเปิดเสรีทางการค้า รวมทั้งส่งเสริมให้เศรษฐกิจสามารถปรับตัวได้อย่างยืดหยุ่นขึ้นและเติบโตบนพื้นฐานของกลไกตลาด และการเพิ่มขึ้นของผลิตภาพเป็นหลัก และการเอื้อให้คนส่วนใหญ่ของประเทศได้รับประโยชน์จากความเชื่อมโยงทางการเงินที่เพิ่มขึ้น สิ่งเหล่านี้จะช่วยให้เศรษฐกิจไทยมีความแข็งแกร่งต่อความผันผวนของเงินทุนระหว่างประเทศในระยะยาวอย่างแท้จริง

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One decade after the 1997 crisis, emerging Asia is vibrant and looking less vulnerable to financial disturbances. In a highly integrated world, these small open economies want to take advantage of financial globalization to promote sustained increase in living standards. There have been selective and timely capital account restrictions and liberalization on both inflows and outflows over the years. Much of this caution derives from the bitter lessons from the 1990s. But, even so, measured by total foreign assets and liabilities as a percentage of GDP, the trend from Bangkok to Seoul is that of more financial integration over the past 25 years. Over time, these countries are likely to benefit from better international risk-sharing or diversification. But there is tension in the short run between *financial openness*, which can help foster financial development and economic growth, and *financial stability*, which may suffer from volatile capital flows. When markets and institutions are still developing, this struggle requires from policymakers a deft balancing act.

The idea of large and aggressive players storming in and out of shallow financial markets invokes strongly the imagery of big elephants crowding in and out of small ponds and the damage their wallowing does to the inhabitants of those shallow watering holes. This image reverberates through the medium-term flight from US dollar assets. In the near term, Thailand, like other emerging markets, needs a fine balance between fencing out the elephants and linking their ponds to larger bodies of water.

This paper contributes to the debate in emerging markets by compiling a compact list of what is known, knowable and unclear about the science of the issues concerning financial globalization, economic growth and resiliency with a focus on emerging economies. We evolve a set of general principles to guide capital account liberalization policy for Thailand *going forward*.

1. Introduction[1]

From a historical perspective, today's emerging markets are unique in their common experience. This uniqueness is twofold. On the one hand, it is quite apparent that openness has gained these economies immense benefit from global economic integration, the phenomenon denied to advanced economies when they started off. At the same time, and as a result of their openness, small developing economies face risks and volatilities that accompany financial globalization, the scale of which advanced economies never had to face in their early stages.

Figure 1: Average growth of financial openness and long-term GDP growth

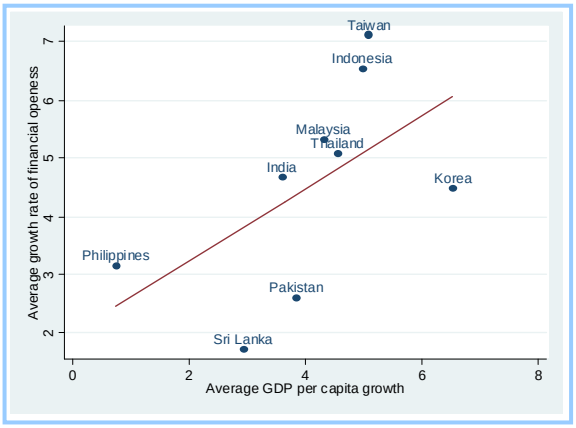
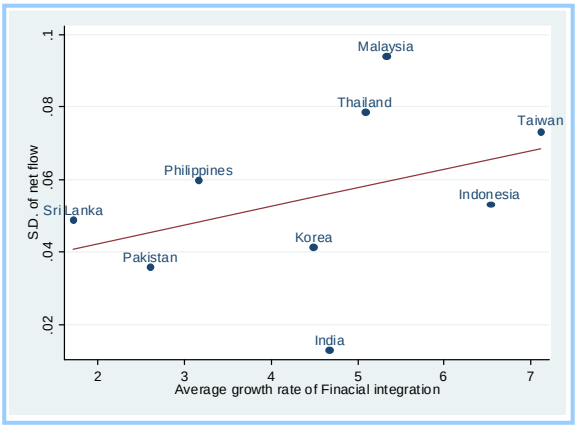


Figure 2: Speed of openness and flow volatility



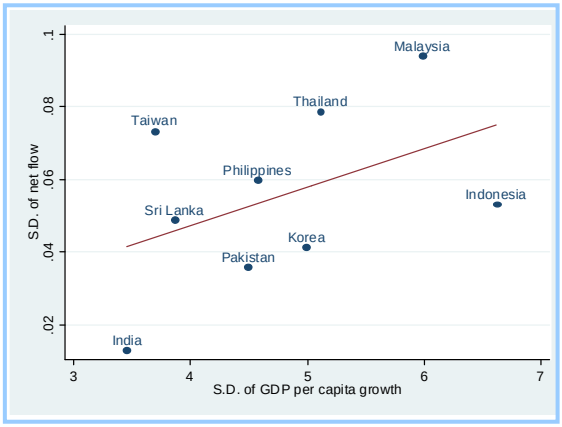
Source: IMF's International Financial Statistics (IFS)

[1] This introduction benefits from Watanagase (2007).

In fact, sustained increase in living standards is a relatively new economic phenomenon to emerging markets. Having experienced modern economic growth after 1950, they are late comers. And having much to benefit from being late, it took this group of countries a much shorter time to treble their per-capita income than today's advanced economies did between 1800 and 1950.[2] Indeed, international difference in living standards has declined over the latter half of the twentieth century as a result of emerging markets' fast-pace and sustained growth. During the past 20 years, the world's income gap has narrowed even faster. It cannot be by sheer coincidence that this period has also witnessed growing international trade and financial integration and the entrance of China, and subsequently India, into the comity of trading nations.

Along these high growth trajectories, emerging markets' aggregate real income and consumption are an order of magnitude more volatile than advanced economies (both in terms of levels and growth rates). Not only is consumption more volatile in emerging markets, but it is also more volatile in relation to income. In fact, over the business cycle, consumption is around 40 percent more volatile than income for emerging markets, while it is less volatile than income for advanced economies. The unique volatility outcomes can be attributed to a set of macroeconomic shocks and their propagation mechanism, which is likely more amplified in emerging markets than in advanced economies.[3] The extraordinary volatility in real aggregate consumption and income can be partially attributed to episodes of financial instability that occur not infrequently in emerging markets. In fact, these bouts of extreme instability have disrupted the *potential growth trends*, which in some cases have taken years to recover. On the whole, these episodes have been associated with too much financial liberalization too soon.

Figure 3: Volatilities of GDP growth and net flow



Source: IFS

The unique global backdrop, as well as the economic outcomes in terms of growth and volatility that have just been outlined, present a real dilemma and at times tension in emerging Asia. And nowhere is this tension more palpable than it is in the realm of exchange rate and capital account regimes. While benefits from trade integration are appreciated and shared by billions the world over, net benefits from international financial integration have not been so apparent in Asia and emerging economies in general. This is consistent with an observation that Asian emerging markets rely increasingly more on trade integration because it is judged to be a safer mode of risk-sharing with the world. As a result, while the pace of

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[2] Parente and Prescott (1999) documents the evolution of international income and growth differences and gives a list of growth facts before and after the industrial revolution.

[3] The same is true when comparing relative volatility in growth rates of consumption and income (Kose, Prasad, and Terrones, 2003). While this is a broad characterization of emerging markets, some countries, for example Thailand, have experienced a much less volatile consumption to income ratio. (Aguiar and Gopinath, 2007). Also see Disyatat and Chai-Anan (2007) presented in this year's BOT Annual Symposium.

financial integration has far outstripped trade integration in advanced economies, it has only managed to keep pace with trade integration in emerging markets.

…

Overall evidence on flows of portfolio equity, debt and foreign direct investment (FDI) shows that capital account liberalization is directly linked to lower cost of capital, investment boom and growth improvement over at least 5 years after the liberalization dates. The temporary growth benefits are clear in the case of equity market liberalization. FDI tends to bring more benefit when made in non-primary sectors with stronger vertical linkages to domestic intermediate sectors, such as manufacturing. Linkages between FDI and trade flows are strong. Indeed, FDI yields most benefit in an environment with minimal trade barriers. Most of the benefits are likely to come indirectly through efficiency improvement, better governance and human capital accumulation.

Moving toward perfect international risk sharing, or smoothening the consumption cycles, seems near impossible, but improving consumption risk sharing should be less challenging. It requires substantially better access to abundant insurance instruments that the deep financial markets offer. In addition, fewer frictions—implying more flexible prices and wages and effort toward lowering financial monitoring and screening costs—should dampen the amplification of real, monetary and credit shock that accompany capital flows to the real economy. Technology, money and credit as well as financial conditions tend to be procyclical everywhere, and capital flows more so in emerging markets. But the shocks that accompany financial volatility are not amplified so much to affect real outcomes in advanced economies as they are in developing countries.

Despite the shortage of evidence in support of growth benefit from debt flows and their association with crises in the past, controls on debt flows may not benefit countries in all cases at all times. In fact, with regard to financial stability, there is little evidence to support the view that countries with higher capital mobility face a higher probability of having a currency or a banking crisis. Readiness for openness does matter. Indeed, it is those with excessive short-term external debt, weak banks and inflexible exchange rates that are vulnerable. Moreover, output cost of a crisis is smaller in countries with open capital accounts.

…

Asian policymakers have come a long way in macroeconomic risk management since 1997. Countries have taken unilateral actions to promote resiliency through improved public debt structure, sharper focus on price stability, buildup of international reserves to a multiple of short-term external debt or other traditional measures of potential claims on reserves and more flexible exchange rates.[4] Countries have also made efforts to ensure stronger prudential regulation and supervision of banks as well as capital market deepening. They have also relied less on foreign debt financing and shifted more toward equity securities and direct investment. This shift in the pattern of capital inflows demonstrates to some extent advances in equity market development and corporate governance in the region. Thailand's outflows,

[4] For a few countries, reserve accumulation partly constitutes a deterrent to the repeat of the last extreme episode of instability in 1997. As an added benefit, a relatively well-developed system of prudential banking regulation has also helped these countries avoid speculative pressures on their exchange rates.

however, are debt heavy. Mainly, this reflects the fact that official flows account for a lion's share of Thailand's foreign asset holdings. Meanwhile, bank's assets in forms of deposits increase in line with exporters' hedging activities. This asset-liability mismatch may reflect inability on the part of the private sector to achieve diversification.

These changes in policies and risk awareness make it less likely that financial market disturbances will trigger a sharp and broad-based dent to real economic outcomes. But, it may be a slight overstatement to declare that Asia as a whole has become resilient to shocks and disturbances today. In some sense, the impressive heights of Asian international reserves may be construed less as an indication of fundamental strength than as an indication for needed progress toward modern monetary policy framework. In addition to that, the size of accumulated global financial vulnerabilities that may unwind in the near future is by most measures unprecedented; the extent and the whereabouts of the risk concentration are unclear. And as a result, circumstances of greater macroeconomic adversity may yet again put to test emerging markets' ability to adjust.

…

Since the challenge going forward requires significant ability for Thailand and other emerging economies to adjust flexibly, what has brought us here may not deliver us safely to prosperity.

Beyond getting the fundamentals right and strengthening them, the solution package we seek must help reduce the economic distortions perpetuated on our economies. These financial and structural distortions impose real costs in terms of higher output volatility, to be made precise, and hinder our chances to become more resilient going forward. This solution package must by default and by design be *broad-based.*

Allowing the competitive pressure and incentive to operate is undoubtedly the best way to foster investment in physical and human capital, as well as innovation and risk-taking, all of which are crucial to long-term productivity growth. They are also crucial for a flexible and resilient economy. But policy and regulations still have a role to play. The imperative here is to improve on structural and policy design that can help deal with market excesses and business fluctuations. Monopoly rights, financial monitoring and screening costs, administered wages and prices are high on the list when it comes to structural causes behind the amplification of various real and nominal shocks onto output, creating larger than necessary business fluctuations.

…

There is little consensus today on the appropriate degree of financial openness through time. The net benefit of extra openness may decline slowly or fast depending on whether domestic physical, human capital, financial and regulatory infrastructure—the traditional growth inputs— as well as macroeconomic policies and governance undergo concurrent improvement.

In order to outline capital account policy priority, policymakers should also underline the fact that big market events that pose systemic risks tend to reflect collective mistakes in which most market participants are offside in the same direction. *To reduce the chance of prolonged financial misalignment* with economic fundamentals, the priority should lie in improving the flows and quality of financial information, corporate and public governance, legal infrastructure, and allowing in different players and views. With various views and risk

appetites, the financial system will more likely undergo constant self-correction. Crashes in asset price will also likely be less prolonged and devastating to the real economy.[5] Our financial market may not be deep enough soon enough, but we require access to deeper and more liquid capital markets. Risk-aware economies have benefited from liberalized inflows in the past. Timely outflow liberalization will help Thais benefit more in the future, seeing that we can unload domestic systematic risk abroad.

To enhance the net benefits from financial globalization, we propose a balanced approach to managing capital flows under flexible exchange rate and reforms in the areas of financial system and market development as well as policy that promotes competition. The key components of this approach, which should be implemented hand-in-hand with capital account liberalization, are: 1. Sound, consistent (across policy and time) and sustainable macroeconomic policies. 2. Openness to trade, as trade enhances benefits of certain types of financial flows. 3. Directionally consistent capital account policy that is transparent. 4. Data disclosure and better data quality on both balance sheet and off-balance sheet items of the public and private sectors for better monitoring and pricing of risks, in support of capital account opening. 5. Financial sector reforms that complements business and household's ability to make sound financial decisions and hedge against financial risks. 6. Best-practice financial sector prudential regulation and supervision to ensure a strong financial system. 7. Effort to lower market frictions and distortions as well as efforts to reduce monopoly power in financial and non-financial sectors. 8. Progress in international cooperation on regional capital market development as well as information sharing and policy dialogue. 9. Appropriate legal safeguards under free trade agreements to preserve policy options that help ensure financial stability as markets continue to develop. 10. Progress on sharing the benefits of financial openness to include the majority of society to strengthen pro-reform constituencies.

The pace of liberalization should be determined by progress in these areas. Indeed, progress in one area of reforms requires progress in the others. Prioritizing would help Thailand capitalize on both investment- and efficiency-induced growth benefits of financial openness.

As we learn to harness the financial markets to help us adjust to future bumps and disturbances, Thailand will also become more resilient and our growth process less bumpy. Inflows and outflows will become more balanced in due course. Elephant traffic will bring less tension and more benefits as the ponds become larger or linked to deeper waters.

…

The rest of the paper is structured as follows: Section 2 summarizes developments in financial globalization for East Asia and Thailand, with lessons for policy going forward. Section 3 reviews the state of the knowledge about the science of the issues concerning financial globalization, economic growth and resiliency with a focus on emerging economies. Section 4 outlines *short-term* policy tension, why a country's political economy may tilt in favor of capital inflow controls and evidence on their effectiveness. Section 5 evolves a set of

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[5] See Bannier (2005) for an articulation that large players need not make market responses more aggressive if the market does *not* uniformly believe that fundamentals are weak. And see Abreu and Brunnermeier (2003) for argument that the resilience of financial bubbles (both positive and negative) can stem from the inability of arbitrageurs to temporarily coordinate their selling (or buying) strategies.

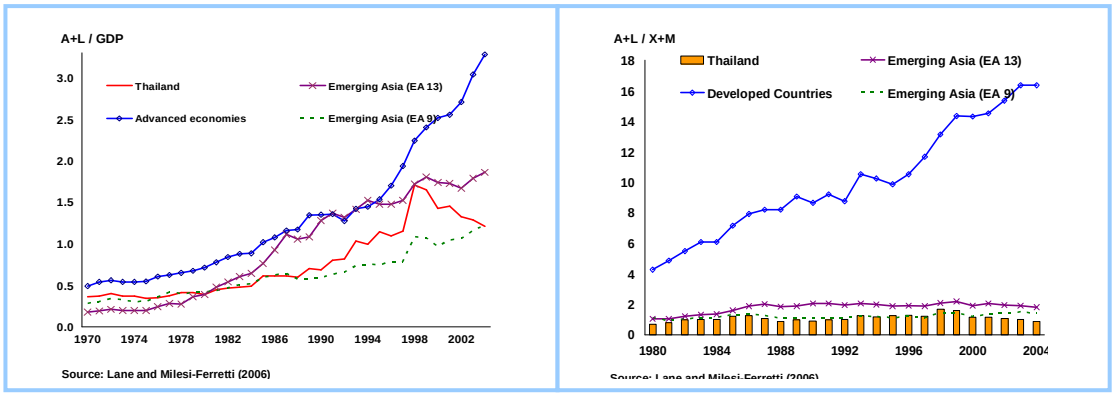
general principles to guide capital account liberalization policy for Thailand *going forward* and discusses more specifically Thailand's priorities. Section 6 concludes the paper.

2. Developments in financial globalization

Trend of *de facto* financial globalization

Fact 1: The world has become more financially integrated over the past 25 years. Advanced economies have embraced financial globalization at a much higher pace over the past 10 years. Emerging Asia[6] and Thailand on average has become more financially open.[7]

Figure 4: Foreign assets and liabilities over GDP (left panel) and foreign assets and liabilities over exports and imports (right panel)



Source: Lane and Milesi-Ferretti (2006): EWN Mark II dataset, CEIC and IFS. Author's calculation.

Fact 2: While financial integration has far outstripped trade integration in advanced economies, it has only more or less kept pace with trade in East Asia and Thailand.

This fact is consistent with the observation that emerging markets use trade in goods to share income risk. It is also consistent with the fact that advance economies are more service oriented while emerging economies' dominant features are primary and manufacturing sectors. It implies that there is a high potential for international trade in assets as a mode of risk sharing in the future.

Size, composition and pattern of financial integration

The financial account separates financial flows into 4 categories: 1. foreign direct investment 2. portfolio equity 3. portfolio debt and 4. other investment, which includes loans, trade credits, deposits and other credit and debit accounts.

Definition (Flows): We define gross and net flows according to international convention, as follows: For every flow category, gross inflow is defined as total nonresidents' inflow minus nonresidents' outflow. Gross outflow is defined as residents' outflow minus residents' inflow. Net flow is defined as gross inflow minus gross outflow.

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[6] Emerging Asia 13 (EA 13) consists of China, Hong Kong, India, Indonesia, Korea, Malaysia, Pakistan, Philippine, Singapore, Sri Lanka, Taiwan, Thailand and Vietnam. EA 9 excludes China, Hong Kong, Singapore and Vietnam from EA 13.

[7] The V-shape for Thailand reflects mostly the sharp decline in GDP in 1998 and later pickup. International assets and liabilities are more or less flat during the time.

For the rest of this section, unless otherwise noted, we use quarterly data from the International Financial Statistics (IFS). Quarterly data are not available for China, Hong Kong, Singapore and Vietnam. By data necessity, we define Emerging Asia as EA 9.[8]

Fact 3: (Integration by types) After the Asian crisis, flows have become more diversified across types. FDI and equity have become more prevalent while debt and other investments have become smaller. This is a world-wide trend. Thailand is less diversified than Emerging Asia as a whole. Official reserves have increased in emerging markets as a share of gross stocks of international assets and liabilities. (Table 1)

More concentration on FDI and equity flows may indicate better risk sharing between residents and non-residents, owing to the procyclical nature of their associated payments.

Table 1: Gross stocks of foreign assets and liabilities and their share by types

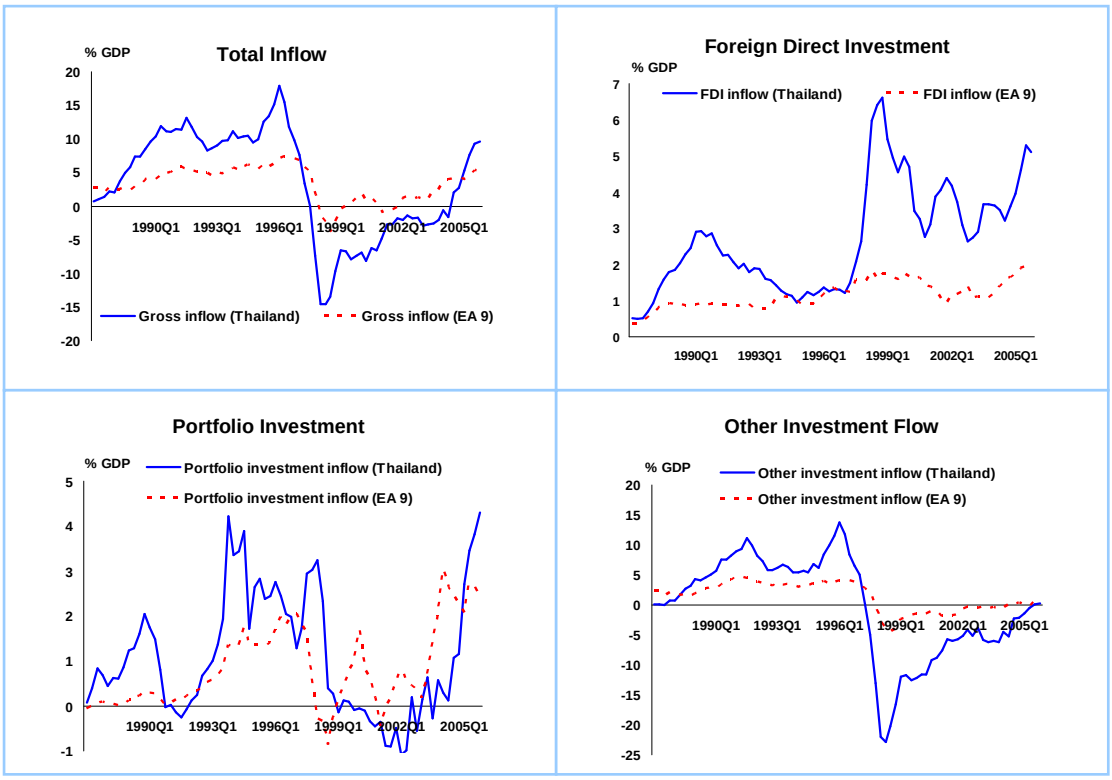
Gross stocks of foreign assets and liabilities	80-84	85-89	90-94	95-99	00-04
Advance economies (bln.$)	6,233	13,756	24,369	42,709	70,561
Share of FDI	16.5	17.1	18.0	20.6	21.1
Share of equity	5.8	8.2	9.9	16.2	16.3
Share of debt and other investment	71.6	69.5	67.7	58.8	58.2
Share of foreign reserve	6.0	5.0	4.3	3.8	3.5
Emerging market (bln.$)	1,351	2,305	4,284	7,451	10,453
Share of FDI	11.1	12.3	16.1	23.0	28.1
Share of equity	1.1	1.5	3.9	7.4	10.4
Share of debt and other investment	78.7	77.5	70.6	58.6	46.7
Share of foreign reserve	9.1	8.8	9.5	11.0	14.3
Emerging Asia (bln.$) , EA 13	479	1,208	2,657	4,568	6,307
Share of FDI	10.6	11.5	16.4	24.7	29.0
Share of equity	1.6	1.8	3.7	7.4	11.7
Share of debt and other investment	76.3	75.5	69.5	56.3	41.9
Share of foreign reserve	11.4	11.2	10.4	11.6	16.7
Thailand (bln.$)	17	34	99	192	178
Share of FDI	10.6	11.1	13.6	14.2	23.6
Share of equity	1.5	8.1	14.8	8.0	9.4
Share of debt and other investment	78.0	66.2	50.4	60.8	44.8
Share of foreign reserve	9.8	14.6	21.3	17.0	21.6

Source: EWN Mark II dataset, Author's calculation
Remark: Equity and debt in the table mean portfolio equity and debt, respectively

Fact 4: Gross inflows to East Asia are close to historic highs at around 5-6 percent of GDP. FDI remains an important component. However, portfolio investment has increased its share recently. Meanwhile, loan and other investment to the region is rising, but still is lower than pre-crisis level (Figure 5).

[8] In addition, the earliest data available for Malaysia starts from 1999 while the latest data for India ends at 2004.

Figure 5: Time-series of gross capital inflows by flow types (in percentage of GDP), 4-quarter moving average



Source: IFS

The recent pickup in capital inflows to emerging Asia partly reflects improved fundamentals in much of the region (Figure 5). However, there are several broader factors that have supported the increase in capital inflows. (IMF 2007)

- *Supportive global financial conditions.* Global financial conditions in recent years have been highly accommodative, with ample global liquidity and demand for higher yielding assets.

- *Growth in the investor base.* An increasing number of institutional investors, including insurance companies, pension funds, and hedge funds are investing in emerging markets, as investors diversify and search for higher returns.

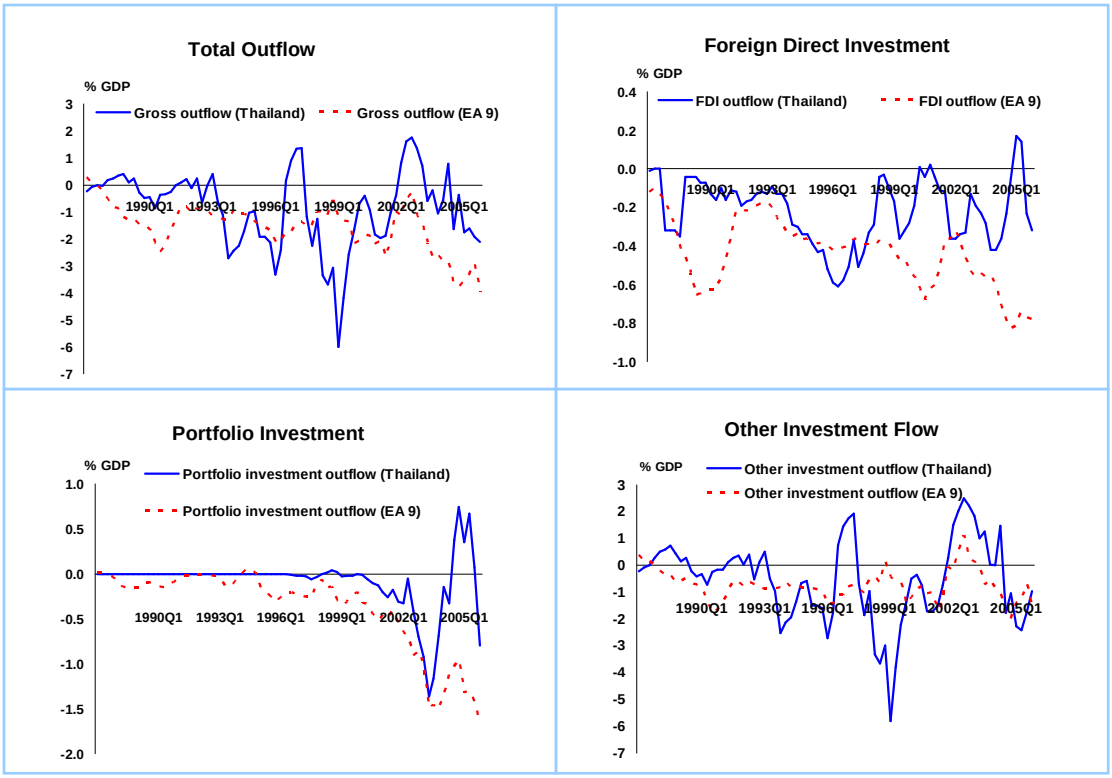
- *Capital market development and increasing capital flow liberalization.* Recent reforms have deepened domestic capital markets in Asia, introduced new types of financial instruments, and liberalized participation by nonresidents. In particular, the broadening and deepening of markets in the ASEAN countries have encouraged inflows, particularly portfolio investments.

- *Attractive portfolio investment opportunities.* Positive interest rate differentials on domestic holdings (especially against the yen) as well as expectations of currency appreciation in the region were another important factor driving capital inflows. For Thailand, the relatively attractive P/E ratio in the stock market may have also drawn renewed interest.

Fact 5: Capital outflows from East Asia have increased rapidly in recent years and have reached unprecedented levels (Figure 6). Portfolio investments comprise the major component of outflows and have grown rapidly during the past few years. Partly, this is

accounted by the recycling of current account surpluses through banking system by some countries. Also, FDI has increased reflecting a more developed corporate sector and greater economic integration.

Figure 6: Time-series of gross capital outflows by flow types (in percentage of GDP), 4-quarter moving average



Source: IFS

A number of factors have contributed to the rising trend in Asian capital outflows. (IMF 2007)

• *Increasing integration and market development.* Greater integration of markets and economies, especially within the region, an increasingly sophisticated and wealthier investor base, and financial market development, are likely to have supported this trend.

• *Recycling of current account surpluses.* In many countries, outflows into bonds in developed markets are related to reserves accumulation. Meanwhile, some governments have moved to establish agencies to manage these reserves and attain higher rates of return. Some outflows especially bank's deposit holdings represent hedging associated with portfolio or FDI inflows.

• *Capital account liberalization.* At the same time, restrictions on private sector outflows are being relaxed, reflecting both a desire to reduce the burden of sterilizing net inflows and a recognition of the value of portfolio diversification by the private sector.

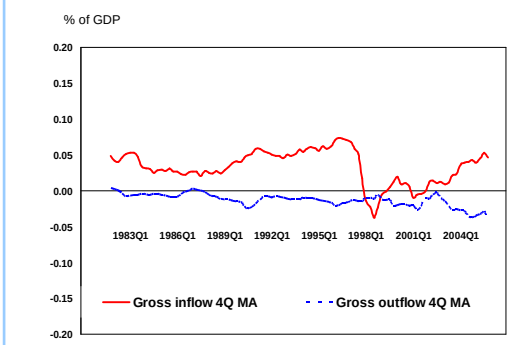
• *More global and developed corporate sectors.* FDI outflows have increased as Asian firms have moved to establish global supply and sales network.

Fact 6: Inflows and outflows have not always been balanced in size, with larger gross inflow, in Emerging Asia. Flows have become more balanced post-crisis. Tailand's in and outflows appear to be less balanced than East Asia on average (Figure 7).

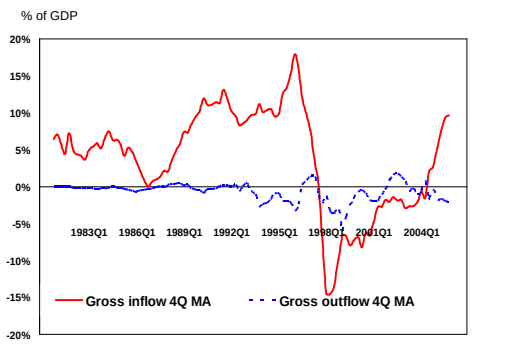
Between 1981Q1 – 2005Q4, gross quarterly inflow for Thailand is on average 5.3 times more than gross quarterly outflow. For Emerging Asia (EA 9) this ratio reads much lower at 2.5.

Figure 7: Gross flows as percentage of GDP

Gross inflow/GDP and gross outflow/ GDP: East Asia 9



Gross inflow/GDP and gross outflow/ GDP: Thailand



Source: IFS, Author's calculation. EA9's measures are simple averages of countries' ratios.

Fact 7: Thailand's holding of foreign assets in form of FDI, portfolio and other investment, as percentage of GDP, is very small in comparison to other countries'.

The exception is in the level of foreign reserves, which reflects the accumulation of reserves after the 1997 crisis, partly reflecting the FX intervention in an attempt to slowdown the currency appreciation.

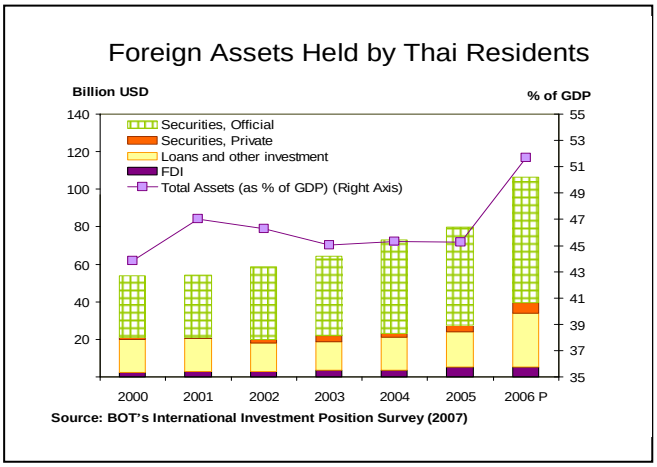
Table 2: Comparisons of foreign assets as percentage of GDP across countries (by types of flow)

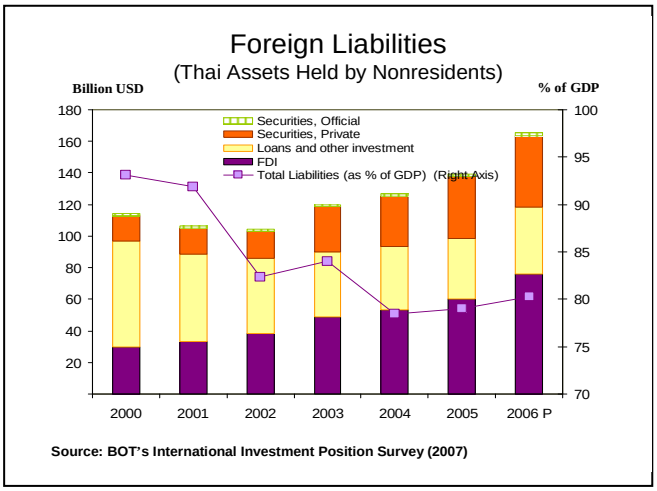
Stock as % of GDP	Direct investment outflows		Portfolio Equity outflows		Debt outflows (Portfolio + Other)		Foreign reserve minus gold	
	1995	2004	1995	2004	1995	2004	1995	2004
Malaysia	10.5	21.0	1.0	2.2	14.7	31.2	26.8	56.4
Singapore	46.9	104.4	41.5	139.2	77.3	250.4	81.8	105.1
Philippines	1.7	2.3	0.7	1.7	13.2	20.1	8.4	15.2
Indonesia	0.8	1.3	0.0	0.0	5.7	7.4	6.8	15.5
Thailand	1.4	3.3	0.0	0.4	6.2	11.1	21.4	29.8
Korea	3.1	7.8	0.3	2.0	12.1	13.4	6.3	29.2
Taiwan	10.4	29.9	3.2	37.0	32.1	64.9	34.1	75.1
China	2.5	2.2	0.1	0.3	8.7	15.6	10.8	37.3
Japan	4.5	7.9	2.8	7.8	39.0	55.3	3.5	17.8
US	18.4	28.0	10.7	21.5	22.1	33.9	1.0	0.6

Source: EWN Mark II dataset, Author's calculation

Recent development in Thailand's International Investment Position

Holdings of foreign assets has risen steadily in line with continued surplus in the current account. The amount of assets has doubled since 2000, to about $106 billion in 2006 (51.7% of GDP) Most of the increases in asset holdings are carried out the central bank through its FX interventions. For the banking sector, the increase in foreign assets partly reflects the acquisition of foreign currency deposits to match increased hedging activities by exporters. The holdings by private non-bank sectors, both FDI and securities, expanded only slowly.





Foreigner's holding of Thai assets has seen a clear shift from bank loans to equity investment. Foreign liabilities has increased in dollar amount, but declined as the share of GDP to 80.3% in 2006. Bank loans has reduced significantly after the 1997 crisis as both official and private sector tried to pay down the external debt. The level seems to stabilize over the past few years. In the meantime, investment in FDI and portfolio equity has expanded rapidly.

Table 3: Thailand's International Investment Position Classified by Business Sector

(Millions of US Dollars)

	Year	Banks	Non-bank Corporations	Government and State Enterprises	Monetary Authorities	Total	
						Amount	% of GDP
Assets	2001	16,546	3,807	923	33,048	54,324	47
	2006	25,628	11,702	2,335	66,985	106,650	51.7
Liabilities	2001	15,160	61,769	20,912	8,325	106,166	91.9
	2006	26,890	119,253	19,468	0	165,611	80.3
Net	2001	1,386	-57,962	-19,989	24,723	-51,842	- 44.9
	2006	-1,262	-107,551	-17,133	66,985	-58,961	- 28.6

Though Thailand's external position remains a net foreign liability position at the aggregate level, the vulnerability to currency exposure has reduced significantly. As percentage of GDP, the net liability has declined from 45% in 2001 to 29% in 2006. Moreover, the increased importance of equity investment by foreigners as opposed to bank

loans has reduced the risk of sudden reversal as foreign investors either in FDI or portfolio equity will have to share both market and currency risks with Thai counterparts. In addition, the gross external debt figures would certainly overstate the extent of currency exposure due to increased hedged position as well as rising share of baht denominated external debt.[9] Thus, Thailand's external position is much less sensitive to exchange rate changes compared to what it was in the past.

However, there are still a number of important distributional issues that warrant further scrutiny. In term of sectoral distribution, there seems to be a clear trend of sectoral mismatch. While most liabilities are accumulated in the non-bank corporation sector, most of the assets, roughly two-thirds of country's foreign assets, are with the central bank in the form of foreign reserves.[10]

Table 4: Thailand's IIP by Debt-Equity Classification[11]

%	Year	Debt	Equity
Assets	2001	94.8	5.2
	2006	91.3	8.7
Liabilities	2001	65.1	34.9
	2006	34.7	65.3

Source: IIP survey (2007)

One of the implications of the sectoral mismatch is the big difference in term of debt-equity profile between Thailand's foreign assets and liabilities. On the liability side, the share of Thai assets held by foreigners in the form of equity has been rising rapidly, reaching 65% of total liability in 2006. On the asset side, however, roughly 93% of foreign assets held by Thai residents is in debt form, largely reflecting the fact that a significant share of assets is under central bank's reserve management, which by law, can only be invested in safe and liquid assets such as government bonds. In addition, the concentration of private assets in fixed income instruments could also be attributed to regulatory restrictions, low risk tolerance on the part of Thai investors as well as lack of investment capability in more complex setting or instruments both in terms of outward FDI and portfolio equity. Compared to debt, return on equity investment may be more volatile, but it is also associated with higher expected return and greater potential for risk sharing in the long run. Thus, the current debt-heavy portfolio allocation by Thai residents is likely to be suboptimal in terms of risk-return profile. Granted, the share of equity will tend to rise along with financial literacy and investment capability of Thai investors. But it is something worth monitoring going forward.

[9] Recent estimate indicates that up to 25% of total external debt is denominated in baht term.

[10] As for the banking sector, the net position is expectedly small due to prudential regulation that limits the open position of foreign currency holdings.

[11] Equity here includes equity FDI, equity portfolio, derivatives instruments and gold holdings by central bank

Flow volatility

Greater degree of financial openness is associated with larger gross flow sizes. There is a positive correlation (0.57) between the average size of non-residents' flow (gross inflow), and by extension, financial openness, and the volatility of gross inflows.

Fact 8:[12] *In post-crisis Emerging Asia, gross outflows are significantly more volatile while gross inflows and net flows are not. Direct investment and portfolio-debt inflows as well as outflows in most categories have become more volatile. FDI is least volatile, followed by portfolio investment and other investment flows in that order. For post-crisis Thailand, all flows appear more volatile, with sizeable increase in gross outflow and net flow volatilities.*

Table 5: Standard deviation of changes in capital flow to GDP for Emerging Asia 9

Emerging Asia (S.D. of change)	Gross inflow		Gross outflow		Net flow	
	1987-1996	2001-2005	1987-1996	2001-2005	1987-1996	2001-2005
Total capital flows	4.50	5.41	2.06	4.18 **	4.36	5.64
Direct investment flows	0.55	1.17 **	0.26	0.44	0.66	1.24 **
Portfolio investment flows	1.20	2.95 *	0.28	1.35 *	1.19	3.04 *
Equity	0.84	1.84	0.05	0.30 *	0.85	1.86
Debt	0.63	1.66 *	0.25	1.13 *	0.61	1.87 **
Other investment flows	4.36	4.12	1.95	4.07 **	4.20	5.22 *

Source: IFS, Author's calculation

* and ** denote significant level of 5% and 10% respectively, indicating whether volatilities during 2001 – 2005 are difference to volatilities during 1987-1996.

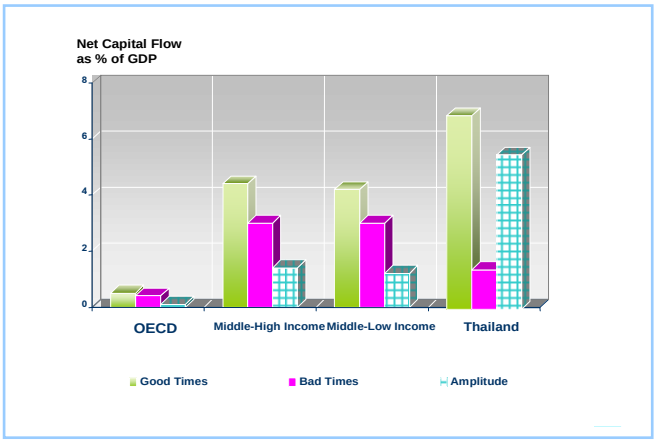
Table 6: Standard deviation of changes in capital flow to GDP for Thailand

Thailand (S.D. Of change)	Gross inflow		Gross outflow		Net flow	
	1987-1996	2001-2005	1987-1996	2001-2005	1987-1996	2001-2005
Total capital flows	5.12	6.39	2.95	5.84	3.60	5.25
Direct investment flows	0.59	1.60	0.34	0.52	0.61	1.47
Portfolio investment flows	2.57	2.43	0.00	1.48	2.57	2.74
Equity	1.85	1.84	0.00	0.21	1.85	1.86
Debt	1.11	2.20	0.00	1.40	1.11	2.60
Other investment flows	4.88	5.98	2.90	6.20	4.02	5.47

Source: IFS, Author's calculation

[12] Using different measures of volatility, such as standard deviation of changes in capital flows or standard deviation of flows, does not change the characterization of flow volatility in Fact 5.

Fact 9: Net capital flows are procyclical; flows are higher during good times and lower during bad time



Source: Kaminsky et. Al. (2004) and IFS data for Thailand

Note: Data starts from 1975 to 2006 for Thailand. Others are from 1960 to 2003.

Picture taken from Disyatat and Chai-anant (2007), presentation at BOT symposium 2007

Extent of financial development

Fact 10: Financial market development in Emerging Asia 9 seems to be slowing down post crisis. Equity market development has picked up speed, while private credit of deposit money banks has declined in importance. Bond market continued to grow steadily

Three financial market development indicators namely stock market capitalization to GDP, bond market capitalization to GDP, private credit by deposit money banks to GDP to reflect development in stock market, bond market, the banking sector, respectively. Their average growth rates are displayed in Table 5.

Table 7: Average size of stock market capitalization (SMKC) to GDP, private credit by deposit money banks to GDP and bond market capitalization (BMKC) to GDP (For EA9 only)

Average size	SMKC/GDP		Private credit/GDP[1/]		BMKC/GDP [2/]	
	85-95	00-05	85-95	00-05	90-95	00-05
Emerging Asia (EA 9)	0.39	0.52	0.39	0.49	0.28	0.46
Thailand	0.58	0.49	0.71	0.79	0.09	0.34

Table 6: Average growth rate stock market capitalization (SMKC) to GDP, private credit by deposit money banks to GDP and bond market capitalization (BMKC) to GDP (For EA9 only)

Average growth rate	SMKC/GDP		Private credit/GDP[1/]		BMKC/GDP [2/]	
	85-95	00-05	85-95	00-05	90-95	00-05
Emerging Asia (EA 9)	43.20	13.1	3.93	-2.18	2.88	2.87
Thailand	35.41	14.12	7.43	-6.43	-2.82	10.67

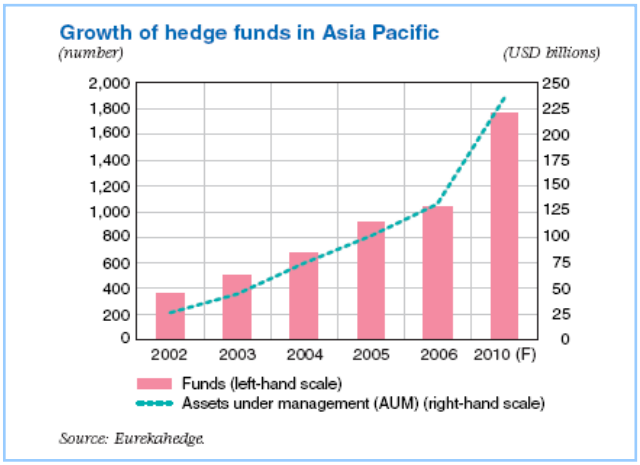
Source: Beck, Demirglic-Kunt, and Levine dataset, Author's calculation [1/] No data available for Taiwan.[2/] No data for Sri Lanka. Excludes pre-crisis Indonesia.

There is improvement toward less concentration of financial risk in the banking system, consistent with higher importance of FDI and equity flows post crisis.

Role of hedge funds in Asia

Fact 11: Asian-focused hedge funds (AHFs) have experienced rapid growth in recent years, both in terms of number of funds and assets under management

Based on industry estimates, the total number of these funds has more than tripled since 2002 to approximately 1,150 at end-2006, with two-thirds based in the region. More than half of the Asian-focused funds have been launched the past two years. Total assets under management (AUM) are reported to be around $132 billion, up fivefold since 2002.



While hedge funds is believed to help increase market liquidity and enforce market efficiency, but they could also pose systemic risks to the stability of financial markets. The concern on systemic risk is that a large number of hedge funds employing similar strategies with high leverage in the markets would increase the volatility of financial markets through momentum trading.13 Fierce competition for hedge funds' business could force some banks and securities firms to relax their risk management measures, allowing hedge funds to increase their leverage and exert an even bigger influence on the volatility and liquidity of the financial markets. Another concern is the lack of good understanding of the risks involved as hedge funds are largely unregulated and there is a general lack of transparency of their investment strategies and portfolio composition.

Recent important developments: The proliferation of bilateral and regional free trade agreement will imply greater economic and financial integration among countries in the region under the legally binding commitment. In the case of Thailand, bilateral FTAs has been signed in recent years with Australia, New Zealand, and Japan. Meanwhile, as a member of ASEAN, Thailand is about to enter into an agreement with member countries to work towards the creation of ASEAN Economic Community (AEC) by 2015. The agreement which includes binding commitment to allow free flows of investment and freer flows of capital will accelerate the speed of regional economic and financial integration. In addition, ASEAN is in the process of negotiating FTAs with a number of trading partners such as Korea, Australia & New Zealand, China and Japan.

Though FTAs are promised to bring long term benefits in terms of increased efficiency and productivity through greater trade and investment, they will also pose constraints on future policy options under the commitment on investment liberalization and investor's protections. While constraint on policy choices is not necessarily a bad thing, the lack of policy flexibility to tackle difficult economic problems that may arise is of a great concern. The added risks here is that under such legal commitments for free flow of investment and capital, countries may not have adequate flexibility to adopt measures to ensure the stability of the economy, financial system and exchange rate for fear that the such measures may violate the rights of investors, thus exposing the country to potential lawsuits from affected investors.

[13] AHFs were reported to be key drivers in the Asian equity sell-off in May-June 2006, and again in February-March 2007. Though the episodes were generally viewed as orderly, a number of hedge funds suffered large losses.

3. A critical review of theory and evidence on financial openness, growth and business fluctuations

In order to evolve a set of general principles to guide capital account liberalization policy for Thailand *going forward*, we require a catalogue of information about the science of the issues concerning financial globalization, economic growth and resiliency with a focus on emerging economies. We present in this section a critical reading of the literature. The central purpose is to identify high-quality empirical and quantitative evidence from which concrete lessons can be drawn. Our emphasis is to find a set of general principles to help guide capital account liberalization for Thailand.

We focus on the following questions:

First, a focus on the growth benefits of international financial integration. Does international financial integration carry growth benefit? Through what channel does international financial integration help foster growth? What types of financial flows carry more benefit? Is there a policy context or environment in which the potential growth benefit of cross-border financial flows can be enhanced?

Then, we focus on the cyclical volatilities of aggregate income and consumption, the latter of which is a good benchmark for international economic risk-sharing. We ask if financial globalization help reduce variability in aggregate consumption? Finally, we explore the link between financial openness and financial stability: Is there a link between financial integration and financial instability? Can it cause crises, and in what context? Are certain types of financial flows better from the perspective of financial stability?

3.1 Summary of findings

A critical reading of several recent reviews of the literature[14] as well as a multitude of recent studies (mostly published during 2000-2007) reveals the following:

On growth benefit of financial openness[15]

Theory

1. Capital accumulation (the direct, investment-induced, channel): Solow-Swan growth theory predicts temporary direct effect on investment and GDP growth from capital account liberalization through permanent reduction in the cost of capital.

2. Allocative efficiency (and, by extension, TFP growth or indirect channel): Financial openness helps enhance allocative efficiency and by extension, total factor productivity (TFP) growth. The theory of TFP predicts that international financial integration promotes competition, which heightens the incentive for domestic firms to adopt efficient technology and make efficient use of existing ones. This translates into higher TFP growth. In response to heightened competition, firms and pro-reform constituents are more likely to influence governments to promote productive public investment and further reduction in costly distortions through institutional and market reforms.

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[14] Kose, Prasad and Terrones (2007), Kose, Prasad, Rogoff and Wei (2006) [henceforth, KPRW]], Henry (2006), Lane and Milesi-Ferretti (2006), Edison, Klein, Ricci, and Slok (2004), Calderon, Loayza, and Schmidt-Hebbel (2004) and KPRW (2004 and 2003).

[15] For the sake of brevity, citations are not available in the summary, but provided in the sections 3.2, 3.3, 3.4, 3.5 and 4 below.

It predicts that rising TFP will lead to continued rise in the marginal product of capital and therefore further incentives to invest in physical and human capital as well as upgrades of institutions—the traditional inputs. Theory is not clear on how long lasting the efficiency-induced growth benefit can last.

Empirical evidence on growth benefits of financial openness

1. Evidence of growth benefits from financial openness based on with purely reduced-form cross-section regressions has been inconclusive. Results on growth benefits being conditional on differences in institutional quality are also inconclusive.[16]

Evidence from aggregate-data studies using de facto measures of financial integration coupled with data with longer time span and interactive dummies accounting for supportive conditions, such as good policies or institutions, do show positive temporary effect on growth.

2. There is robust evidence linking the equity market aspect of capital account liberalization with temporary investment boom and growth improvement.

2.1 Equity market liberalization reduces the cost of capital. These one-time impacts differ across countries.

2.2 Lower cost of capital comes from lower risk-free rate and lower equity market risk premium. There is evidence of risk-sharing in the content of prices <u>at the stock market level</u>.

3. Capital stock grows faster after equity market liberalization. The effect lasts around 5 years. Liberalization has statistically and economically significant impact on stock prices and dividend yields, with temporary impact on investment and GDP per capita growth, even after concurrent economic reforms are controlled for.

Evidence of efficiency-induced growth from micro data

1. There is some evidence of international financial risk-sharing (or efficiency) benefit of equity market liberalization (inflows) at the firm (stock price) level. The difference in the betas (firm-specific risk) is positively and significantly related to stock price change during liberalization.

2. There is some evidence that liberalization-induced changes in stock prices translate into investment growth benefit through firms' investment decisions.

2.1 Lower risk-free interest rate post-liberalization is associated with rising average investment rate at the firm level in various emerging markets. Importantly, <u>part</u> of the decline in listed firms' costs of capital can be attributed to lower firm-specific risk premia (beta's) during liberalization.

2.2 There is little empirical support for the view that capital inflows are allocated efficiently; i.e., thin evidence that firms with extra reduction in risk premia do adopt more projects that were too risky in the absence of international risk sharing.

By extension, the empirical link between financial openness and TFP growth has been weak. This hypothesis needs more empirical attention.

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[16] We recommend that policymakers give less weight to studies with purely reduced-form cross-section regressions. The methodology has a number of conceptual flaws that cannot easily be overcome by better datasets or econometric techniques.

3. We note that the literature has so far focused only on liberalization of capital inflows. The key benefits from risk-sharing may come from liberalization of outflows, as citizens can unload domestic systematic risk abroad. Despite the prediction that much of the benefit should come from outflows, we have not found empirical studies on risk-sharing benefit from outflow.

Evidence at the level of national equity portfolios of advanced economies shows significant and slightly reduced "equity home bias" over the past 10 years, even as they could get a better return with reduced portfolio risk through higher degree of cross-market diversification.

Evidence on growth benefit of debt flows

1. There is relatively little productive research and evidence supporting the idea of growth benefit of debt flows.

2. Lack of empirical evidence of their growth benefits means we do not know much about the issue. Arbitrary controls on short-term debt flows may hurt growth in economies that cannot attract equity or FDI flows.

Evidence on foreign direct investment (FDI) flows

1. Industry and firm-level data show that FDI can generate productivity spillovers through technological adoption, skill acquisition, and efficient use of existing technology and resources (through heightened competition and export activities).

Specifically, FDI carries positive vertical (cross-sector, backward linkages) technological spillover effects. Evidence of horizontal (same-sector) spillovers is sparse and inconclusive.

2. Aggregate data evidence points to strong linkages between FDI and trade flows. Case studies also show that FDI yields most growth benefit with minimal trade barriers and protectionist environment.

On output, consumption volatility and consumption risk sharing

Theory, quantitative results and empirical evidence

1. Theory has no obvious prediction for the collective effects of financial integration on output volatility. But there are indirect lessons.

2. Business cycle theory focuses on various types of shocks—technology, monetary and credit—and their propagation mechanisms.. Certain cross-border flows (FDI and equity, for example) carry productivity benefits. Flows and financial conditions tend to be procyclical. They affect firm and household balance sheets.

2.1 Dynamic stochastic general equilibrium (DSGE) models with monopolistic competitive setup and reasonable parametrization (with US data) predicts, with quantitative results, that small shocks can be amplified enough to affect output volatility through countercyclical markup over marginal cost when monopolistic arrangement is prevalent. Models of this class also predict that lower monopoly power, on average, implies milder propagation of shocks and smoother business fluctuation.

2.2 Fewer frictions—more flexible prices and wages, transaction cost and effort toward lowering financial monitoring and screening costs—should dampen the amplification (financial accelerator) of technology, monetary or credit shock to the real economy.

3. Intertemporal optimization models uniformly predict that risk-averse consumers (and economies), desiring smooth consumption across time and states, should find insurance

against temporary idiosyncratic risks to income welfare-enhancing. Well-developed financial markets can offer risk-sharing tools.

4. The key theoretical predictions of complete market (perfect risk sharing) are rejected empirically.

5. Incomplete market models of the debt-constraint (DCM) type slightly under-predict the consumption response to income shocks in the (US) data. DCMs limit risk sharing through endogenous restriction of quantity or class of assets that can be traded, even though state-contingent contracts are available to all agents. They point to a possibility that risk sharing can be improved by access to better insurance.

6. International risk sharing has increased for advanced countries over the past two decades, along with financial integration. But emerging markets and developing economies have yet to gain more risk-sharing benefits.

7. Emerging market business cycles, prone to trend growth shocks and consequently larger fluctuation in consumption relative to income, may have more potential benefit than advanced economies from better risk-sharing through financial openness.

8. The hypothesis that emerging markets have not attained clear risk-sharing benefits because they may not be getting the "right" types of flows is not borne out in the data.

On crises as special cases of volatility

1. At the aggregate (data) level, there is little evidence to support the view that capital account liberalization by itself increases countries' vulnerabilities to extreme episodes of economic instability, both from probability and output cost aspects.

2. Capital account liberalization interacting with non-credible fixed exchange rate regime could be a combination for a crisis. Financially integrated countries with sound macroeconomic policy, well-developed and regulated financial systems are less likely to face a crisis.

On capital control and its effectiveness

1. Capital controls on inflows seem to make monetary policy (interest rate setting) more independent, alter composition of capital flows, but not reduce the volume of net flows, and so affecting the current account balance or the real exchange rate.

2. There is little systematic evidence of success or effectiveness in controls on outflows outside of the brief Malaysian (1998-9) experience.

3. Controls on in- or outflows need not always be effective. On inflows, the more a country depends on short-term flows to finance its current account, the less effective are the controls.

4. Response at firm's level to capital controls shows efficiency loss as it increases cost and impediments for small domestic firms to raise capital. Chilean's El Encaje increases the sensitivity of investment to cash flow for small, publicly traded domestic firms, but does not affect large firms.

Research methodologies that promise scientific progress on the issue

The literature has noted prevalent simultaneity and policy endogeneity issues in identifying causal relationships between growth, stability and their determinants. General equilibrium models built under the instruction from growth and business cycle theory, extended into open-economy setting, working with both macro and micro data, should have the best chance at discovering and understanding systematically the multi-way interaction between financial

globalization, financial development, institution and growth-volatility. Research in the field of financial globalization using the dynamic stochastic general equilibrium models is getting off the ground. The profession will likely benefit more from this approach than from purely regression-based analysis.

A note on selectivity and objectivity

Even in the perfect world of empiricism (in which simultaneity or policy endogeneity is well controlled for), testing the two channels of growth benefits requires different econometric approaches. To evaluate the empirical validity of different views of capital account liberalization, we judge the studies we and others review by 1. their empirical models' consistency with growth and business cycle theory, 2. econometric rigor and the statistical power of the tests employed and 3 robustness of empirical results.

3.2 The link between international financial integration and economic growth

We start by reviewing theoretical prediction of financial openness and growth. Then we review the evidence, from aggregate national data to market-level data and finally to firm-level data.

Theory[17]

Growth theory and models, which are tools constructed under instruction from theory, help provide a reasonable description of the world, *predicts that there are 2 general channels* through which capital account liberalization affects growth:

1. Capital accumulation (the direct channel): Solow-Swan growth theory predicts temporary direct growth effect of capital account liberalization.[18]

In a nutshell, intertemporal optimality in growth models with uncertainty requires that investment takes place until expected marginal product of capital equals cost of capital. The cost of capital is the sum of two parts, domestic real interest rate (plus depreciation) and the risk premium to compensate for uncertain return to capital.

Liberalization effectively links domestic markets to the world market, generally bringing domestic interest rates down to world levels and lower the (asset) risk premia as well.[19] As a result, theory predicts that liberalization should reduce the cost of capital permanently, spur investment temporarily to equate the marginal product of capital to the lower cost of capital. Firms raise capital stock per effective labor unit. Output per capita rises to a new steady state. Theory predicts the investment-induced direct growth increase to be temporary.

2. Allocative efficiency and, by extension, total factor productivity growth channel (or the indirect "collateral benefit" channel[20]): That TFP is an important, if not most important, source of long-term growth is well established in recent cross-country growth accounting

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[17] The theoretical growth literature spans a half-century from the deterministic growth theory of Solow (1957) to "growth under uncertainty" of Brock and Mirman (1972), to theories of international income differences of Hall and Jones (1999) and Parente and Prescott (1999); the last one is also a theory of total factor of productivity.

[18] Total factor productivity develops exogenously from the process of financial liberalization *by assumption*.

[19] The rate of depreciation rate is a structural variable. It does not vary significantly over time.

[20] KPRW (2006) is the first to coin this term.

work (Easterly and Levine, 2002) and the theory for international income differences (Hall and Jones, 1999; Parente and Prescott, 1999).

Capital flows that accompany financial globalization may bring along extra benefits, such as improvement of governance and the rule of law (institutions), development of the financial sector, responsible macroeconomic policies, etc. A working hypothesis for this channel is that the collateral benefits help enhance allocative efficiency and by extension, total factor productivity (TFP) growth.

This is consistent with the working theory of TFP. International financial integration promotes competition, which heightens both the incentive and the pressure for domestic firms to adopt efficient technology and cut cost. Firms do that through adoption of superior technology and efficient use of existing ones. This translates into higher TFP growth (Parente and Prescott, 1999). In response to heightened competition, (less monopolistic) firms and other pro-reform constituents are also more likely to lobby their governments to promote productive public investment (in education and physical infrastructure) and further reduction in costly distortions through institutional and market reforms in profitable trade and investment (Mishkin, 2007).

By itself, higher TFP growth will result in higher GDP-per-capita growth. But theory is not clear on how long lasting the "collateral" growth benefit of financial liberalization will be. It predicts that rising TFP will lead to continued rise in the marginal product of capital and therefore further incentives to invest in physical and human capital as well as upgrades of institutions—the traditional direct input channels (Hall and Jones, 1999; Parente and Prescott, 1999). This is why the indirect channel is proposed to be the main growth-benefit channel (KPRW, 2006).

The theory of TFP is most pertinent in this case because it points to a way countries can better utilize capital flows to promote trend growth (first-order importance over second-order volatility or cycle) more fully: Move toward an arrangement that promotes competition.

Empirical evidence from cross-country regression studies using aggregate data

In summary, *we recommend that policymakers give less weight to studies with purely reduced-form cross-section regressions and with even lesser weight to those with mixed sampling. Most such studies show no evidence of growth benefit and may even reveal negative correlation between financial integration and growth. Only a few show positive temporary growth benefit.*[21]

1. Evidence of growth benefits from financial openness based on cross-country regression framework using aggregate data has been inconclusive. It also has a number of conceptual flaws that cannot easily be overcome by better datasets or econometric techniques.

2. The result on growth benefits of financial liberalization conditional on differences in institutional quality is inconclusive at best.

[21] Henry (2006) goes further to suggest that purely cross-sectional approach to empirical validation of growth theory's implication for capital account liberalization is inadequate, misses the point and should be rejected.

3. Nevertheless, evidence from aggregate-data studies using de facto measures of financial integration[22] coupled with data with longer time span and interactive dummies accounting for supportive conditions, such as good policies or institutions, do show positive temporary effect on growth.

We devote extra space here to analyzing studies that based their results on cross-section regressions and use aggregate (macroeconomic) data because they form the majority of the literature on financial globalization. Their results, though flawed, have also calcified into "conventional wisdom".

Problem with empirical methodology: Theory's *temporary* (direct) growth-benefit prediction is of a panel or time-series nature. Liberalization process is generally gradual. But most studies use the approach of cross-section regression analysis. These regressions (with or without controls) effectively identify impact of *sudden* capital account opening exclusively through cross-country variation in *average* growth rates over time and fraction of years the country is financially open. The estimation procedure fundamentally tests whether countries with *open* capital accounts have higher *long-run* growth rates than countries with *closed* capital account.[23]

Even though theory predicts temporary direct growth benefit (and is unclear about the time period TFP benefit will play out) there is no role for time-series, within-country intertemporal growth variation in these regressions to test for these growth effects.

Studies of this type, in effect, measure *permanent* growth effect on investment or GDP. This type of literature generally reports "no growth benefit, which we should, from the best of them, read as "no permanent growth benefit." But as we shall see, there are 3 key empirical problems with this literature that render even the "no permanent growth benefit" interpretation suspect. The literature is plagued by severe measurement error, inappropriate sampling choices and treatment of the liberalization process as a sudden one-shot event.

1. *Measurement error*. Measuring the degree of capital account restriction (or financial openness) is exceedingly difficult. At issue is how well these indicators capture the meaning of liberalization.

Indeed, measurement error in financial openness indicators is a key factor that reduces statistical power of regression-based tests in general. The financial openness indices used in the regression literature prior to 2004 are mostly of the *de jure* type, i.e. they are based on the IMF's judgment reported on Line E2 of the *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER) (IMF, AREAER; and Henry, 2006). These indices are usually based on fractions of years a country has opened its capital account or SHARE (of years open). Line E2 provides no indication of what had been liberalized, so the derived financial openness index carries no information about what drives variation in SHARE. For example, the regression modeler has no way of telling from Line E2 whether the degree of openness comes from liberalization of inflows, outflows or whether it is specific to debt

[22] As opposed to the "de jure" or restriction-based type, which is based on the IMF's judgment reported on Line E2 of the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).

[23] To make the case for rejection of cross-section regression analysis, we review a number of original articles reviewed by KPRW (2003 and 2006), Edison, Klein, Ricci, and Slok (2004), Calderon, Loayza, and Schmidt-Hebbel (2004).

securities, equity securities or FDI. In fact, that researcher has no way of telling what changes the IMF's judgment regarding the degree of a country's capital account openness.

As a result, the *de jure* measurement's usefulness in the construction of a well-articulated model for empirical research is highly limited. Even the widely used and cited Chinn-Ito measure of financial openness falls into this category.[24] For instance, the degree of Thailand's financial openness, recorded in the Chinn-Ito dataset at -0.06 throughout during 1970-2005, reflects no change in the actual financial openness of the Thai economy over the past 36 years. If a researcher used this measure in a regression, she would find no correlation between financial openness and Thailand's GDP-per-capita growth.

2. Many of the regression-based studies use *mixed samples of advanced and developing economies*. One the one hand, increasing the sample size helps improve statistical power of the tests. But there are fundamental differences between rich and poor countries. Specifically, rich and poor countries implement liberalization at different time periods and the growth effects may materialize during different years or even decades. So the choice of time period is especially important for mixed-sample regression analyses.[25]

In fact, the measurement nature of SHARE can lead to "negative growth effect" of capital account liberalization in multiple country sampling as the following example illustrates. Suppose a researcher wants to test for the direct channel, the type on which studies tend to focus. She should control for any TFP benefit from international financial integration. That is, in this hypothetical example it is equivalent to assuming that two countries, "Rich" and "Poor", have similar TFP growth over the period of 20 years.[26] Suppose country Poor is closed for the first 10 years and open for the next 10 years. "Poor's" SHARE = 0.5. Suppose country Rich is open for 20 years; so, "Rich's" SHARE = 1. Theory suggests that "Poor" face lower world interest rate after liberalization over the latter 10 years while "Rich" is already at world interest rate. Over the span of 20 years, the direct-growth channel predicts that "Poor" will grow faster than "Rich" in the transition to reach a higher steady-state output level. A researcher regressing growth rates on SHARE would observe that faster growth correlates with lower SHARE. From results we find in the literature, her inference is likely to be "capital account liberalization has negative effect on growth," when in fact cross-sectional regression using mixed samples has no power to detect the effect. The signal-to-noise ratio is too low, i.e., true variation in the data is too small relative to the noise. The researcher ends up with simply too much uncertainty surrounding the estimates to draw a useful inference.

3. Mistreatment of the liberalization process: In most regression studies, there is no consideration that the process of financial opening is mostly incremental. Most countries take several steps to open its stock market completely. Looking exclusively at the price response to its initial opening may understate the total financial impact of the liberalization process. Taking this problem into account, the result should tend toward a relatively higher stock

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[24] Chinn and Ito's (2005) measure for financial openness is constructed from IMF's AREAER. It can be downloaded from www.ssc.wisc.edu/~mchinn/Readme_kaopen2005.pdf and www.ssc.wisc.edu/~mchinn/kaopen_2005.xls.

[25] For irrelevant or inappropriate time period using mixed sample, Rodrik (1998), is a prime example. Rodrik's (1988) sample ends in 1989, which means the impacts from the 1980s debt crises receive disproportionately large weight in that short dataset. That the process of financial globalization only started in the 1980s should also make this sample unrepresentative as well.

[26] We expand on an example, the original version of which should be attributed to Henry (2006).

market price increase or sharper reduction in the cost of capital due to capital account liberalization. (Stulz, 1999)

Regression analysis in general also suffers from another important shortcoming. It is highly difficult to control for any growth effect that incurs from other domestic reform measures, which usually take place in conjunction with capital account liberalization. This issue as well as policy endogeneity (or reverse causality) are the banes of most regression-based studies.

Is the financial openness and growth link conditional?

Earlier growth-regression studies show no progress in finding "unconditional" results. This leads to a debate on whether growth benefits are conditional on the strength of a country's institutions. A number of later regression-based studies would then show *little* evidence to suggest that capital account liberalization had a larger impact in high and middle-income countries than in poor developing ones. (Arteta, Eichengreen and Wyplosz, 2001; and Kraay, 1998). So, it is fair to say that *no significant results* on difference in institutional quality have so far emerged from cross-sectional growth regression literature.[27]

We turn to studies that focus on behavior of real variables before and after the removal of specific capital account restrictions. We focus our search on the so-called policy-experiment approach.

Empirical evidence from aggregate equity market data

Published work in the area of policy experiments focuses on the removal of restrictions on portfolio equity *inflows* or equity market liberalization.

Regarding outflows, a central implication of finance theory is that investors should hold a large fraction of their wealth in foreign asset markets to fully utilize these markets in sharing non-diversifiable labor income risk. Evidence at the level of national equity portfolios of advanced economies shows significant and slightly reduced "equity home bias" over the past 10 years, even as they could get a better return with reduced portfolio risk through higher degree of cross-market diversification.[28]

We make a note here that there is not much research being done, and so no evidence, on real variables' responses to relaxation of outflow restrictions. Therefore, this subsection is *entirely* about evidence on inflows liberalization.

Theory

Stock prices and the cost of capital move inversely. Standard asset pricing theory predicts that there should be a *one-time* revaluation of the stock market post liberalization.

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[27] The failure is *not* due to researchers' inability to condition their tests on level of institutional development. It also does not mean that institutions do not matter. The problem seems to lie with the limits of cross-country regressions using aggregate data, which are not appropriate to test this hypothesis.

[28] This is called the international diversification puzzle. The reason why international diversification is low is that terms of trade movements provide considerable insurance against country specific shocks and labor income risk (Cole and Obstfeld 1991, Acemoglu and Ventura, 2002, Pavlova and Rigobon, 2003; and Heathcoate and Perri, 2004). Such is an important risk sharing benefit from trade integration.

Theoretically, expected marginal product of capital or (equity) cost of capital for the whole market depends on 2 components: 1. domestic risk-free real interest rate (plus depreciation) and 2. the equity (market or aggregate) risk premium (over the risk-free bond rate). After liberalization, *both* components are predicted to change.[29] Before liberalization the first component is equal to domestic real interest rate (plus depreciation) whereas immediately after liberalization it becomes world real interest rate (plus the same depreciation). The second component, before liberalization, is equal to the price of risk times the risk level, which is the variance of the local *market* return. After liberalization, the second component becomes the price of risk times the risk level, now measured by the covariance of the local market with the rest of the world.

Evidence

The "aggregate" policy-experiment or "before-and-after" approach studies the entire market (as opposed to individual firms—see firm-level approach below). These studies avoid measurement error by narrowing the scope of the search to stock market liberalization as discrete removals of barriers.[30]

The strength of the approach is as follows: 1. The narrowness of the capital account liberalization indicator reduces measurement error. It helps improve statistical power of regression-based test in the sense of higher signal-to-noise ratio.[31] 2. The approach also helps remove theoretical ambiguity around its prediction. Unlike with broad indicators like the fractions of years open (SHARE), which carries no information about the direction or nature of flows that have been liberalized, this narrow indicator focuses on *stock market inflow* liberalization and impact on *listed firms*.

The panel-regression empirical approach used is superior to purely cross-sectional analysis. It starts by asking the theoretically-consistent question, which is: Do we see a *permanent* fall in the cost of capital with *temporary* increase in investment and growth post liberalization in *developing* countries?

The evidence from (aggregate data) policy-experiment literature can be summarized as follows:

1. There is robust evidence linking the equity market aspect of capital account liberalization with temporary investment boom and growth improvement.

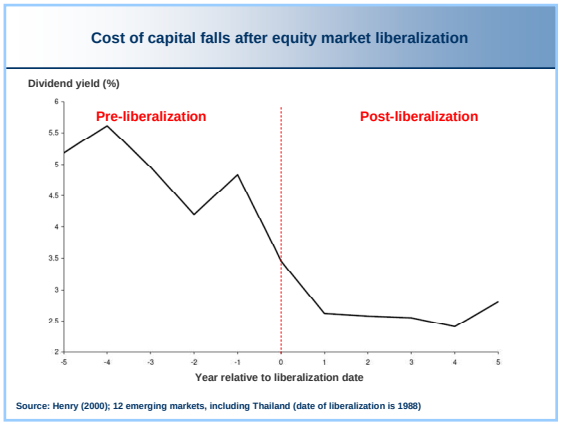
2. There is evidence of risk-sharing in the content of prices <u>at the stock market level</u>. Evidence shows that world real interest rate is historically lower than domestic emerging market interest rates on average. Emerging stock markets' historical returns show that the variance

[29] Note that the rate of depreciation usually does not vary, even over a long period of time in most countries.

[30] Liberalization dates are identified by 1. Official dates of the liberalization policy decree. 2. Dates of closed-ended country funds setup that usually coincides with or slightly predates permission for foreigners to buy locally listed shares. As the stock market is forward looking, market can learn of impending liberalization before the official decree comes out. 3. Identifying a large jump in the International Finance Corporation's Investability Index near the date of the official liberalization decree. Option 2 is the modal indicator in the literature.

[31] True variation in the data becomes larger relative to noise.

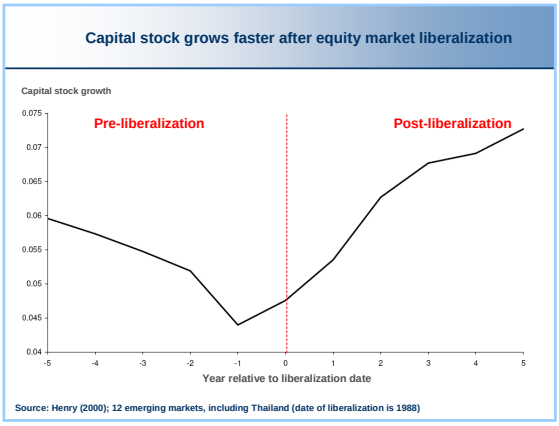
of the domestic market is indeed greater than its covariance with the world.[32] *(Stulz, 1999) Equity market liberalization reduces the cost of capital. The one-time impacts differ across countries.*



In other words, investors bear less (systematic) risk holding emerging markets' portfolios after liberalization. There is a significant one-time revaluation in stock prices, in real dollar terms, in the average country and an average fall in dividend yield (Henry, 2000).[33]

Does the fall in the cost of capital and revaluation in stock prices translate into real investment increase? Panel regression studies—by design, exploiting variation in within-country growth rate over time—measure temporary abnormal growth associated with liberalization episodes. This finding supports the theoretical prediction.

3. Capital stock grows faster after equity market l iberalization. The abnormally faster growth is temporary (lasting 5 years).[34] *Evidence shows that liberalization has statistically and economically significant impact on stock prices and dividend yields. There is temporary impact on investment and GDP per capita growth, even after the impact of other concurrent economic reforms—macroeconomic stabilization, trade liberalization and privatization—are controlled for* (See e.g. Bekaert and Harvey, 2000; Bekaert, Harvey and Lundblad, 2005).



There are some limitations to this approach: As with the cross-section analyses we have deemphasized earlier, there is no consideration that the process of financial opening is mostly incremental. Taking this problem into account, the results should also tend toward a relatively higher stock market price increase or sharper reduction in the cost of capital. This observation lends credence to the fact that the seemingly whopping 30 per cent rise in stock prices in real dollar terms, which is estimated to be related to liberalization, may be too small (or biased downward).

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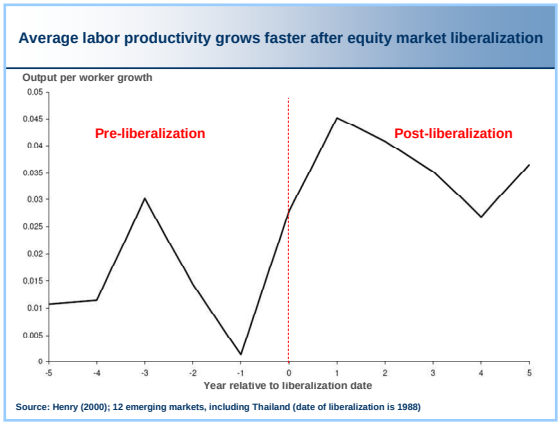
[32] Datastream weekly indices in dollars from 9/30/88 to 10/28/98 or since they became available show positive difference between the variance of the return of Thailand's stock market portfolio minus its covariance with the world market portfolio. Condition has to be positive for the country to have a lower cost of capital in world markets rather than in autarky.

[33] Henry (2000) reports a jump of 26 percent in stock prices in real dollar terms in an average country post-liberalization in 12 emerging markets. Thailand, during 1986-91, is included in the sample. Liberalization dates used for Thailand are January 1988 (the date of country fund, *Siam Fund*, setup) or April 1988 (announcement date).

[34] In fact, capital stock grows faster in the 5 years post-liberalization in 18 countries to a five-year average of 6.5 per cent from 5.4 per cent. (Henry, 2003)

4. The impact on GDP growth from stock market liberalization is quite high.[35] *How this comes about at the rate it impacts capital stock directly, unless there is TFP growth impact (the indirect channel) is not yet understood through aggregate market data.*



5. Aggregate policy experiment studies do not yield to a direct causal interpretation. There is serious potential endogeneity problem that is difficult to control for. The large and significant estimated correlations between liberalization and real variables are likely to be biased upward.

A critical reader of this literature should come away from it with a note of caution in regard to the *direct* growth benefits implied. While the stock price impact maybe somewhat understated (as suggested above), the growth benefit result reported in the policy-experiment literature could perhaps be overstated somewhat for the following reasons:

1. Not many developing countries have stock markets, published reliable data and liberalize. As a result, the literature is faced with the problem of small sample size, which reduces power of a statistical test to be precise.

2. The results attribute economy-wide investment boom and growth to a policy change that affects directly only firms that are listed on the local stock market. The relatively small size of country funds compared to the liberalizing country's capital stock should give caution to too much *direct* interpretation. Should policymakers place much confidence in the result?

The result may, however, imply that this aspect of capital account liberalization may act either as a catalyst to investment (through an investment climate boost) or an indicator of a larger move toward open capital markets or imports of capital goods.

3. How does this high GDP growth impact come about at the rate it impacts capital stock directly, given the capital share of no more than one-third? This accounting implies a possibility of an indirect TFP growth impact. But the process is not yet understood within the policy-experiment literature.

For instance, we have seen that aggregate market data allow for tests of whether capital flows efficiently between countries (they do, investment rises until marginal product of capital equals cost of capital). But they do not allow researchers to disentangle the growth impact of intra-country allocative efficiency of capital inflows, which should reflect in the reduction in equity (risk) premia, from that of lower cost of capital. The sample size is too small to provide sufficient power to disentangle the effects, as both channels have similar directional effects on investment changes. To test whether countries that liberalize actually allocate capital inflows efficiently and benefit from it (the productivity channel) requires firm-level data.

Evidence of efficiency-induced growth from micro data

Theory

With firm-level data, researchers can test to see if there is financial risk-sharing benefit from financial integration. Intra-economy efficiency of capital allocation is related to financial risk

[35] The average impact across the literature is around 1% per year increase.

sharing[36], or reduction in firm-level equity risk premium, through this key idea: Stock price revaluation at the time of liberalization reflects to some extent the impact of liberalization on firm's fundamentals. If intra-economy allocation of capital (inflows) is efficient, then capital inflows should reflect firms' fundamentals and go to the highest expected return (fundamentals) sectors. Firms with higher stock price increase face lower costs of capital than the average firms.[37] *The extra reduction in the firm's risk premium below market risk premium as a result of capital inflow reflects the benefit of international financial risk-sharing.* The firm's own investment decision will also reflect this lower cost of capital. Individual firms, *allocating capital efficiently*, will invest until the expected marginal product of its capital stock is equal to the (lower) cost of capital. Hence, theory predicts that the time paths of individual firms' stock prices, reflecting firms' fundamentals, should have information content of intra-economy capital inflow allocative efficiency and international financial risk-sharing.

Asset pricing theory predicts that liberalization changes the source of systematic risk for pricing a firm's shares from the local market to the world stock market. The "before-and-after" change in the true cost of capital under uncertainty depends on the change in the risk-free rate (a common change across firms) and the firm-specific change in risk premium (*or in asset pricing theory's jargon, the difference in the firms' betas*).[38]

To find out if capital (flow) is allocated efficiently, there are 2 steps to the empirical strategy.

1. *Efficiency at the level of asset pricing*: The empirical strategy taken in this literature is to test if the *firm-specific* change in the risk premium—the change in the firm's beta—is significantly positive in explaining the change in the cost of capital.

2. *Efficiency at the level of real resource allocation* (firm-level investment decision). There are 2 testable predictions:

2.1 The first prediction is that common shock to the cost of capital, which results in the fall of the domestic risk-free real interest rate, should cause average investment rate of all firms to rise.

2.2 The second prediction is that, given the common shock, the change in the firm-specific beta (or shock) implies that firms whose equity premia (and cost of capital) fall should invest even more than firms whose premia (and cost of capital) rise.

Evidence

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[36] Risk sharing in this section has to do with portfolio diversification through international financial markets. Risk is measured from the point of view of financial return on equity, or by extension, on business investment and production. Financial returns can be linked to consumption in typical consumption-based models of asset pricing. In the interest of brevity, we do not elaborate on this linkage here. We explore consumption risk sharing more extensively in the next section.

[37] Recall Gordon's formula: $D/P = \square - g^e$, or dividend yield is approximately equal to equity cost of capital minus expected dividend growth. Under the assumption that liberalization does not change the firm's expected future cash flow, the firm's stock price can be used to proxy (inversely) for its cost of capital. This is a rather strong assumption, but every study uses it.

[38] Note: Beta is the firm-specific equity premium. It depends on the source of systematic risk (country or global). It is the difference between the covariance of the firm's stock return with local economy—pre-liberalization—and the covariance of its return with the world economy—post-liberalization.

1. There is some evidence of international financial risk-sharing (or indirect, efficiency) benefit of equity market liberalization at the firm stock price level. The difference in the betas (firm-specific risk) is positively and significantly related to stock price change during liberalization.[39]

2. There is some evidence that liberalization-induced changes in stock prices translate into investment growth benefit through firms' investment decision.

2.1 Empirical evidence shows that lower risk-free interest rate post-liberalization is associated with rising average investment rate at the firm level in various emerging markets. Importantly, part of the decline in local listed firms' costs of capital, mirroring rising stock prices, can be attributed to lower firm-specific risk premia during liberalization.

The interpretation of the first prediction—the common shock to the cost of capital via lower risk-free rate (in 2.1) boosting average firm's investment—is quite strong and should be more credible than that made on aggregate investment rate by aggregate stock market data. This is so because stock market liberalization most directly affects investment decisions of listed firms and this result comes from firm-level data.

2.2 There is little empirical support for the view of that capital inflows are allocated efficiently. Flows, if intermediated efficiently, should in theory seek sectors with highest expected return. Yet there is little empirical success to confirm that firms with extra reduction in risk premia do adopt more projects that were too risky in the absence of international risk sharing. (Henry, 2006)

By extension of allocative efficiency to TFP gains, the empirical link between financial openness and TFP growth has so far been thin. This hypothesis needs more empirical attention (Mitton, 2006; and Ariyapruchaya et al., 2006).

One of the most promising research papers in this area is Mitton (2006), which uses firm-specific liberalization dates to account for the gradual nature of liberalization process and mitigate the potential contamination by other domestic reform programs. It finds that firms that are open to foreign investors improve on sales growth, debt-equity and other leverage ratios, investment *and* efficiency. Ariyapruchaya et al (2006) finds similar result on improved firm-level TFP in Thailand from openness to foreign investors.

3. We note that the literature has so far focused only on liberalization of capital inflows. The key benefits from risk-sharing may come from liberalization of outflows, as citizens can unload domestic systematic risk abroad. Despite the prediction that much of the benefit should come from outflows, we have not found empirical studies on risk-sharing benefit from outflow.[40]

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[39] Chari and Henry (2004), studying eleven emerging countries, and Patro and Wald (2005), which uses a sample of 430 firms in 18 countries, show that firms' betas (or change in firm-specific risk premium) account for 1/3 of the revaluation. Dvorak and Podpiera (2005) find similar results for 74 firms in 8 Central and Eastern European countries during their accession to the EU in 2001. The beta difference explains 22 percent of the revaluation.

[40] Expected benefits include liberalization-induced welfare gains from consumption and income volatility reduction, which we review below.

Evidence on growth benefit of debt flows

Theory

Important benefits of foreign debt flows have to do with the fact that foreign currency denominated public debt or "real debt" can act as *a commitment device* to foster good macroeconomic policies. Unlike the case of domestic currency denominated public debt or "nominal debt," the choice and temptation to inflate away is no longer available. The only choice left facing the government is the painful route of default. This constraint on the government solvency condition helps increase the incentive to do well while lessens the incentive to inflate (see Cochrane (2003) for insights and review of the literature, and see Woodford, 2001).

Moreover, banks in some countries have little choice but to generate liquidity through short-term external debt to finance illiquid projects in a high systematic risk or low-quality investment environment (Diamond and Rajan, 2001).

On the other hand, theory suggests that debt does not ameliorate agency problems. Government's implicit guarantee of debt also generates moral hazard. So the risk-sharing benefits of debt flows are not clear.

Evidence

In summary, there is relatively little productive research and evidence supporting the idea of growth benefit of debt flows.

There are two large types of debt: portfolio debt and bank loans. The literature converges on bank loans as the more risky type. Lack of empirical evidence of their growth benefits, however, does not automatically mean there is none. It means we do not know much about the issue.

In fact, automatic or arbitrary controls on short-term debt flows may hurt growth in economies that cannot attract equity or FDI type flows.

Low creditworthiness and illiquidity of the investment projects in some countries may indirectly cause debt crises through the need of external liquid short-term debt financing. Because it had been the prevalent type of flows, it was inextricably linked to inefficient allocation of resources through ill-supervised domestic banks. For countries that are liquidity abundant, and operate under flexible exchange rate, the risk to real outcomes posed by short-term debt accumulation should already be mitigated in normal time. The priority is quite clear in the literature, despite or because of minimal evidence of growth benefit of debt flows, that this type of financial flow should be least favored by developing countries.

Evidence on foreign direct investment (FDI) flows

FDI, in theory, brings not only investment money, but also technological and managerial advancement plus spillovers onto the local chain of production. Nevertheless, despite the received wisdom and widespread evidence of countries' competition for direct investment flows, it is not easy to find conclusive evidence linking FDI to growth in the cross-section regression-based work.

A large number of studies employ cross-section regression methods without adequate control for simultaneity problem interpret the results as "FDI yields productivity benefits." (see KPRW, 2006 for references). Usually, the problem is uniform: These papers generally tease causality out of the positive association between FDI located in certain sector and that sector's productivity growth, while they cannot account for productivity differential across

sectors. Foreign firms may locate in high-productivity sectors by choice. As a result, the inference and interpretation from cross-section regression results are sketchy.

Recent empirical work, however, has had more success in finding empirical evidence of growth benefit of FDI through nuanced interaction with the initial stock of human capital, financial sector development and degree of trade openness.[41]

In summary,

1 Evidence based on industry and firm-level data show that FDI can generate productivity spillovers through various channels, most notably through technological and process adoption or imitation, skill acquisition, and efficient use of existing technology and resources (through heightened competition and export activities).

Specifically, FDI carries positive economically meaningful vertical (cross-sector) technological spillover effects. Evidence of horizontal spillovers—same-sector spillover from foreign to domestic firms—is sparse and inconclusive (Javorcik, 2004[42]). The growth benefits are especially large in sectors that have "backward linkages" to other sectors of the economy. These are likely to be manufacturing rather than primary sectors because of the links to domestic intermediate sectors. (Aykut and Sayek, 2005)

2. Recent empirical evidence from aggregate data points to strong linkages between FDI and trade flows. Joint changes in FDI and trade flows are correlated with economic growth (Melitz, 2005). Several case studies also show that FDI yields most growth benefit in an environment with minimal trade barriers and protectionist policies. (Moran, 2005).

These results are useful for policy prioritization, as it sets out to show how a country can better utilize the potential benefits of FDI flows.

Implication for policy from evidence on growth-benefits

Capital account liberalization can have direct growth benefit. That type of benefit may be temporary. But the key channel of growth benefits from financial integration is likely to be the (indirect) TFP channel promises. Policy that promotes TFP are policies that promote economic competition and lower distortions. These policies should allow countries to reap more benefits from inflows, as they are likely to be more efficiently allocated.

Moreover, the environment of minimal trade barriers and protectionism can enhance the benefits of FDI flows. A country that promotes trade openness should gain more from financial flows.

Outflows also promise much financial risk-sharing benefits. Effort to reduce home bias in investment, through lower transaction costs, upgrades of information quality as well as knowledge and local institutions and households' ability to invest abroad can help increase the potential benefit of outflow liberalization.

3.3 The link between international financial integration and volatility of income and consumption

Capital flows are known to be procyclical in emerging markets and developing countries (Kaminsky, Reinhart and Vegh, 2004). Does capital account liberalization cause the business cycle to become more volatile in these countries? In the extreme, does it make for economic

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[41] See Kose, Prasad, Rogoff and Wei (2006) page 24 for citations of various studies that tout the importance of these three conditions.

[42] Javorcik (2004) studies firm-level data from Lithuania and controls for simultaneity problem well.

instability or crises? Or, as theory would suggest, does it help reduce consumption volatility, and possibly income volatility, through international risk sharing (consumption smoothing)?

The first and second questions have received wide attention from a literature that focuses on financial crises in developing countries (KPRW, 2006). The nature of the third question is related to the risk sharing benefits of financial openness. Whereas "international risk sharing" in the previous section refers to international portfolio diversification and investment decisions of firms, which is linked to allocative efficiency and is mostly production or supply related, in this section the relevant risk is defined as consumption volatility.[43]

The literature measures degree of international risk sharing either by the standard deviation of aggregate consumption or the ratio of standard deviation of consumption growth to standard deviation of income growth. These two measures reflect the ability of *trade and* financial globalization to generate welfare gains by reducing the volatility of aggregate consumption and by decoupling national consumption and income, respectively. *We focus on (consumption) risk sharing benefits from financial globalization.*

For the sake of literary continuity, we tackle first the last question—risk sharing benefit of consumption smoothing—and then discuss how evidence is borne out for the first two—amplification of business fluctuations.

Theory[44]

Summary

Output: *Theory has no obvious prediction for the collective effects of a process as vast as financial integration on output volatility*, particularly in emerging market setting. But there are lessons on what causes business cycles, which may yield insight into how cross-border trade in financial assets can affect output volatility.

Business cycle theory focuses on various types of shocks and their propagation mechanisms. The foremost shocks are technology and monetary (and credit) shocks. Certain cross-border flows (FDI and equity, for example) carry productivity benefits. What can theory say about financial integration and output volatility indirectly?

1. DSGE models with monopolistic competitive setup and reasonable parametrization (with US data) predicts that small shocks can be amplified enough to affect output volatility through countercyclical markup over marginal cost, where monopolistic arrangement is prevalent (Jaimovich, 2007). Models of this class predict that for every positive average markup level (structural monopoly power), output volatility becomes more sensitive (elastic) to markup volatility.

In short, less monopoly power, on average, implies milder propagation of shocks and smoother business fluctuation.

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[43] In any case, there is a link between financial returns and consumption in all consumption-based asset pricing models.

[44] Note: Predictions from business cycle theory and quantitative results from models that are built under the instruction of such theory generally do not come from regression-based econometrics. They are empirical evidence in the tradition of Frisch (1933) (see Kydland and Prescott (1996) for reference and strong argument in favor of this line of non-regression based evaluation of models.) But since this paper uses the term "empirical evidence" to mean regression-based results, to be consistent, we put this type of empirical evidence under the section of "theory".

2. In addition, fewer frictions—implying more flexible prices and wages, lower transaction cost and credit market monitoring and screening costs—should dampen the amplification of monetary or credit shock to the real economy (Rogoff, 2006; and Bernanke, Gertler and Gilchrist, 1999).

Consumption: If complete insurance markets were available to households they could insulate their consumption profile from (capital and labor) income risk. International financial markets are incomplete because it is not possible to purchase insurance against all future contingencies. Two popular incomplete market models are 1. standard incomplete markets model (SIM) and 2. debt-constrained markets model (DCM).

1. SIM models limit risk sharing from unavailable insurance instruments. DCM models limit risk sharing through endogenous restriction of quantity or class of assets that can be traded, even though a full set of state contingent contracts is available to all agents. While the DCM models slightly under-predict the consumption response to income shocks in the (US) data, the SIM models grossly over-predict it (Krueger and Perri, 2005).

2. Intertemporal optimization models uniformly predict that risk-averse consumers (and by extension, economies), desiring smooth consumption across time and states, should find insurance against temporary idiosyncratic risks to income welfare-enhancing. Well-developed financial markets can offer risk-sharing tools.

3. The extent of welfare improvement from smoother consumption is controversial. But emerging market business cycles, prone to trend growth shocks and consequently larger fluctuation in consumption relative to income (Aguiar and Gopinath, 2007; and Neumeyer and Perri, 2005), may have more potential benefit than advanced economies from better risk-sharing through financial openness.

Output volatility

What does theory say about the effects of cross-border flows on output volatility? A quick answer is that business cycle theory still cannot offer a direct answer.[45] But it may still help us come to grip with the question indirectly.

We start by observing that under flexible exchange rate, the dilemma between financial openness and degree of monetary policy independence (in the sense of interest rate setting) strongly implies that cross-border flows are related to interest rate setting, domestic money and credit creation as well as exchange rate dynamics over some horizon. In order to draw lessons from the vast, and lately somewhat revisionist, business cycle literature, we look for the important types of shocks, which we think can in principle be related to fluctuation in cross-border flows, *and* their propagation mechanisms, which may amplify these shocks to impact output cyclically.

Long-standing suspects have been monetary, fiscal, and oil price (terms-of-trade) shocks. To this list, Prescott (1986) adds technology shocks (quantified as highly autoregressive shocks to TFP), and argues that they account for more than half the fluctuations in post-WWII United States. Recent research in the field of business cycle accounting has tried to disentangle true

[45] An emerging and vibrant field of open-economy macroeconomics, which starts off with Obstfeld and Rogoff (1995), while extensive, is rather limited in its almost singular focus on the analysis of real effects of monetary shocks. The literature has so far been primarily theoretical. And the focus on measuring impact of financial openness on business fluctuations is largely absent.

shocks to technology from Prescott's (1986) broad measure (Chari, Kehoe and McGrattan, 2007).

There has been some success. For example, when measured carefully, variable capital utilization, variable labor effort (Burnside, Eichenbaum and Rebelo, 1993) and changes in monopoly power, measured by number of competitors and variable markup over marginal cost[46], can separate true technology shocks from TFP (Jaimovich, 2007). Considering these factors, the magnitude of true technology shocks should be much smaller than Prescott's broad measure.

Monopoly power and output volatility

The fact that true technology shocks are smaller than TFP shocks does not mean technology shocks are unimportant. DSGE models with monopolistic competitive setup and reasonable parametrization predict that variable markup and capacity utilization can dampen the volatility of true technology shock somewhat, but they amplify the effects of these technology shocks significantly (Basu, 1996; Burnside, Eichenbaum and Rebelo, 1996; and Jaimovich, 2007).[47]

The underlying story is as follows: *Any* shock to agents' environments which generates new profit opportunities induces positive net business formation. The resulting rise in the number of firms reduces average markups over marginal costs.[48] Other things equal, a fall in markups (higher price elasticity of demand) leads to an expansion in aggregate output.[49]

In these models, firms' entry and exit decisions provide a channel through which the direct impact of a fundamental shock is amplified. An output boom (bust) is caused by various positive (negative) shocks propagating through larger (fewer) number of competing firms with less (more) monopoly power.[50]

Theory predicts, and US data confirms, that small shocks can be amplified enough to affect output volatility where monopolistic arrangement is prevalent (Jaimovich, 2007).

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[46] The three basic stylized facts on markup and monopoly power are: 1. the existence of monopoly power in the U.S. economy; 2. procyclical variations in the number of competitors; and 3. markups being countercyclical and negatively correlated with the number of competitors.

[47] The interaction between firms' entry and exit decisions (variation in number of firms) and variation in the degree of competition gives rise to observed *procyclical* movements in measured TFP. After decomposing variations in TFP into those that originate either endogenously from this interaction or from exogenous shocks, a substantially smaller proportion of the volatility of output is due directly to technology shocks. An analysis of such an interaction support the view that a *significant fraction* of the movements in measured TFP results from the interaction between variations in the number of firms and the degree of competition.

[48] As price elasticity of demand increases with number of competitors in the monopolistic competitive sector, the size of price reduction required for selling additional unit is lower, i.e. lower markup over marginal cost. Equivalently, the firm can raise unit price, but it has to sell even fewer goods because demand is more elastic to price; hence, the firm has lower relative power to raise price, i.e. lower markup over marginal cost.

[49] In a series of influential papers, Rotemberg and Woodford (1991, 1992, 1995 and 1996a) study the macroeconomic consequences of oligopolistic behavior. In their model, implicit collusion among a *fixed* number of firms leads to countercyclical movements in the markup (over marginal cost). This in turn leads to increases in aggregate economic activity.

[50] More progress is being made into sector-specific model-data matching.

Certain cross-border flows (FDI or equity, for example) carry known productivity benefits. Do countries with more prevalent monopolistic arrangement experience more output volatility from the similar shocks brought on by capital inflows, for instance? Would higher average (steady state) markup (in separation from countercyclical markup variation around that long-term trend) translate into higher output volatility about trend?

Models of this class predict that given a country's higher long-term markup *level*—or more prevalent monopolistic arrangement over the long run—cyclical variation of markup around that level would lead to higher output volatility (around its respective long-term trend). Indeed, *for every positive average markup level (structural monopoly power), output volatility becomes more sensitive (elastic) to markup volatility*.[51]

Technically, in more monopolistic arrangement, the elasticity of markup with respect to the number of firms becomes higher; that is, *markup falls (rises) more sharply when steady-state markup level is higher after one more firm enters (exits) from positive technology shock*. As a result, a similar-sized technological shock can cause a larger fall in the markup, and output boom is higher (more product at lower price) when steady state markup in high. In economies with more prevalent monopoly power on average, technological shocks undergo stronger amplification, which should exacerbate business cycle fluctuations.

Market frictions and output volatility

Money, credit and financial conditions, much like capital flows, tend to be procyclical. In economies with higher degrees of financial, real and nominal frictions, they exacerbate business fluctuations even more.

The new generation of monetary business cycle models' unifying features are the introduction of price or wage rigidities and market imperfections (monopolistic competition) into a dynamic general equilibrium model with well-specified microfoundations.[52] These features allow for welfare analysis in emerging market context, which helps lay the groundwork for policy evaluation. They emphasize the role of nominal and real frictions, such as wage-price rigidities and adjustment costs, to have monetary shock impact on real variables in the short run (Altig, Christiano, Eichenbaum and Linde, 2004; and Gali, Lopez-Salido and Valles, 2004). Credit market frictions—namely, the external finance premium—are also shown to influence the response of the economy to both real (technology) and nominal shocks (Bernanke, Gertler and Gilchrist, 1999).

The external finance premium, generally positive, is defined as the difference between the cost to a borrower of raising funds externally and the opportunity cost of internal funds (internal finance).[53] The critical idea is that the *external finance premium rises as the financial condition of borrowers (their creditworthiness) worsens*, as measured by indicators such as net worth and liquidity. Endogenous changes in creditworthiness may *increase the*

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[51] Log linearization of first order conditions show that the volatility of markup around its trend is negatively proportional to output volatility around its trend. That proportion increases as a function of long-term average markup level.

[52] Most of these models are closed-economy model (or one can imagine several unified open economies with free flows of goods, assets and inputs under fixed exchange rate) and their extension into generalized open-economy setting are under way.

[53] External finance (raising funds from lenders) is virtually always more expensive than internal finance (using internally generated cash flows), because of the costs that outside lenders bear of evaluating borrowers' prospects and monitoring their actions.

persistence and amplitude of business cycles *from otherwise short-lived* economic shocks (the financial accelerator).

Financial accelerator effects need not be confined to firms and capital spending but may operate through household spending decisions as well.[54] This "financial accelerator" effect applies in principle to *any shock that affects a borrower's balance sheets or cash flows*.[55] For example, an increase in productivity that improves the cash flows and balance sheet positions of firms leads in turn to lower external finance premiums in *subsequent* periods, which *extends the expansion* as firms are induced to continue investing even after the initial productivity shock has dissipated. The financial accelerator should be stronger when costs of monitoring, screening and evaluating creditworthiness, or external finance premium, are on average higher.[56]

Implication for structural policy to reduce output volatility

In essence, theory predicts that the more monopoly power exists in an economy, the more volatile is its real output in response to similar shocks. In addition, fewer frictions—implying more flexible prices and wages (Rogoff, 2006) and effort toward lowering financial monitoring and screening costs—should dampen the amplification of real, monetary and credit shock that accompany capital flows to the real economy.

Technology, money and credit as well as financial conditions tend to be procyclical everywhere, and capital flows more so in emerging markets. Asset price boom and bust is not limited to emerging markets, but the shocks are not amplified so much to affect real outcomes in advanced economies as they are in developing countries.

Countries can experience lower output volatility from financial flows by moving toward an arrangement that promotes competition. Policies that reduce monopoly power and market frictions in general should reduce business fluctuations over time. These structural policies can also help reduce the need for arbitrary controls on flows as a first response, and obviate the need for arbitrary judgment of what constitutes "better" flow types, as the real economy will likely become more resilient to financial and real shocks that accompany every type of financial flows. The definition of what constitutes "better" flow types will change. A more financially developed market will also find less need to rely on the so-called bad flows. Financial volatility will still matter to output volatility, but it will not matter to the extent that it does in emerging markets today.

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[54] Household borrowers, like firms, presumably face an external finance premium, which is lower the stronger their financial position (Aoki, Proudman and Vlieghe, 2002, 2004; Iacoviello, 2005, and Almeida, Campello and Liu, 2006).

[55] Under reasonable parametrization, the financial accelerator has a significant influence on business cycle dynamics.

[56] Back to the frictionless world of Modigliani-Miller (theorem): Absent consequence of taxes, whether a corporation finances itself with debt or equity is irrelevant. The financial accelerator stops working to propagate shocks onto the business cycle. In a low (high) friction financial market in which borrowers face smaller (larger) external finance premium, a firm's cash position would be less (more) relevant to its decision to invest because efficient capital markets would (be less likely to) supply the necessary funding for investment projects expected to yield a positive net return in a timely manner.

Consumption volatility

Theory

Theory on consumption risk sharing predicts the following for the extreme cases of autarky and complete market.

Autarky or no financial integration:

1. *Perfect domestic consumption-output correlation*: Standard theory has strong prediction that in the absence of trade in goods and financial assets (autarky), consumption should be perfectly correlated with domestic output, or nearly perfectly correlated if there is investment or storage of goods over time.

2. *Low domestic consumption-world consumption correlation*: Another prediction is that domestic consumption should not correlate much with world output (world consumption), unless cross-country outputs are perfectly correlated.

Complete market and perfect risk sharing

If complete insurance markets were available to households they could insulate their consumption profile from capital and labor income risk (good times and bad times).

3. *Low consumption volatility-output volatility correlation*: With complete markets in which there is insurance against all risks available over state and time, perfect risk sharing is enabled. The economy chooses to be out of autarky and consumption volatility should decouple from output volatility, giving lower domestic consumption-output correlations.

4. *Near perfect cross-country consumption growth correlation*: Cross-country consumption growth correlations, one measure of risk sharing, should be near perfect and consumption fluctuations across countries should correlate more than those of output.

5. *Higher domestic consumption-world output growth correlation than with domestic growth*: Domestic consumption growth should correlate more with world output (consumption) growth than domestic output growth.

Incomplete market theory, imperfect risk sharing and consumption volatility

In response to the empirical rejection of complete risk sharing models, a number incomplete risk sharing models have been developed. International financial markets are incomplete because it is not possible to purchase insurance against all future contingencies. Two popular model types are described below:

Limited risk sharing from unavailable insurance instruments: In many models imperfect risk sharing arises since agents cannot buy insurance against income risk, but can only trade a single, non-contingent asset (bond) and face borrowing constraints (Deaton, 1991; and Aiyagari, 1994). This setup is referred to as the standard incomplete markets model (SIM).

Risk sharing can also be limited by restriction of quantity or class of assets that can be traded: Another class of models assumes that a full set of state contingent contracts is available to all agents, but that intertemporal contracts can only be legally enforced by exclusion from future intertemporal trade (Kehoe and Levine, 1993; and Alvarez and Jermann, 2000). Since exclusion from credit markets is not infinitely costly in some states of the world, agents might find it optimal not to repay their debts (default option) and go into autarky. This possibility endogenously restricts the extent to which each contingent asset can

be traded and thus limits risk sharing. This model is referred to as the debt-constrained markets model (DCM).

Neither model can capture the actual consumption response to income fluctuations of US households (Krueger and Perri, 2005). The SIM model, due to the lack of insurance markets, predicts that household consumption should react to income shocks much more than it actually does, even when an income process is (relatively) not persistent. The DCM model, due to the presence of insurance markets predicts that household consumption should be *nearly* perfectly insulated from income declines and this does not seem true in the data.

The DCM model predicts a substantially better risk allocation than the SIM model. While the DCM model slightly under-predicts the consumption response to income shocks in the data, the SIM model grossly over-predicts it.[57]

In conclusion, a reasonably parameterized version of the SIM model predicts a substantial deviation from perfect consumption insurance, whereas the DCM model predicts a modest deviation.[58] Theory does not perform too badly in some narrow dimension and is moving toward a set-up which combines aspects of both models to understand consumption smoothing.

An aside: Since intra-national risk sharing is imperfect, but exceeds the degree of international risk-sharing (Hess and van Wincoop, 2002), a number of theoretical papers have proposed that transactions costs associated with international trade in goods and financial assets are large (Obsfeld and Rogoff, 2001). Theory has focused more on trading costs—such as, transportation costs, tariffs and non-tariff barriers—but insofar as trade in financial assets partially accompanies trade in goods, these models may hold some promise in explaining imperfect risk sharing.

Evidence

At the outset, we would like to note here that any empirical study on the dynamic of consumption in developing countries suffers from the well-documented measurement problem. Not many studies that we have examined study (better measured) income dynamics as an alternative measure of risk sharing.

1. There is no systematic (cross-country, aggregate data, mixed sample) evidence that links financial openness or integration to the reduction in volatility of consumption, which is the ultimate benefit of international risk-sharing (KPRW, 2006).

2. The literature agrees that the key theoretical predictions are rejected empirically.. As summarized in Backus, Kehoe and Kydland (1995) and Kose, Prasad, and Terrones (2007): 1. The observed cross-country correlations of consumption fluctuations are relatively low. 2.

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[57] Another interesting issue is that in the data, the response of consumption to positive income shocks is not statistically different from the response to negative income shocks, contradicting the asymmetries predicted by both models. The Permanent Income Hypothesis would perhaps be able to do a better job in accounting for this symmetric pattern of the data.

[58] Krueger and Perri (2005) compares these implications with the United States Consumer Expenditure Survey (CE) data. Both models also predict that consumption growth asymmetrically responds more strongly to positive than to negative income growth rate shocks of similar magnitude, but these responses are quantitatively and qualitatively different in both models. In the data the response is quite symmetric so neither model seems to able to account for the data.

These correlations are lower than those of output. And 3. Correlations between consumption and domestic output are generally higher than those between consumption and world output.

3. International risk sharing has increased for advanced countries over the past two decades, groups among which financial integration has increased most substantially. But emerging markets and developing economies have yet to gain more from it (Artis and Hoffmann, 2006).

4. The hypothesis that emerging markets have not attained clear risk-sharing benefits because they may not be getting the "right" types of flows is not borne out in the data (Kose, Prasad and Terronnes, 2007).

5. The cause for deviation from perfect consumption risk sharing is more likely to be restriction from deep financial insurance markets (the DCM models).

Implication for financial market policy to reduce consumption volatility

Even as actual gains from international risk sharing has been low, by comparing the extent to which the volatility of domestic consumption exceeds that of group-wide output, one could gauge *potential* gains from international risk sharing for that country. The potential risk sharing benefits from full financial integration with the rest of the world are substantial for every country, as the median standard deviation of individual countries' consumption growth (at 4.4%) is far higher than that of worldwide output (at 0.8%) (IMF, 2007, Table 5). Potential gains should be higher for economies that are more volatile, perhaps because of its propensity to experience shocks or because of the inability of their inhabitants or their government to self-insure against such shocks through counter-cyclical policies. Countries with low access to financial integration should stand more to gain.

Moving toward perfect international risk sharing seems near impossible considering that households in the US, where financial markets are well developed, do not have adequate access to financial insurance. But moving toward better international risk sharing should be less challenging. It requires substantially better access to abundant insurance instruments that the deep financial markets offer.

3.4 Are there threshold effects of financial openness on growth-stability tradeoff and risk-sharing?

A series of influential review by KPRW and independent empirical work with their coauthors over the years have led to 2 related conceptual hypotheses on the "threshold effects". The authors suspect that there are such thresholds, but at present there is *only preliminary evidence to support them.*

The key purpose for the discussion of thresholds is that, if support can be found for these hypotheses, emerging market policymakers can explore further the risk-benefit calculus of each of these individual thresholds so as to prioritize itself well to reap the benefits without exposing itself to too much risk. One thing KPRW stresses is that the benefits may not be measurable over a short span of time, while the risk seems more apparent in the short run.

1. There are *growth-stability threshold conditions* interacting with the degree of financial openness that determines growth and financial stability outcomes (KPRW, 2003, 2004 and 2006). The growth-stability threshold hypothesis states that certain initial conditions are crucial for determining growth and volatility (stability) outcomes. Suspected initial conditions studied in the literature involve structural as well as policy-related features of an economy, namely financial sector development, institutional quality and governance, and macroeconomic (monetary, fiscal and exchange rate) policies. *Countries that are below these initial conditions are at more risk of failing to improve its growth-stability trade-off.* At the

same time, financial integration is promised to improve the structural and policy related features outlined. Hence, *countries can improve the risk-benefit profile* if they prioritize and gradually open up to financial globalization.[59]

2. There is a *risk-sharing threshold effect* associated with the degree of risk sharing benefits and the degree of financial integration (Kose. Prasad and Terronnes, 2003 and 2007). Essentially, the risk-sharing threshold hypothesis states that there is a level of financial integration beyond which countries can enjoy the risk sharing benefits.[60] Countries that stay below this threshold do not enjoy the benefit of financial globalization. Most emerging markets are below this hypothetical threshold. An obvious policy recommendation is to move beyond the threshold by embracing more financial openness (Kose, Prasad and Terronnes, 2007).

It is quite obvious that these thresholds are conceptualized to be highly emerging-market centric. Most industrial countries are above them, and most developing countries are below them. At present, the most that can be said about the threshold literature is that emerging markets will have to find out through experience where they are in relation to the conceptual thresholds.

In our review of financial openness and crises, we turn this threshold issue upside down and ask if there is any direct evidence that financial openness is bad for growth and stability in emerging markets.

3.5 Crises as special cases of volatility

Following the Asian financial crisis, financial globalization was seen in some policy circles as a proximate cause for the crises, exacerbating output volatility in emerging markets and increasing vulnerability to sudden stops of capital inflows. The procyclicality nature of cross-border flows in emerging markets also aids this presumption. There are two types of financial crisis: a currency crisis and a banking crisis, which occurs less frequently but are more disruptive (Kaminsky and Reinhart, 1999).

Empirical evidence can be summarized as follows:

1. At the aggregate (data) level, there is little evidence to support the view that capital account liberalization by itself increases countries' vulnerabilities to extreme episodes of economic instability, i.e. periods characterized by large fluctuations in aggregate income and consumption.

There are two issues at work and the literature's take on both of them: the probability of it happening, and the cost once it happens.

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[59] Thus far, formal empirical evidence suggests strongly that financial integration boosts domestic financial market development, although the possibility that a well-developed financial market also fosters financial integration cannot be ruled out. Recent empirical evidence linking financial integration improves governance or institutional quality is limited. Recent evidence that financial globalization disciplines macroeconomic policies is also weak.

[60] Empirical results that lead to this hypothesis are as follows: 1. risk sharing seems to increase in advanced countries during financial globalization, but not in emerging or developing economies. 2. preliminary results show that financial flows help improve risk-sharing outcome s in advanced countries, but have no significant impact in emerging markets. The puzzle posed is: why emerging markets, being more financially integrated, have not enjoyed the risk sharing benefits?

1.1 there is no systematic evidence that countries with higher capital mobility tend to face a higher probability of having a currency crisis (Edwards, 2005; Forbes, 2005, Glick and Hutchinson, 2001; Glick, Guo and Hutchison, 2006; and Eichengreen, 2003) or a banking crisis (Bonfiglioni and Mendicino, 2004).

1.2 There is no evidence that the output cost of currency crises is smaller in countries that restrict capital flows (Edwards, 2006). In fact, output cost of a banking crisis is smaller in countries with open capital accounts (Bonfiglioni and Mendicino, 2004).

2. That said, capital account liberalization interacting with other policy choices, e.g. non-credible fixed exchange rate regime, could be a combination for a crisis. (KPRW, 2006; Henry, 2006). *Case studies reveal that financially integrated countries with sound macroeconomic policy, well-developed and regulated financial systems are less likely to face a crisis (IMF, 2007.)*

Policy implication on crisis avoidance

Countries need to treat capital account liberalization process with appropriate sequencing if they cannot show improvement in domestic financial sector supervision and macroeconomic framework (the implied preconditions). They should also design liberalization strategy as an element of a broader economic reform package during the period of low external imbalances.

4. *Short-term* policy tension: Why a country's political economy may tilt in favor of capital controls and evidence on their effectiveness[61]

Going forward, the pressing and practical challenges emerging Asia's policymakers face in the near term are three-fold. Indeed, the three challenges are inter-related. They are "hot money" inflows and large inflows in general, pressure for rapid domestic currency appreciation, and finally, the potential loss of monetary autonomy in the sense of independent interest rate policy to ensure price stability and provide financial conditions that are suitable for financial stability over the business cycle.

Since 1997, Asian countries have taken unilateral actions to promote resiliency through improved public debt structure, sharper focus on price stability, buildup of international reserves and more flexible exchange rates. They have also made efforts to ensure stronger prudential regulation and supervision of banks as well as capital market deepening. Having done the right things, Asian emerging markets have become hosts to international investors and have had ample access to funds at favorable cost—although the more powerful underlying reason may ironically be a medium-term flight from US dollar assets since 2002. With large capital inflow comes pressure for these currencies to appreciate. In this experience, some currencies appreciate faster than others. In fact, those that surrender most of their monetary autonomy or maintain restrictions on cross-border capital inflows need not feel as much immediate pressure to appreciate as those that have come further along the liberalization road.

Rapid appreciation in the exchange value of the currency renders part of the domestic industries less competitive in the global markets. While commodity imports such as fuel and energy as well as metal and raw materials have become more affordable with the exchange rate appreciation, despite their rising world price trends, these benefits are spread-out while the short-term cost of adjustment is centered on labor-intensive, high domestic-content primary sectors, such as agriculture and low-end manufacturing. As a result, even for net

[61] The practical challenges outlined in this part benefits from Watanagase (2007).

primary commodity importing economies, the nature of the problem is as much political economy as it is economic. There are strong and vocal constituencies in emerging markets that are averse to currency appreciation and part of them averse to variability in the exchange rate itself.

Meanwhile, hot money, or indeed large inflows in general, can fuel asset prices and encourage excessive risk-taking behavior. And, perhaps most importantly, they can create a risk that funds might flow out more quickly than they came in. As we have discussed in the previous section, output growth can be more volatile in emerging markets from large (gross) flow sizes, given the prevalent frictions embedded in our economies.

Central banks may wish to counter financial excess and output volatility in the interest of financial and economic stability. If the central bank chooses to maintain a high interest rate stance, the pressure on the currency to appreciate will likely mount. We are witnessing this phenomenon across most of Asia. Thailand's domestic demand is likely to firm in the following years, and we will face similar challenges.

The political economy can become increasingly in favor of more central bank intervention in the foreign exchange markets or some sort of control on capital inflows, particularly those of the "hot money" type.[62]

Are controls on capital flows effective?

We review the evidence gathered by a high-quality survey of the literature on capital controls and their effectiveness, as follows:[63]

1. Capital controls on inflows seem to make monetary policy (interest rate setting) more independent, alter composition of capital flows, but not reduce the volume of net flows, and so the current account balance. Evidence on effect on real exchange rate is, therefore, at best controversial.

2. There is little systematic evidence of success or effectiveness in controls on outflows outside of the brief Malaysian (1998-9) experience, however success is defined.

3. Imposing controls on in- or outflows need not always be effective. On inflows, the more a country depends on short-term flows to finance its current account, the less effective the controls are.[64] This confirms a wide variety of contradicting results in this literature.

4. Capital controls tend to be particularly easily circumvented when they are re-imposed on previously liberalized systems.

Response *at firm's level* to capital controls shows *efficiency loss*. Basic test involves examining sensitivity of investment to cash flow, i.e. increase in financing constraints on

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[62] Not unlike today's political economy in advanced countries, emerging market politics also risks being less favorable to openness, but more partial to protection of selected industries or protectionism in general.

[63] See Magud, Reinhart and Rogoff (2005). Their contribution is in measuring capital controls on a uniform basis and trying to understand cross-country experience through time based on 30 empirical studies worldwide. It defines capital controls, documents differences between in and outflows of different types, and standardizes the results of over 30 empirical studies according to differentiated degree of methodological rigor.

[64] There are initial conditions that can help make controls effective. Under a portfolio balance approach, these initial conditions have to do with how elastic short-term flows are to total flows.

investment.[65] Chilean's *El Encaje* has been shown to increase the sensitivity of investment to cash flow for small, publicly traded domestic firms, but does not affect large firms. In fact, the Chilean unremunerated reserve requirement measure, no matter how market-friendly it was intended, is estimated to increase cost and impediments for small domestic firms to raise capital (Forbes, 2005). Multinational affiliates face roughly 5 percentage point higher financial cost in countries with capital controls than affiliates of the *same* company that borrow in countries without capital controls (Desai and others, 2004).

More important, in those circumstances, controls can create doubts about the future direction of policy. Indeed, this is the problem of time-inconsistency in policymaking: There is temptation to use arbitrary discretionary, rather than rule-based, policy to grapple with the issue of large inflows when the authority deems it necessary. The necessity of its use and its later removal may be genuine, but the doubt it engenders in the mind of providers of capital and technological inputs may potentially discouraging beneficial foreign investment in some cases.

To be sure, the short-term adjustment costs from large flows exist. It is also possible to lose sight of *net* potential gains in the medium term if policymakers put much weight on short-term adjustment costs. Indeed, our conceptual principles support the view that the risk-benefit calculus will change in favor of net benefits of financial flows as our economies adjust more flexibly and adopt stronger competitive arrangement (or structure) over time. Over the longer term, further steps to develop and improve access to deeper financial markets can also help.

For the time being, surges in capital inflows appear to be a feature of financial globalization. And there seems to be no "magic bullet" for dealing with them. The best short-run *policy* response for small open economy that has been to some extent financially integrated appears to be a combination of exchange rate flexibility, and limited sterilized intervention to smooth exchange rate movements. Further liberalization of restrictions on outflows, as warranted by the pace of concurrent financial market reform, can also support deeper integration and potentially offset swings in capital inflows.

[65] We should take care to note that if firms face financing constraints, then their investment will be sensitive to cash flow. But sensitivity of investment to cash flows need not come from financing constraints.

Recent Experiences in Liberalizing Outflows in Thailand

Relatively low level of foreign asset holding by Thai residents when compared to international standard implies that we still underutilize the benefits of risk diversification as well as enhanced expected returns from investment opportunities in the global markets. Given the small size of Thailand's capital market at the moment, the concentration of wealth on domestic assets, or home bias, would expose investors to great systemic risk, which could be diversified away by holding global assets with low or negative return correlation with Thai assets. The unbalanced flow with large inflow and timid outflow also play a role in putting upward pressure on the baht over the past couple years.

Responses to outflow relaxation have been rather slow in the early phase. After the external position has stabilized following the 1997 crisis, Bank of Thailand has gradually relaxed restrictions on portfolio outflow investment since 2003 by allowing qualified institutional investors to invest in securities abroad within the pre-announced annual quota. However, from 2003-2006, only around 18% of total quota were actually invested abroad.

Quota and Actual Portfolio Outflow (2003-2006)

(Billions USD)	Quota 2003-2004	Quota 2005			Quota 2006		
		BOT*	SEC**	Total	BOT*	SEC**	Total
Quota approved by BOT	3.0	2.0	0.5	2.5	2.0	1.3	3.3
Amount allocated to institutional investors (Institutional investors applied and received approval)	3.0	1.0	0.5	1.5	1.1	0.5	1.5
Actual outflow investment	0.5	0.5	0.2	0.7	0.2	0.2	0.4
Remaining quota	2.5	0.5	0.3	0.8	0.9	0.3	1.1
Ratio of actual outflow investment to amount allocated to institutional investors	17%	50%	40%	47%	18%	40%	27%
Ratio of actual investment to quota	17%	25%	40%	28%	10%	15%	12%

* BOT assigns investment allocation for GPF, Insurance, Social Security and Specialized Financial Institutions
** SEC assigns investment allocation for mutual fund, pension fund, and securities companies (since 2007)

The reasons for such low interest shown for investing abroad include cyclical factors such as favorable returns of domestic assets and baht appreciation, but also reflect the early stage of developing infrastructure in this area, namely, retail investors' financial literacy associated with investing abroad as well as institutional investors' ability to offer attractive investment products at reasonable costs. Granted, this kind of knowledge and skills cannot be built over night, but needs long-term investment in human resources and capacity building. In addition, prudential restrictions on types of securities that could be invested may also hamper investors' investment flexibility.

The portfolio outflow has accelerated in 2007, following the further relaxation on outflow restriction. In January 2007, Bank of Thailand has announced that qualified institutional investors wish to invest in securities abroad no more than $50 million per fund can do so without getting quota approval from BOT. This measure is meant to reduce policy uncertainty and send out clearer policy signal to institutional investors so that they can plan their strategy on a longer term basis. Other supporting factors may also at play, including lower domestic interest rates and relatively more stable baht. In 2007 alone, the outflow thru FIF has exceeded the amount during the preceding years between 2003-2006.[66] Further relaxation on foreign currency deposit (FCD) was introduced in July 2007. The new rule increases the maximum limit of the amount for those who earn income abroad (including exporters) can put in FCD account. And for the first time, individuals and firms are allowed

[66] However, most of the outflows thru foreign Investment Fund (FIF) in 2007 are invested in foreign fixed income products with fully hedged on FX risk. Thus, this will not necessarily help relieve the upward pressure on the baht, as the forward purchase of the baht cancels off the spot sale of the baht today.

to convert baht into foreign currencies and deposit them in FCD, with imposed maximum limits. This was meant to facilitate households and firms' financial planning and risk management. In addition, in August 2007, BOT has allowed private funds to invest abroad and has agreed in principle to grant up to $10 billion quota for overall portfolio outflow investment to be allocated by SEC to various financial products and channels, including listing foreign products in the Thai capital markets and allowing foreign companies with certain qualifications to raise funds in Thai capital markets. The greater flexibility will allow SEC to allocate quota more efficiently.

Besides outflow liberalization, the authority has also recently relaxed FX regulation to enhance efficiency of private sector's financial management. One example of is the removal of surrender requirement on export receipts in July 2007. Before the removal, the regulation required that foreign currency income, once repatriated back into the country, must be sold for baht within 7 days.[67] This rule is the legacy from the days of fixed FX regime to ensure adequacy of foreign reserves to support the stability of exchange rate. However, under the current environment of flexible FX regime with sufficient reserves, this rule has become counterproductive. Under the rule, most exporters will automatically have to sell their dollar receipts to the banks even if they may need to use dollar to buy imported materials in the future, resulting in higher transaction costs and less efficient financial management. Moreover, by forcing most export receipts to be converted into baht, it automatically translates robust export performance into pressure on the baht. Given that most of the countries in the region have already allowed their exporters the freedom to manage their foreign currency income, this inflexibility would put Thai businesses at disadvantage relative to their competitors in other countries. The authority's decision to remove the surrender requirement along with lifting the limit on the maximum amount that Thai businesses with foreign income can deposit into foreign currency deposit accounts should help enhance the efficiency of financial management in the private sector in the future.

Going forward, policy priority should be placed on ensuring proper pacing and sequencing of outflow liberalization as well as strengthening market infrastructure that would ensure the benefits of further outflow liberalization while containing associated risks. Adequate liberalization is needed to support the building of market infrastructure and financial literacy on all parts. However, in the early phase, the authority should pay particular attention on relaxing outflow restrictions at the proper pacing and sequencing. Limits and conditions on certain outflow transactions, especially those involved own investment by retail investors may be necessary while financial literacy is improving. Certain prudential requirements may also be desirable such as limits on (baht) margin trading to avoid excessively leveraged position on currency or security speculations. Over time, however, the authority should rely less on quantitative controls and move more towards market mechanism by relying on other policy variables to influence the outflows such as interest rate or tax rate. As for the concerns that outflow may become excessive in the future, the best way to minimize this risk is to enhance the attractiveness of investing in domestic markets by adhering to macro policy discipline, upgrading quality of institutions and governance and creating a favorable and dynamic economic and investment climate. In today's world, controls on capital outflow are not likely to succeed anyway given that there will always be to circumvent and move money out of the country.

As for the market infrastructure development, efforts and resources should focus on

enhancing retail investors' financial literacy and upgrading institutional investors' capability to invest abroad and manage risks effectively as well as **strengthening retail investor protection.** As global exposure increases, investors should be aware of the risks involved. The authority should require financial institutions to provide full disclosure of the inherent risks, including the maximum amount at risks. In addition, **clarification on tax issues** as well as tax fairness across products and channels will also be important to minimize distortions.

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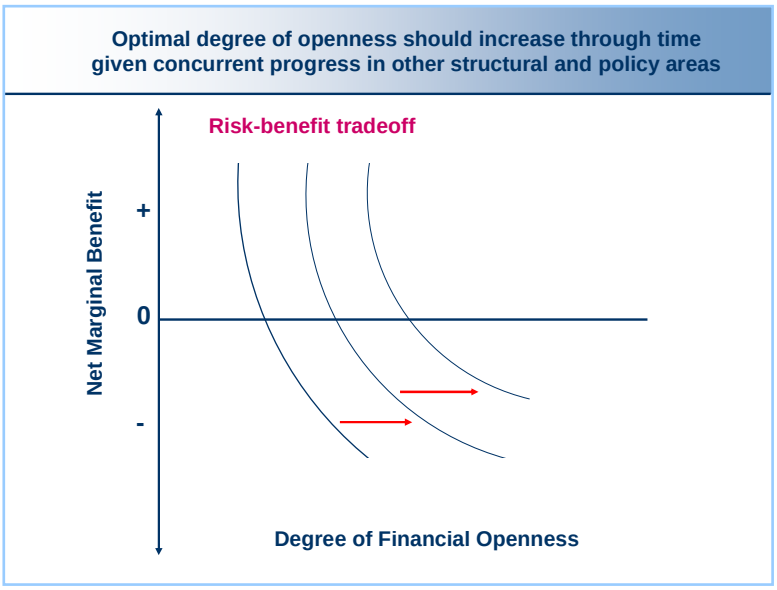
[67] Up until January 2007, the rule was within 7 days. Between then and the removal of the rule, the number of days was extended to 15 days.

5. The general principles for capital account policy for Thailand

As a country moves forward to become more financially openness, the risk-benefit calculus will change when institution quality and ability to adjust changes (higher net benefit of extra openness). Countries need to treat capital account liberalization process with appropriate sequencing.



Summary of implications for policy and conditions for successful capital account liberalization

Direct growth benefit fr om capital account liberalization may be temporary. The key channel of growth benefits from financial integration is likely to be from TFP improvements. Countries can experience lower output volatility from financial flows by moving toward an arrangement that promotes competition. Technology, money and credit as well as financial conditions tend to be procyclical everywhere, and capital flows more so in emerging markets.

1. Policy that promotes TFP are policies that promote economic competition and lower distortions. These policies should allow countries to reap more benefits from inflows, as they are likely to be more efficiently allocated. It is more likely to help reduce output volatility from financial flows.

2. Promotion of trade integration (lower cross-border trading costs) should enable a country to gain more from financial flows.

3. Effort to reduce home bias in investment, through lower cross-border financial transaction costs, upgrades of information quality as well as knowledge and local institutions and households' ability to invest abroad can help increase the potential benefit of outflow liberalization.

4. Fewer frictions, specifically, more flexible prices and wages and lower financial monitoring and screening costs, should dampen the amplification of real, monetary and credit shock that accompany capital flows to the real economy.

5. Moving toward better international risk sharing requires substantially better access to abundant insurance instruments that the deep financial markets offer. This may involve review of regulatory constraints that may impede the development of new financial hedging products.

6. Improvement in domestic financial sector supervision and macroeconomic framework helps the process of capital account liberalization bring more benefits.

7. Countries should also design liberalization strategy as an element of a broader economic reform package during the period of low external imbalances.

To enhance the net benefits from financial globalization, we propose a balanced approach to managing capital flows under flexible exchange rate and reforms in the areas of financial system and market development as well as policy that promotes competition. The conceptual balanced approach strongly underlines the necessity for good pacing and sequencing. *The pace of liberalization should be determined by progress in these areas:*

1. Sound, consistent (across policy and time) and sustainable macroeconomic policies.

2. Openness to trade, as trade enhances benefits of certain types of financial flows.

3. Directionally consistent capital account policy that is transparent

4. Data disclosure and better data quality on both balance sheet (e.g.,debt falling due) and off-balance sheet items (e.g., hedging and other derivatives) of the public and private sectors for better monitoring and pricing of risks at all levels, in support of capital account opening.

5. Financial sector reforms that complements business and household's ability to make sound financial decisions and hedge against financial risks. Priority should be placed on capital market deepening through further enhancing the role of institutional investors, increasing supply of new products and strengthening corporate governance. Enhancing the effectiveness of future financial and risk management goes hand-in-hand with improving financial literacy of both businesses and households as well as developing a menu of necessary hedging instruments to adequately match the need of businesses and households. This may require a review of existing regulatory constraints that may hinder the development of new hedging instruments.

6. Best-practice financial sector prudential regulation and supervision to ensure a strong financial system and allow capital to be allocated efficiently and prudently.

7. Effort to lower market frictions and distortions—such as wage and price rigidities (related to administered-price control) , quantitative restrictions, transactions costs that pertain to financial monitoring and screening activities—, *reduce regulatory burden as well as efforts to reduce monopoly power in financial and non-financial sectors,* which will help create favorable investment climate and facilitate necessary economic restructuring.

8. Progress in international cooperation on regional capital market development as well as information sharing and policy dialogue among regulators, especially on issues of mutual interest, such as concentration risks, large exposures, or risky activities that may not be evident to any one regulator, for example, those involving hedge funds.

9. Appropriate legal safeguards under free trade agreements to preserve policy options that help ensure financial stability as markets continue to develop.

10. Progress on sharing the benefits of financial openness to include the majority of society. Policy priority should be placed on arranging for sufficient and efficiently administered short-term financial assistance, retraining and job matching service for affected workers as well as long term commitment to enhance the quality of human resources, including better education, and health services.

Indeed, progress in one area of reforms requires progress in the others. Prioritizing would help Thailand capitalize on both investment- and efficiency-induced growth benefits of financial openness.

Extraordinary emerging market income and consumption volatility may be the result of macroeconomic shocks, their propagation mechanism as well as policy and institutional setup, but it can be ameliorated by better risk sharing with the world. In this welfare-enhancing endeavor, international financial integration on top of ongoing trade integration can play an important role.

6. Conclusion

In building a resilient economy, prudent fiscal and monetary policy does help. As an automatic stabilizer, flexible exchange rate also helps. But, prudent macroeconomic management alone will not raise people's living standard in the long run. We need a balance between prudence and enterprise or *the ability to take risky action and make sound decisions on the part of the business sector*. Otherwise, we risk either having a stagnant, inefficient economy or building a fast-growing one on a bubble; neither of which we can afford.

Policies that reduce monopoly power and market frictions in general should reduce business fluctuations over time. These structural policies can also help reduce the need for arbitrary controls on flows as a first response, and obviate the need for arbitrary judgment of what constitutes "better" flow types, as the real economy will likely become more resilient to financial and real shocks that accompany every type of financial flows. The definition of what constitutes "better" flow types will change. A more financially developed market will also find less need to rely on the so-called bad flows. Financial volatility will still matter to output volatility, but it will not matter to the extent that it does in emerging markets today.

Hence, the priority is the need to design a system that allows for constant self-correction—one that also lets the economy regain its strength quickly after a severe negative shock. That system should be underpinned by a strong link to the world economy, which will encourage innovation and efficiency. The competitive markets should operate under a clear rule of law with good governance. In support of them, we need an effective and honest government and supporting institutions that focus on improving resiliency of the economy and sustainable long-term economic growth.

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