CHAPTER 7

Hong Kong SAR and Singapore as Asian Financial Centers—Complementarity and Stability

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MAIN POINTS OF THIS CHAPTER

- Hong Kong Special Administrative Region (SAR) and Singapore have evolved into Asia's preeminent international financial centers (IFCs).
- Their historical growth paths have thus far been largely complementary, with each tending to specialize in different asset markets and financial services, and each focusing on different parts of Asia.
- These complementary evolutionary paths, if maintained, may also carry significant benefits for regional and global financial stability.
- Hosting large financial institutions with complex, fluid business models in both economies calls for the maintenance of strong regulatory and supervisory cooperation between Hong Kong SAR and Singapore. Such cooperation could also play a significant role in enhancing Asian financial integration—both regionally and globally.

INTRODUCTION

Asian financial centers are frequently viewed through the lens of a "race for dominance" among a few well-established cities such as Hong Kong SAR, Singapore, and Tokyo, as well as other potential contenders like Seoul and Shanghai. Indeed, an extensive literature looks at the development of these financial centers from that perspective. This chapter, however, suggests that an alternative consideration—regional and global financial stability—also matters when looking at the evolution of these centers. Rather than asking what each financial center needs to do to make itself stronger or "dominant," the chapter asks if the patterns of coexistence of financial centers in Asia have a bearing on regional or global financial stability. To answer this question, the analysis explores different scenarios with a global shock propagation model, using well-known network analysis methods. The exercise takes as given that Singapore and Hong Kong SAR are the two main international

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financial centers in Asia, and looks at how their coexistence might affect regional and global financial stability because they are both, indeed, significantly more internationalized than are their Asian peers. The point is not to rule out the emergence or reemergence of other financial centers. Rather, with the world as it is today, we document not only how these two centers complement each other—geographically and through product specialization—but also suggest that this complementarity may better serve to stabilize the global financial system.

Keeping the focus on global and regional stability, both cities host a large number of global systemically important banks (G-SIBs), and need to maintain appropriate licensing, regulatory, supervisory, and resolution mechanisms. Supervising and regulating large financial institutions in a global web of financial markets and supervisors raises particular challenges explored in the later sections of this chapter. For instance, the two centers face the challenge of maximizing coordination with home supervisors and ensuring domestic regulatory requirements are in place that meet the highest international standards. And, they must do this without hampering global cooperation or generating regulatory arbitrage.

BACKGROUND ON HONG KONG SAR AND SINGAPORE AS INTERNATIONAL FINANCIAL CENTERS

Parallels and Differences

From trading hubs to financial hubs. The historical parallels and differences between Singapore and Hong Kong SAR are well documented and can be traced back to their days as trade hubs (Ng Beoy Kui 1998; Huat, Lim, and Chen 2004; Pauly 2011). Both cities enjoyed important strategic locations on major trade routes, between the South China Sea and the Indian Ocean for Singapore, and as a privileged location in Northeast Asia and a gateway to China for Hong Kong SAR. Both were traditionally large trade and trans-shipment centers until the 1970s. Continuing growth in trade was accompanied by rapid improvements in infrastructure and growth in banking facilities. The two financial systems have developed on complementary trajectories with limited overlap and competition.

Asian Dollar Market. The creation of the Asian Dollar Market (ADM) was central to the development of Singapore. The rapid expansion of the Eurodollar market created pressures for an Asian city to host a market for the U.S. dollar to broaden its time zone coverage. Singapore began such a market in 1968, when the ADM was first introduced, and the government provided incentives and preferential tax treatment for the development of the Asian Currency Units to support the ADM. Hong Kong SAR initially continued to impose a moratorium on banking licenses and maintain the 15 percent withholding tax on interest income from foreign currency deposits. However, once the moratorium was lifted in 1978, Hong Kong SAR began to take a more active presence in debt markets. Both cities proceeded with a series of liberalization measures to open up their financial sectors to foreign banks and other financial institutions.

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China. Hong Kong SAR has benefited from access to China's vast internal market. Many policy changes to China's financial sector were initially piloted in Hong Kong SAR, including the various quota regimes that govern portfolio flows to and from China, as well as attempts to encourage the international use of the renminbi. In this respect, Hong Kong SAR resembles other international financial centers with large domestic economies, such as New York.[1] The introduction of "H shares," which allowed companies incorporated in mainland China to be traded on the Hong Kong Stock Exchange, helped foster financial links between Hong Kong SAR and China.

Growing Asian bond markets. Hong Kong SAR and Singapore both benefit from the broader growth of Asian credit. Before the global financial crisis, Asian bond markets were relatively small, illiquid, and not very diversified, with a primary focus on sovereign and financial issuers. Since 2008, the market has grown 2.4 times (from $200 billion to $480 billion), reflecting a shift in Asia from heavy surpluses (both external and internal surplus, and excess savings) to a greater reliance on markets to fund growing demand. Both consumption and investment have caused this shift.[2] Primary issuance by Asian borrowers is growing, and most credit securities are now allocated to Asian investors, reflecting a rebalancing of the investor base into the region.

Government policies. Singapore developed as an IFC with the support of active government policies. The government fostered and maintained Singapore's position in the global financial market through internationally competitive tax structures and by promoting a well-regulated financial system. A robust financial center is considered central to the city's economic future. The Monetary Authority of Singapore (MAS), which is tasked with multiple policy roles, oversees the entire financial system and ranks among the best globally in regulation and supervision.[3] By comparison, Hong Kong SAR's success as an IFC has been characterized as largely "laissez-faire," with financial sector growth generally left to market forces (Ng Beoy Kui 1998; Huat, Lim, and Chen 2004; Pauly 2011). For instance, when the public pension fund (Mandatory Provident Fund) was launched in 2000, its management was left to the private sector, unlike in Singapore, where the Central Provident Fund is largely managed by the government.

Government support. Authorities in both jurisdictions have introduced measures to encourage the development of debt markets. They have done this by improving clearing infrastructure via a settlement, central clearing, and custodian system (for example, the Central Moneymarkets Unit in Hong Kong SAR); promoting exchange fund notes in the retail market; expanding the profits tax

[1] The importance of China for Hong Kong SAR is discussed further in other sections of this chapter.
[2] Primary issues from Asian issuers are growing, and the majority of credit securities are now allocated to Asian investors, reflecting a rebalancing of the investor base into the region.
[3] See IMF (2013), "Singapore Financial System Stability Assessment" (FSSA). MAS has the following responsibilities: monetary policy and sustainable economic growth, foreign reserves management, maintaining financial stability, and fostering a sound financial center. In addition, MAS is in charge of microprudential and macroprudential supervision of all financial intermediaries, and acts as the resolution authority.

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concession scheme; and streamlining regulations on issuing and listing debt securities. Hong Kong SAR and Singapore both took measures to establish a full benchmark yield curve, with a greater range of tenors, and expanded markets from government debt to corporate debt. Singapore also participated in the implementation of cross-border securities offering standards by the Association of Southeast Asian Nations (ASEAN), together with Malaysia and Thailand.[4] Issuers offering equity and plain debt securities in multiple jurisdictions within ASEAN will only need to comply with a single set of disclosure standards for prospectuses, bringing about greater efficiency and cost savings to issuers. Neither Hong Kong SAR nor Singapore has market entry requirements, restrictions on remittances, capital gains taxes on listed equities, or capital gains taxes on fixed-income securities for nonresident participants in bond markets.

Competition or Complementarity?

Singapore and Hong Kong SAR seem to complement each other, since they typically provide financial services to clients in two distinct geographic regions. Hong Kong SAR tends to concentrate on markets in China, Taiwan Province of China, and Korea, whereas Singapore's clients are mainly, but not exclusively, from India and Southeast Asia.

Market specialization. This differentiation is mirrored at the product level, given that the two IFCs display complementary product expertise. Aside from foreign exchange trading and fund management, competition between the two in other areas, such as the derivatives market and off-shore lending, is limited. Hong Kong SAR and Singapore offer different derivatives products, and there is a distinct difference in the geographical distribution of their respective offshore lending activities (Figures 7.1 and 7.2).

Important foreign exchange markets. Both Hong Kong SAR and Singapore are important foreign exchange markets (Figure 7.1) despite not having major currencies of their own (unlike London, New York, and Tokyo). Their financial expertise and robust infrastructure have facilitated the trading of hard currencies necessary to support trade growth in the region. Hong Kong SAR's currency board exchange rate arrangement with the U.S. dollar since October 1983 has promoted its currency's use as a proxy for the U.S. dollar in futures and option hedging. On a global scale, however, foreign exchange markets in both Singapore and Hong Kong SAR remain significantly smaller than those in the United Kingdom and the United States.

Renminbi. The development of the renminbi business has mostly profited Hong Kong SAR, which has become the premier offshore hub for renminbi trading, settlement, financing, and wealth management. According to the Hong Kong Monetary Authority (HKMA), for Hong Kong SAR in 2013, renminbi trade settlement amounted to RMB3,841 billion in 2013, and the stock of

[4]The ASEAN Disclosure Standards Scheme aims to facilitate fund-raising activities as well as to enhance investment opportunities within ASEAN capital markets.

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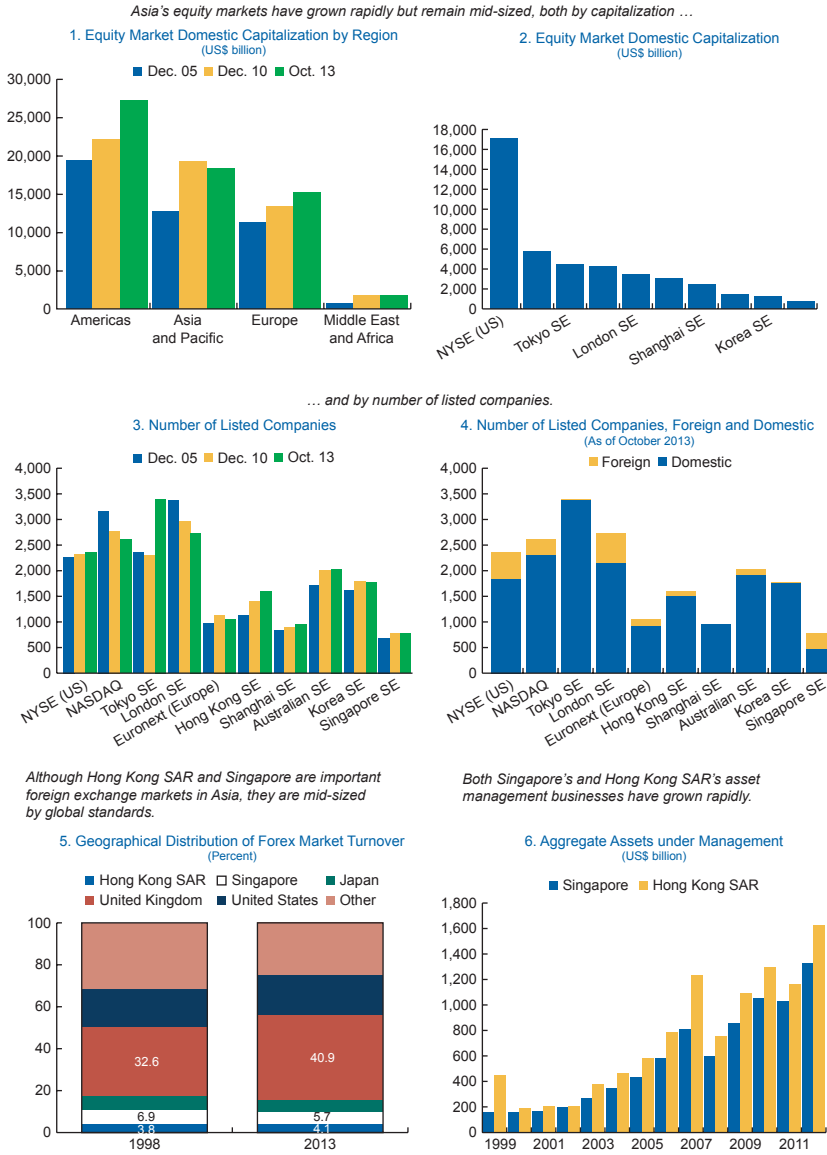
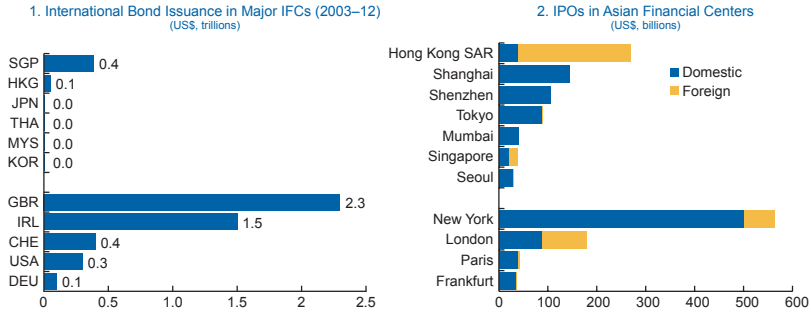


Figure 7.1 Business Lines

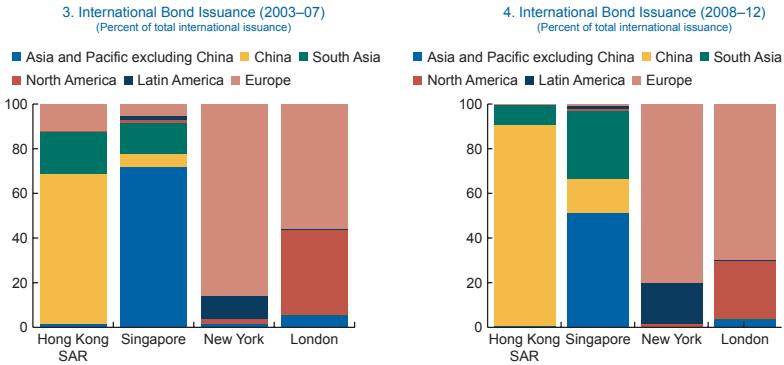
Sources: Bank for International Settlements Triennial Bank Survey (2013); Hong Kong SAR Securities and Futures Commission; Monetary Authority of Singapore; and World Federation of Exchanges (2011).
Note: SE = stock exchange

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Hong Kong SAR and Singapore are important equity and bond markets in the region, but mid-sized global players. Hong Kong SAR has larger international equity issuance, Singapore larger bond issuance.



Hong Kong SAR's international bond issuance is mainly and increasingly by Mainland Chinese issuers. Despite recent diversification, Singapore's international bond issuance remains mainly by Korea and Hong Kong SAR issuers.



International IPO issuance in Hong Kong SAR is also mainly by Mainland Chinese issuers but has recently become more diversified. Issuance in Singapore is by now also mainly by non-Chinese North Asia and Pacific issuers (including a few large deals by issuers from Hong Kong SAR).

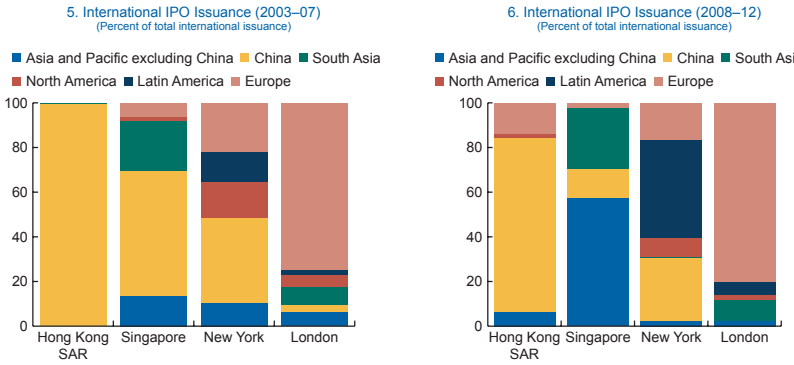


Figure 7.2 Geographic Distribution of Issuers

Sources: Dealogic; IMF (2014); World Federation of Exchanges (2011); and authors' estimates.
Note: CHE = Switzerland; DEU = Germany; GBR = the United Kingdom; HKG = Hong Kong SAR; IFC = international financial center; IPO = initial public offering; IRL = Ireland; JPN = Japan; KOR = Korea; MYS = Malaysia; SGP = Singapore; THA = Thailand; USA = the United States.

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outstanding renminbi bonds was ¥310 billion at the end of 2013.[5] The total issue size of the renminbi sovereign bond market has risen substantially since the first issue in 2009, reaching ¥8 billion in 2010 and ¥23 billion in 2013. Renminbi lending by banks in Hong Kong SAR also expanded, with outstanding renminbi loans amounting to ¥116 billion at the end of 2013. The range of renminbi financial instruments and products has expanded to include renminbi shares, currency futures, and exchange-traded funds accessing the A-share market. All of these activities are supported by a sustained pool of liquidity, with renminbi customer deposits and outstanding certificates of deposit issued by banks totaling ¥1,053 billion at the end of 2013.

Competition for renminbi business. Hong Kong SAR is currently the main hub for conducting renminbi operations. Singapore, like London, aims to increase its market share, especially as the renminbi market continues to grow. The development of renminbi business in Singapore was given a boost when the People's Bank of China appointed ICBC Singapore as Singapore's renminbi clearing bank in February 2013. This catalyzed growth of renminbi activities in Singapore,[6] particularly in trade financing.[7] In December 2013, Singapore Exchange Ltd and Hong Kong Exchanges and Clearing Ltd signed a memorandum of understanding to leverage each other's strengths and capture more of Asia's growth. This collaboration will cover new technology, regulation, and joint product development. The yuan-denominated products covered could be bonds, commodities, equities, or currencies.

Bond markets. Hong Kong SAR and Singapore are both mid-sized international bond markets, smaller than Ireland, London, Luxembourg, and the United States, despite a fivefold expansion in bond issuance in Hong Kong SAR and a tenfold expansion in Singapore since 1995. Issuance is predominantly in local currencies (67 percent in Hong Kong SAR; 77 percent in Singapore). In Hong Kong SAR, private sector debt dominates (64 percent), while in Singapore government and private debt each account for about half of issuance (47 percent and 53 percent, respectively).[8] Singapore is one of the most international bond markets in Asia, with more than a quarter of total annual issuance from foreign entities. Foreign entity issuers consist mainly of supranational agencies, corporations, and financial institutions. Since 2005, Singapore has been part of several main benchmark bond indices.[9]

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[5] HKMA, International Financial Center section, 2013 Annual Report.

[6] According to an April 28, 2014, SWIFT press release, Singapore overtook London as the top renminbi offshore clearing center after Hong Kong SAR.

[7] According to a December 3, 2013, Society for Worldwide Interbank Financial Telecommunication press release, Singapore was ranked first, outside of China and Hong Kong SAR, in the use of renminbi for trade finance as of October 2013.

[8] In Singapore, property-related companies dominate private corporate debt issuance, followed by government-related companies (airlines, telecom, transportation, banking). Comparable data for Hong Kong SAR are not available.

[9] Citigroup's World Government Bond Index, HSBC Asian Local Bond Index, and JPMorgan World Government Bond Index.

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Equity markets. The Hong Kong SAR and Singapore stock exchanges remain smaller than those of their global peers, but are strong in Asia, with 4.8 percent and 1.2 percent, respectively, of the world aggregate equity market domestic capitalization (and 16.4 percent and 4.8 percent, respectively, if compared with the equity market capitalization of Asian countries). Capitalization of the Hong Kong SAR Stock Exchange is almost four times that of the Singapore Exchange.

Rapid growth. The market capitalization of Singapore's securities market increased more than 20-fold in 20 years (from $34 billion in 1990 to $770 billion in 2013). This growth was fueled by an influx of offshore banking activities and foreign capital, by the liberalization of the Central Provident Fund (whereby savings could be used to invest in equities), and by a relaxation of listing requirements. Hong Kong SAR's stock market capitalization is much larger, with $3 trillion as of November 2013, ranking right behind the main European, Japanese, and U.S. stock exchanges. Half of the companies listed in Hong Kong SAR come from China, illustrating the degree to which Hong Kong SAR benefits from economic developments in China. As of October 2013, there were 1,602 listed companies in Hong Kong SAR, with a market capitalization of HK$23.4 billion.

Growing fund management. Growth within the Asia and Pacific region, especially in China, has supported the fund management industries in Hong Kong SAR and Singapore. Both IFCs have played an active role in the international investment of local savings, and in managing offshore money on behalf of investors based overseas. As a result, Singapore's and Hong Kong SAR's assets under management have grown rapidly (almost sixfold and fourfold, respectively) since 1999, including mutual funds, hedge funds, private equity, and real estate investment trust funds.

Asset management hubs. Two-thirds of the top 50 global fund management companies have established a presence in Hong Kong SAR and Singapore. Hong Kong SAR hosts the largest number of fund managers and the largest pool of hedge fund assets ($87 billion as compared with $63 billion in Singapore), including assets that are invested in Asia. Hong Kong SAR is also the premier offshore renminbi business center. Assets under management are predominantly invested overseas and broadly equally divided between stocks and bonds. Asia and Pacific markets were a major destination of investment, accounting for 70 percent of assets for Singapore and 80 percent of assets for Hong Kong SAR.

Openness. The fund management industry is quite international in both cities. Singapore mainly serves as a conduit for funds that come from abroad and are reinvested abroad. Some 80 percent of the assets managed by the 600 fund management firms in Singapore originate outside of the country, mostly in Asia; 86 percent of these assets are then invested elsewhere.[10] Because Singaporean banks have limited exposures, financial stability risks linked to the potential failure of an asset manager would mostly carry reputational risks for the financial center. The favorable tax and legal framework underpins the attractiveness of Singapore.

[10] Asian-Pacific markets were the major destination of investment, accounting for 70 percent of assets for Singapore and 80 percent of assets for Hong Kong.

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In both Hong Kong SAR and Singapore, excellent market infrastructure, financial expertise, a favorable tax environment, the absence of exchange restrictions, and the establishment of a robust Code on Unit Trusts and Mutual Funds also attract foreign fund managers.

UNTANGLING DRIVERS OF GROWTH

This section looks at the underlying factors behind the growth of Hong Kong SAR and Singapore since the global financial crisis. Hong Kong SAR, for example, has traditionally enjoyed a large and growing volume of initial public offerings (IPOs) and bond issuances from China. But is the postcrisis growth largely due to Hong Kong SAR's geographical advantage as the "gateway to China," or does it also reflect gains in Hong Kong SAR's own competitiveness, such as the quality of relevant institutions and infrastructure? More generally, to what extent have Hong Kong SAR and Singapore benefited from the favorable mix of foreign issuers concentrated in the quickly recovering Asian emerging economies? How much have they benefited from their inherent competitiveness as IFCs? How do the experiences of Hong Kong SAR and Singapore differ from each other and from the experiences of their Western competitors—New York and London?

Constant market share method. This analysis used the constant market share method to examine these questions. In its original trade context, the basic intuition underlying this approach is that a country's export growth can be attributed to the following two distinct factors: (1) changes in the composition of the country's export destinations and products (*structural effect*), and (2) changes in the country's share of world exports under the assumption that the composition of destinations and products is held fixed (*competitiveness effect*). The analysis used the same approach to analyze growth in the volume of foreign IPOs and bond issuances within an IFC. In this setting, the structural effect captures the change in foreign issuer mix of the IFC, while the competitiveness effect measures the change in the share of world IPOs (or bonds) issued in the IFC.[11]

Different drivers. The constant-share market analysis[12] indicates similar drivers for both Hong Kong SAR and Singapore: Competitiveness gains were the main driver of postcrisis growth in IPO issuance, while structural effect was more important for international bond issuances.

IPOs. Since 1998, the volume of international IPOs in the two Asian IFCs increased significantly (Table 7.1). The gain in competitiveness contributed substantially in both IFCs, but Hong Kong SAR's growth benefited more from the change in the shares of foreign issuers (232 percent) than did Singapore (93 percent). IPOs from China rose by more than sixfold in Hong Kong SAR, accounting for almost the entire share of international IPOs in Hong Kong SAR during 2003–07. Singapore benefited primarily from a gain in competitiveness

[11] Seade, Wei, and Wu (2010) use a similar method to analyze the sources of IFCs' growth in different financial service markets.
[12] The approach follows Jiminez and Martin (2010).

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TABLE 7.1

Decomposition of International IPO Growth in Major IFCs

Percent	Real Growth Rate	Structural	Competitiveness	First-Time Issuance
		From 1998–2002 to 2003–07		
Hong Kong SAR	424	232	192	0
Singapore	1,595	93	718	784
New York	–113	–23	–89	–1
London	203	–26	146	83
		From 2003–07 to 2008–12		
Hong Kong SAR	10	–8	3	15
Singapore	38	–12	49	0
New York	0	12	–13	1
London	–39	–19	–23	3

Sources: Dealogic; and IMF staff calculations.
Note: IFC = international financial center; IPO = initial public offering.

(718 percent) and a large amount of issuances from first-time issuers (784 percent), coming mostly from emerging Asian countries. Postcrisis, Hong Kong SAR and Singapore continued to grow, albeit at a much slower pace. Hong Kong SAR experienced a sharp decline in Chinese IPOs, which dropped by 26 percent. Large first-time issuances, in contrast, contributed about 15 percent to Hong Kong SAR's growth, more than offsetting the negative structural shock. The bulk of these first-time IPOs came from North American and Western European countries, which, together with the competitiveness effect of 3 percent, provide an indication that Hong Kong SAR's growth stems from the city's own competitiveness rather than just a "gateway-to-China" effect. Similarly, in Singapore, the mix of foreign issuers concentrated among emerging Asian countries actually had a negative contribution of 12 percent to Singapore's growth relative to the world, while the contribution from improvement in competitiveness more than offset that effect.[13]

Bonds (Precrisis). The results from international bond markets offer a markedly different overall picture (Table 7.2). From 1998–2002 to 2003–07, international bond issuances in Singapore more than doubled, or grew by 44 percent relative to world growth. The competitiveness effect contributed about 13 percent and the structural effect contributed –22 percent to this growth. The overall growth, however, was mainly driven by issuances from first-time issuers, mostly from emerging Asian countries, suggesting that the locational advantage could have played a relatively larger role than the gain in competitiveness. Meanwhile, Hong Kong SAR experienced an 8 percent decline of issuances, or –76 percent relative to world growth, largely driven by a loss of competitiveness (–112 percent). The negative impact was mitigated by the first-time issuances from a few Asian

[13] Whereas the gain in competitiveness played a key role for Hong Kong SAR and Singapore in the postcrisis period, New York and London both lost competitiveness. New York benefited from a large increase in IPOs from emerging market economies in its region, including Brazil and Mexico.

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TABLE 7.2

Decomposition of International Bond Issuance Growth in Major IFCs

Percent	Real Growth Rate	Structural	Competitiveness	First-Time Issuance
		From 1998–2002 to 2003–07		
Hong Kong SAR	–76	7	–112	30
Singapore	44	–22	13	53
New York	306	94	183	30
London	38	20	14	4
		From 2003–07 to 2008–12		
Hong Kong SAR	261	234	27	1
Singapore	134	65	68	1
New York	91	8	80	3
London	12	9	3	0

Sources: Dealogic; and IMF staff calculations.
Note: IFC = international financial center.

issuers and from the United Kingdom, suggesting that Hong Kong SAR also mainly benefited from the growing funding needs of the region.

The structural effect played a more important role during the postcrisis period. In Singapore, issuances increased by 134 percent, of which about 65 percentage points can be attributed to the change in the composition of issuers toward Asian countries, notably China, and about 68 percent to Singapore's own gain in competitiveness. Hong Kong SAR's growth (261 percent) was predominantly driven by the structural effect and in particular by the fast growth in China-originated issuances that represented about 90 percent of total international issuances after the crisis.[14]

COEXISTENCE OF HONG KONG SAR AND SINGAPORE AS INTERNATIONAL FINANCIAL CENTERS

Micro efficiency versus financial stability. As argued elsewhere in this chapter, Hong Kong SAR and Singapore have complemented each other in Asia by specializing in different markets and clientele. In principle, the existing specialization can have implications in two dimensions: efficiency (limited competition, or inability to fully exploit possible scale economies in the provision of financial services, causing possible "micro" inefficiencies) and stability (destabilizing

[14] While the "gateway-to-China" effect was the central driver behind Hong Kong SAR's growth, and to a lesser extent Singapore's growth, the relative growth in New York during the postcrisis period mainly reflected a sustained increase in competitiveness. London, however, benefited relatively more from the structural effect, in part resulting from a large increase of issuances from some of the European countries, such as Switzerland and Sweden, which are considered to be safe havens.

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competition leading to increased transmission of financial shocks). This section reviews the implications of the existing business model of the two centers for financial stability, setting aside the question of efficiency.

Shock propagation exercise. The probabilistic shock propagation model (used recently in the 2012 IMF "Spillover Report") is founded on a network of bilateral exposures between country pairs, and is a useful tool for this exercise.[15] The model is a thought experiment consisting of multiple rounds of deleveraging. Investors who face losses in one market may need to deleverage in others. As funding in the second set of markets also dries up, investors in those also decide to deleverage, including from third markets and so on. (See Box 7.1.)

Data and scenarios. To illustrate the role of the two financial centers in Asia clearly, a stylized hypothetical network was constructed with only three regions: Asia (including Hong Kong SAR, Singapore, China, and eight other Asian countries), a global financial center that links Asia to the rest of the world (the United Kingdom or the United States), and the rest of the world.[16] Three scenarios were considered (for a graphical illustration, see Annex 7.1).

1. Hong Kong SAR and Singapore continue their specialized, and complementary, business models: Hong Kong SAR intermediates all exposures to China, whereas Singapore intermediates those to the rest of Asia. This scenario is a highly stylized representation of the current geographical complementarity between the two cities.
2. Hong Kong SAR and Singapore begin competing for the same business in Asia: both countries intermediate the rest of the world's financial exposures to Asia.
3. One of the two (here, purely for illustrative purposes, Hong Kong SAR) supplants the other as the sole financial center in Asia.

Random shocks. Figure 7.3 shows the propagation of a random shock anywhere in the network for each of the three scenarios. If both Hong Kong SAR and Singapore were to remain specialized financial centers in Asia (the dotted red curve) or even if one of them were to shrink (the black curve), global shocks would propagate more slowly than if both of them were competing in the same markets and for the same clientele (the blue curve). This is based on the following rationale: Because of their widely dispersed exposures, financial centers act as shock propagators. Two financial centers competing for the same business would each establish exposures to the same set of partner countries. As a result, these

[15] In contrast to the work of the 2012 IMF "Spillover Report," however, this analysis uses a stylized, hypothetical network rather than an actual network of bilateral data.

[16] The actual network of Bank for International Settlements or Coordinated Portfolio Investment Survey exposures is, of course, much richer, with an abundance of exposures between countries. However, many of these exposures are small and would have been a distraction to the focus of the exercise about the role of Hong Kong SAR and Singapore. Therefore, the analysis concentrated on a hypothetical network that abstracts from any links between the two countries and countries outside the region. In a stylized form, this represented the geographical differentiation discussed elsewhere in this chapter.

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Box 7.1. Shock Propagation Model

Mechanics of the shock propagation model. An initial shock can hit any particular country in the network at random. The likelihood of a particular country being hit by an initial shock depends on the country's interconnectedness: the more interconnected a country, the more likely it is to be a source of shocks. Once the first (source) country is hit by an initial shock, it responds by cutting exposures, that is, eliminating links to partner countries in the network. Once struck by the initial random shock, the source country's financial system is assumed to be more likely to cut larger exposures than to cut smaller exposures. This deleveraging transmits the shock to the source country's partner countries, which now face a similar decision, triggering another round of deleveraging and contagion. Once a link has been severed, it cannot be reestablished and cannot be severed again. Each of these rounds of deleveraging is called a "step" in the experiment, and the exercise allowed as many steps as were needed for all countries in the network to be affected. This probabilistic exercise was repeated a thousand times. Strictly speaking, the steps have no time dimension because several steps could, in principle, collapse into one if financial systems are able to react instantaneously. In practice, however, deleveraging may well take time, so a few steps may afford policymakers time to respond.[1]

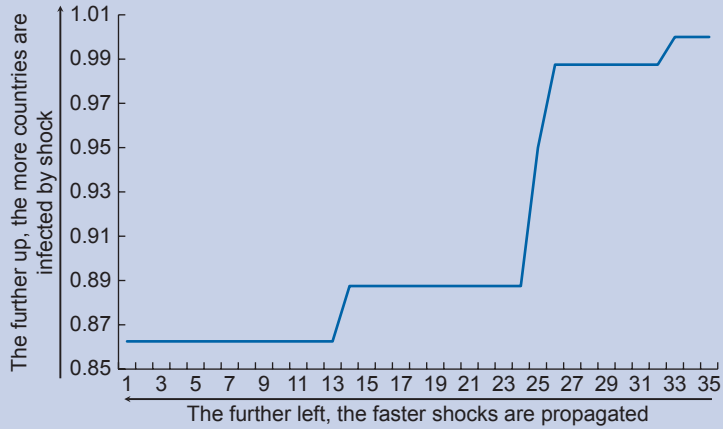


Figure 7.1.1 Shock Propagation Curve (*Share of countries affected in each step*)

Source: IMF staff calculations.

Interpreting shock propagation results. This exercise assumes that a link is severed. In principle, a link could, of course, be reduced rather than severed. Defining the degree of reduction, however, introduces an additional layer of assumptions. To keep the conceptual exercise simple and clear, assumptions that are not strictly necessary for the thought experiment are avoided. This does imply, however, that the results can only be interpreted with regard to *speed of contagion* rather than *size of the impact*. For example, Figure 7.1.1 shows the number of steps on the horizontal axis and, on the vertical axis, the share of countries affected in each of these steps.[2] The line is a "shock propagation curve." The further to the right or the lower the shock propagation curve, the longer it takes for contagion to reach a particular proportion of countries or the fewer the countries affected in each step, that is, the slower the shock propagation.[3]

[1] In the model, the shock generates a change in the network by cutting individual links. In practice, the network may change more broadly in response to the shock.

[2] Since the hypothetical network is unweighted, all links that exist are assumed to be of equal size. In this figure, the share of countries is not weighted by the number of their total links.

[3] The shock propagation curves are highly nonlinear because the network contains two distinct regions. For example, when a shock leaves Asia, reaches the global financial center, and jumps to the rest of the world, it suddenly causes an impact in a large number of countries.

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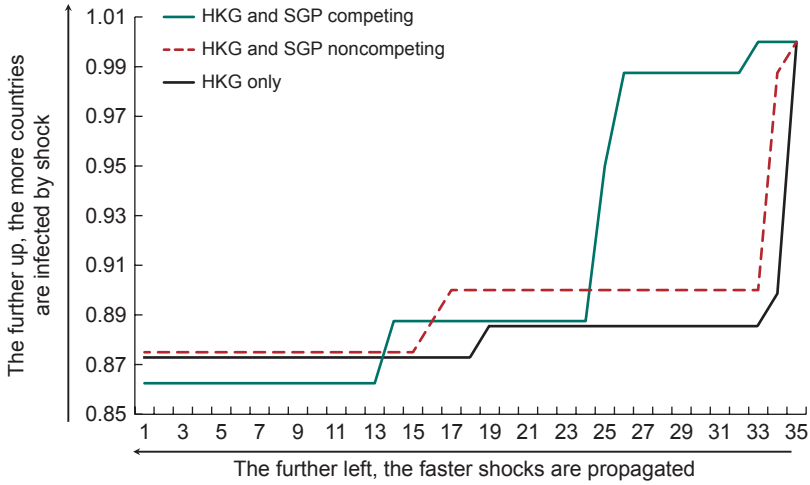


Figure 7.3 Shock Propagation Curve: Random Shock (*Share of countries affected in each step*)

Source: IMF staff calculations.
Note: HKG = Hong Kong SAR; SGP = Singapore.

partner countries would subsequently have a higher probability of receiving a global shock from either Hong Kong SAR or Singapore than they would have had if they were linked to only one of the two.

Shocks originating in China. The next experiment assumed that the initial shock originated in China specifically, rather than in a random location in the network (see Figure 7.4). In this exercise, the shock propagation curves for Hong Kong SAR and Singapore represent the following scenarios: specialized complementary centers (dotted red) and only one of the two (black) separate. A shock in China travels faster through a network in which there is only one Asian financial center (black curve) than in a network with two specialized financial centers (dotted red curve). This is because a single Asian financial center would provide a direct channel from China—the source of the shock—to the rest of Asia. In contrast, Singapore as a second financial center could buffer a shock from China that was immediately transmitted to Hong Kong SAR and, hence, slow the contagion to the rest of Asia. For the same reasons as in the case of random shocks, either scenario would slow contagion more than would two competing financial centers (blue curve).

Capital account liberalization in China. The final experiment considered a scenario of capital account liberalization in China. The assumption was that Hong Kong SAR becomes the only financial center for China. Of course, alternatively, Shanghai might become the only financial center for China, with Hong Kong SAR's financial market role withering once capital controls were removed. For this scenario, the only important element is that the source of the shock—China—is now home to a financial center in its own right. In Figure 7.5, for reference, two shock propagation curves from the previous experiment are shown

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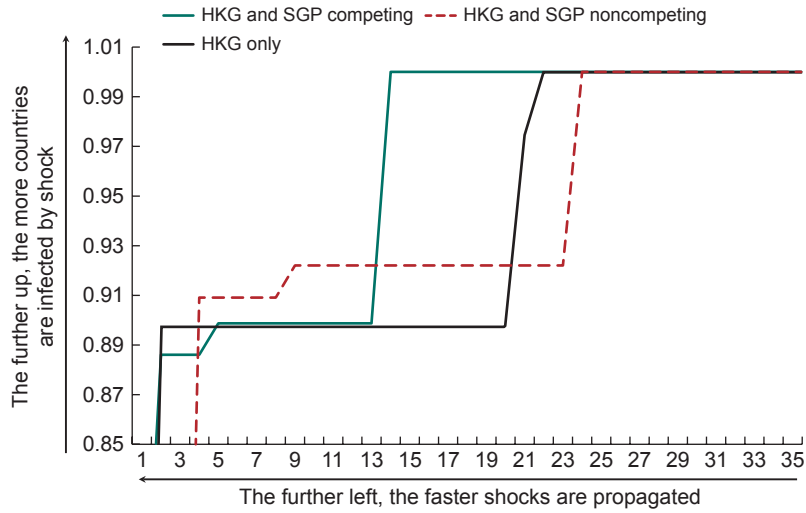


Figure 7.4 Shock Propagation Curve: Shock in China (*Share of countries affected in each step*)

Source: IMF staff calculations.
Note: HKG = Hong Kong SAR; SGP = Singapore.

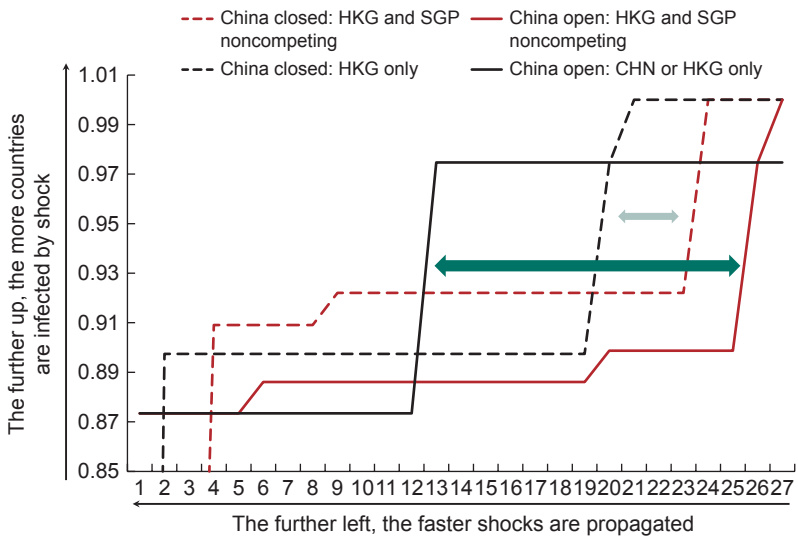


Figure 7.5 Shock Propagation Curve: Shock in China (*Share of countries affected in each step*)

Source: IMF staff calculations.
Note: CHN = China; HKG = Hong Kong SAR; SGP = Singapore.

in dotted lines: a dotted red for the scenario of Hong Kong SAR and Singapore as specialized financial centers and a dotted black for a scenario in which only one of them survives as the Asian financial center. The distance between these curves (indicated by a light green arrow) illustrates the degree to which the presence of

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the second, specialized, complementary financial center stabilizes the financial network by slowing contagion from shocks in China. Next, consider a merging of Hong Kong SAR into China as China's opens its capital account. The two continuous lines in the figure indicate the shock propagation curves for an open China. Again, the gap between the two continuous curves (dark green arrow) indicates the degree to which the presence of Singapore would slow the propagation of shocks in China. This gap is substantially wider. Hence, as China opens its capital account and integrates into the global financial network, Singapore's presence becomes increasingly stabilizing to the financial network by providing a buffer between China as the source of shocks and the rest of Asia.[17]

These results suggest that the stabilizing role of additional financial centers depends on the nature of the additional financial centers. Here, financial centers have many links and hence are able to propagate shocks widely. Additional financial centers would only serve to stabilize the network if they were different from existing financial centers, in particular, if they served as additional buffers between the source of shocks and other financial centers or countries.

Put together, these experiments suggest that the current complementarity between the two jurisdictions' business models may be an important consideration from the standpoint of regional and global financial stability. And as China integrates into the global financial system, the importance of maintaining this complementarity increases. As mentioned earlier, competition may foster other standard considerations of micro efficiency. While not seeking to disregard such micro considerations, it is worth noting that there is an inherent tension in favoring outright competition in an industry that is broadly thought to have economies of scale. The main insight we seek to convey from these shock propagation studies is that excessive competition may also engender destabilizing levels of complexity and interconnectedness in the network, and the presence of two "specialized" Asian financial centers may better balance the micro benefits from economies of scale with the macro benefits of stability.

REGULATORY AND SUPERVISORY ISSUES

Presence of Foreign Financial Institutions

Gateway. Foreign financial market participants typically use Hong Kong SAR and Singapore as access points to the rest of Asia. The two cities are considered to be hubs that offer robust expertise and infrastructure and diversified financial entities and services, as well as strong legal, regulatory, and supervisory frameworks. A characteristic both IFCs share is the strong presence of foreign banks, including G-SIBs, many of which are incorporated as branches rather than as subsidiaries. The presence of these G-SIBs has resulted in large cross-border exposures,

[17] This is consistent with other authors' findings. For example, Hooley (2013) cautions that, as China integrates into the global financial network, the global financial system becomes more vulnerable to financial shocks originating in China.

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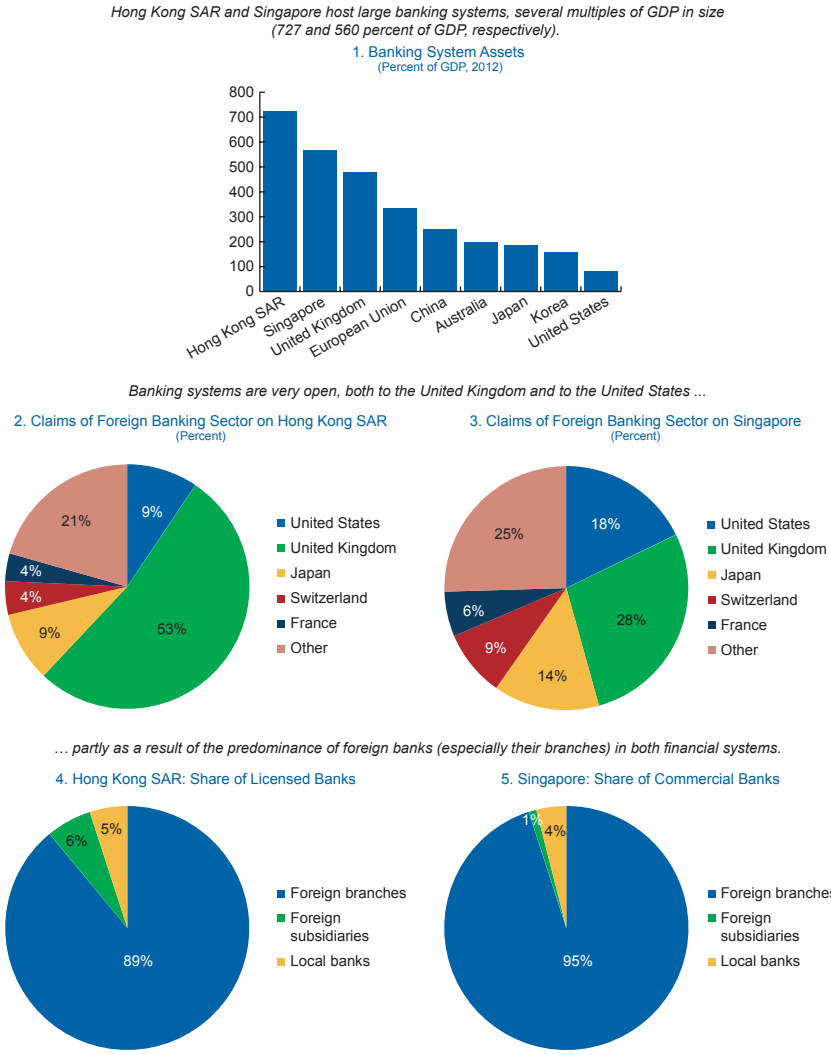


Figure 7.6 Banking Systems

Sources: Australia October 2012 Financial Sector Assessment Program; Bank for International Settlements, preliminary international banking statistics (consolidated foreign claims ultimate risk), 2013:Q2; European Banking Federation; Haver Analytics; Hong Kong Monetary Authority; Korean Financial Statistics Information System Monthly Bulletin; Monetary Authority of Singapore; and The CityUK.
Note: The largest four foreign banks account for one half of the banking system assets. Commercial banks account for 77.8 percent of the financial system assets. About half of the foreign banks offer retail services and accept retail deposits.

especially to the United States and the United Kingdom, and banking system assets that are several multiples of GDP (Figure 7.6). These interconnections represent the "plumbing" of the networks examined elsewhere in this chapter.

Business models. Foreign banks operate using several business strategies, depending on their group and regional preferences. To simplify, two business

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models dominate: (1) deposit-led retail and commercial banking, in which banks operate on a stand-alone basis collecting local deposits first and then lending locally or regionally; and (2) an investment-led model, in which banks are typically branches of large foreign banks, and fund projects that are primarily financed by the parent company or by funds directly raised in capital markets. Across Asia, and in Hong Kong SAR and Singapore in particular, HSBC, Standard Chartered Bank (SCB), and Citigroup have become strong local deposit-taking institutions, similar to the first model. Many European and other American G-SIBs follow the second model.

Foreign G-SIBs. Three foreign banks stand out in their size and importance for both Hong Kong SAR and Singapore: HSBC Group and SCB from the United Kingdom, and Citigroup from the United States. In aggregate, they hold 23 percent of bank assets in Singapore and, together with Bank of China, they hold 53 percent in Hong Kong SAR. These three institutions illustrate the fact that global banks implement their global strategic choices in Asia out of geographic convenience and to leverage business specialization, by using primarily, but not exclusively, Singapore as a platform for non-Japan, non-China Asia, and Hong Kong SAR as a hub for China and Northeast Asia. Similarly, fixed-income trading and asset management are often executed out of Singapore, while equities and investment banking tend to be done in Hong Kong SAR. HSBC is a Hong Kong SAR subsidiary, with a branch in Singapore, in line with the HSBC's stated model and preference for subsidiaries. SCB operates as a subsidiary in Hong Kong SAR, and incorporated a subsidiary in Singapore in October 2013 to house its retail banking operations, but the bank continues to have other operations under its branch. Citibank has both a subsidiary and a branch in Singapore. The incorporation status of individual banks has implications for the extent of supervisory powers available to home and host authorities. Although capital regulations may not apply to branches (requirements for "branch capital" are relatively rare), many other prudential risk-management requirements often apply to both branches and subsidiaries. In both Hong Kong SAR and Singapore, standards, such as liquidity requirements, are applied across the board to all authorized institutions, subsidiaries, and branches. Home and host supervisory responsibilities and cooperative arrangements often reflect proportionality considerations.

Importance of Sound Financial Regulation in IFCs

Regulation of IFCs has become an increasingly important factor in financial center competition since the global financial crisis. Two concurrent trends have emerged:

- **Tolerance of policymakers for unregulated products and markets has waned.** The financial crisis reiterated the need to make financial systems more resilient and provided a strong impetus globally to strengthen regulatory frameworks. Financial centers not compliant with international rules are faced with peer pressure, stigmatization, and reputational damage. Well-regulated financial centers with sound prudential requirements and effective

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mechanisms for supervisory intervention may be considered to be safe havens, particularly in times of crisis.

- **Tension is rising between greater convergence of regulation and national fragmentation.** The recent emergence of more harmonized regulatory standards at the global level and greater policy coordination may narrow the scope for regulatory competition. However, full consistency in the drafting and implementation of global rules has not yet been achieved. Sharp divergences in regulatory and supervisory standards—particularly between financial centers—may increase risks of regulatory arbitrage, and therefore, implicitly or explicitly, generate destabilizing competition to the detriment of global stability.

Opting for a strict approach. A robust regulatory framework is widely viewed to be an element of competitiveness for global financial centers. Both Hong Kong SAR and Singapore have demonstrated their interest in robust regulations and a high degree of transparency in the financial sector, as essential elements in their status as IFCs. The two jurisdictions have a strong track record in their timely adoption, and strict implementation, of the global regulatory agenda.

Regulatory Cooperation, Priorities, and Challenges

Membership in key regional and global forums. In addition to their membership in the Basel Committee on Banking Supervision and the Financial Stability Board, MAS and HKMA actively participate in several regional forums to promote financial stability in Asia and improve the collective voice of the region in international standard-setting bodies.[18] These forums include (1) the ASEAN Capital Markets Forum, which focuses on projects to harmonize standards in capital market regulations in ASEAN; (2) ASEAN+3, which coordinates initiatives between ASEAN and China, Japan, and Korea;[19] and (3) Executives' Meeting of East Asia Pacific Central Banks (EMEAP) to support regional financial stability and development and to discuss financial and monetary stability, bond market development, payment and settlement systems, and banking supervision. In addition, Singapore hosts the IMF's Training Institute for Asia, the Chiang Mai Initiative Multilateralization's independent surveillance unit, and the ASEAN+3 Macroeconomic Research Office. HKMA took the lead on the implications of global financial reforms for Asia as Chair of the EMEAP Monetary and Financial Stability Committee.

Business model review. The emergence of various sets of structural measures, such as initiatives proposed in the United States (Volcker rule), the United

[18] For initiatives led by Hong Kong SAR, see HKMA, 2012 annual report. MAS co-chaired the Basel Committee on Banking Supervision Core Principles Group, which delivered the revised Core Principles for Effective Banking Supervision in September 2012 and currently chairs the Macroprudential Supervision Group.

[19] These initiatives include promotion of financial stability through the Chiang Mai Initiative Multilateralization, and development of the bond market through the Asian Bond Markets Initiative.

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Kingdom (Independent Commission on Banking, also known as "Vickers"), and the European Union (Liikanen proposals), may be one incentive, among other regulatory and macroeconomic changes, prompting banks to review their business models, geographic footprints, and operational structures.[20] While it is too early to assess the full impact of these combined changes, some banks are reportedly considering moving assets to markets where funding is readily available and cheaper, and are also likely to book and net derivatives where they trade the underlying assets. Asian financial centers could benefit from attracting EU and U.S. banks' activities, especially in asset and private wealth management, and possibly in derivatives. Should more complex assets be transferred to Hong Kong SAR and Singapore, a robust regulatory framework that minimizes regulatory arbitrage and fosters solid supervision would be critical.

Challenges of hosting G-SIBs. As noted elsewhere in this chapter, foreign G-SIBs have been central to the development of the two financial centers by connecting them to the G-SIBs' sophisticated and large home jurisdictions, and allowing the transfer of staff, technology, and know-how. This helped deepen overall sophistication and credibility and created a critical mass. At the same time, the presence of G-SIBs may bring some externalities worth monitoring and possibly regulating. For instance, in the case of Hong Kong SAR and Singapore, externalities may include the following:

- *Size*—Even if the portion of assets (or revenues) of G-SIBs associated with Hong Kong SAR and Singapore is small compared with those of the rest of the G-SIBs' assets, they could still be meaningful relative to these jurisdictions' total banking assets, GDP, and reserves.[21]
- *Interconnectedness*—G-SIBs have strong connections with each other and with other financial sector participants. The failure of one G-SIB could amplify and propagate systemic shocks. As hosts to G-SIBs, Hong Kong SAR and Singapore need to be particularly guarded against such vulnerabilities in their respective self-interests, in the interests of preserving complementarity, and for greater regional and global stability.
- *Complexity for supervision and resolution*—Large foreign banks often have complex business models, geographic footprints, and organizational structures. Properly supervising these sophisticated cross-border groups is a challenging task that requires joint surveillance from both home and host authorities.

[20] European Commission January 2014 proposal for a regulation of the European Parliament and of the Council on structural measures improving the resilience of EU credit institutions. Section 619 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which created a new section 13 of the U.S. Bank Holding Company Act of 1956. Section 4 of the Financial Services (Banking Reform) Act 2013, which inserts Part 9B (sections 142A – 142Z1) into the Financial Services and Markets Act 2000.

[21] The HKMA and MAS participate in crisis management groups for G-SIBs that are sizable in Hong Kong SAR and Singapore. HKMA participates in nine such groups and MAS participates in seven.

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- *Systemic importance*—G-SIBs have relative systemic values that vary depending on whose perspective is being considered (for example, from home and host authorities or from the banking group). A group like HSBC, for instance, would likely be considered of systemic importance for the United Kingdom, Hong Kong SAR, and Singapore. From HSBC's point of view, it is possible that operations in Singapore would be considered to be less systemic for the group than would be operations in the United Kingdom or Hong Kong SAR. SCB would also be viewed as systemically important for the two Asian jurisdictions, but might not be for its home country, since its U.K. activities are quite small. Based on the elevated contribution that Singapore and Hong Kong SAR make to the bank's revenues, SCB is likely to label both centers as systemic.
- *Leakages*[22]—Domestic regulations may not always apply to foreign banks operating locally. The perimeter of application would depend on the form of incorporation of the banks (branch or subsidiary), giving greater powers to home and host authorities, respectively.[23]

Regulatory responses thus far. In addition to opting for a strict regulatory approach for domestic banks and maintaining a strong track record as already noted, the two centers have already adopted measures to mitigate the risks associated with foreign banks and hedge funds:

- *Foreign banks*[24]—HKMA and, to a larger degree, MAS, impose strict standards, comparable to those applicable to domestic banks. These standards apply to (1) licensing and access to retail deposits, which may require local incorporation; and (2) prudential requirements. For instance, in Singapore, full and wholesale branches have to observe a minimum asset maintenance ratio of 35 percent and 15 percent, respectively. In addition, a separate set of asset maintenance requirements under the Deposit Insurance Act covers insured deposits. Foreign branches also must comply with stringent liquidity requirements (they typically hold minimum liquidity assets equivalent to 16 percent of their qualifying liabilities), and must maintain minimum cash balances. MAS enjoys resolution powers, and can impose corrective and remedial actions on branches. In Hong Kong SAR, the existing liquidity requirements apply, and the new liquidity coverage ratio (for Category 1 banks) and liquidity maintenance ratio (for Category 2 banks) will apply to foreign bank branches. A proposed new resolution regime would extend to branches of foreign banks, and existing supervisory intervention powers for banks extend to branches already.

[22] See Aiyar, Calomiris, and Wieladek (2012) for an illustration of leakages from macroprudential policy in the United Kingdom.

[23] Even though requirements such as capital rules may not apply to branches, branches are subject to other prudential requirements, including liquidity requirements, corporate governance requirements with respect to management, and inspections by host authorities.

[24] Measures are detailed in the Singapore FSSA (IMF 2013), Box 2 on "Supervision and Resolution of Foreign Branches."

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- *Hedge funds*—Hedge funds are also subject to closer scrutiny. In line with the United States, where stricter registration and reporting requirements have been imposed on hedge funds by Dodd-Frank, MAS now requires asset and hedge fund managers operating in Singapore (including foreigners) to either hold a capital markets license or be registered. Similarly, both Hong Kong SAR and the United Kingdom are tightening the regulation and surveillance of hedge funds.

Outlook for future regulatory responses. The hosting of G-SIBs in Hong Kong SAR and Singapore is an opportunity, but also calls for intensified supervision and cross-border cooperation. Authorities' active participation in foreign banks' colleges of supervisors and crisis management groups is essential to identifying and developing robust and actionable resolution strategies for foreign G-SIBs active in Hong Kong SAR and Singapore.

CONCLUSION

Complementarity. Using network analysis tools, we posited that financial system stability would be enhanced if Hong Kong SAR and Singapore both existed as financial centers *and* acted in a complementary fashion to one another across geographic clientele and asset markets. Indeed, this framework closely matches how they have developed thus far. The main insight we seek to convey is that excessive competition may engender destabilizing levels of complexity and interconnectedness in the network, and the presence of two "specialized" Asian financial centers may better balance the micro benefits from economies of scale with the macro benefits of stability.

Credibility. If Hong Kong SAR and Singapore are to continue playing their stabilizing roles, they will need to preserve sound financial systems. Doing so will require effective regulation, intensive supervision, and strong fiscal and external buffers. It would benefit both centers, and Asia at large, if the two jurisdictions were to collaborate on enhancing Asia's connectivity and address infrastructure regulations affecting Asia and identify common themes and solutions for financial markets.

Strategic challenges. Hong Kong SAR's financial depth, intensive social and professional networks, and sheer depth of soft institutional structures create comparative advantages. At the same time, these advantages require the jurisdiction to strike a balance between servicing the financial needs of China and reaping the related opportunities, while preserving and further growing its international character and ability to define its policies to support its own financial services sector for a broader clientele. Singapore is characterized by a small domestic market, which is dominated by a few large banks. Without a base similar to the one that Hong Kong SAR has with China, Singapore's banks need to continue to develop long-term, risk-based regional strategies. To attract foreign interest and continue to benefit from further innovation, Singapore needs to deepen its debt and stock markets as well as its insurance and asset management sectors. Singapore is

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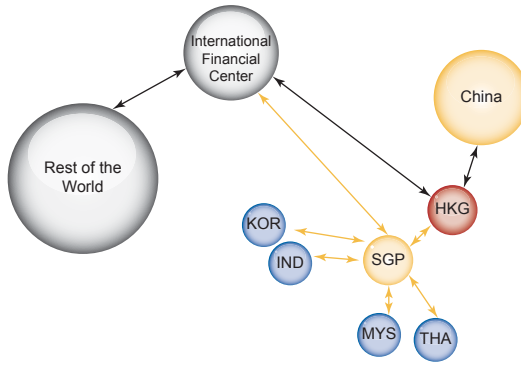
expected to continue to be considered a "safe haven" in South and Southeast Asia. However, Singapore may also have to venture beyond this region, to new geographic and product growth drivers.

Meeting the region's needs more effectively. Many emerging Asian economies appear to have low degrees of financial integration, both with the world and with other Asian countries. A low degree of financial integration or openness tends to be mirrored by a lack of financial sector depth. This is where Hong Kong SAR and Singapore could help boost financial integration. For instance, the two jurisdictions could help link Asia and niche regional centers to global financial centers, which could improve economic growth and financial resilience in Asia. Finally, the prospective development of pan-Asian banking groups may mitigate some of the volatility associated with hosting groups from the United States and Europe, and further enhance the voice of Asia in the global regulatory and policy agenda.

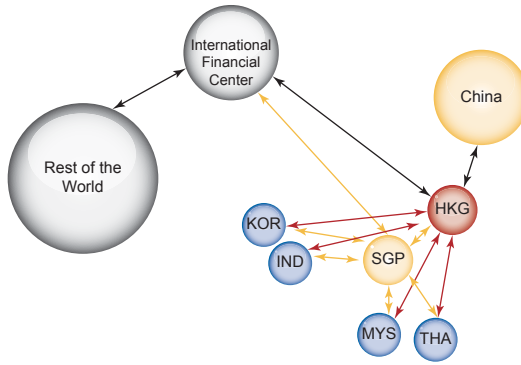
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ANNEX 7.1

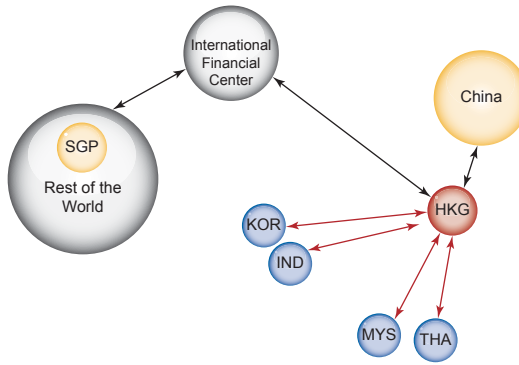
1. Hong Kong SAR is the Financial Center for China, Singapore is the Financial Center for the Rest of Asia



2. Hong Kong SAR and Singapore are Competing Financial Centers for Asia



3. Hong Kong SAR Becomes the Dominant Financial Center for China and the Rest of Asia



Annex Figure 7.1.1 Connections and Shocks

Note: Since the hypothetical network is unweighted, all links are assumed to be of equal size. In the figures presented here, the size of the circles is illustrative. HKG = Hong Kong SAR; KOR = Korea; IND = India; MYS = Malaysia; Singapore; THA =Thailand.

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