

**FOR
AGENDA**

SM/07/401
Correction 1

January 15, 2008

To: Members of the Executive Board

From: The Secretary

Subject: **People's Republic of China—Hong Kong Special Administrative Region—Selected Issues**

The attached corrections to SM/07/401 (12/26/07) have been provided by the staff:

Factual Errors Not Affecting the Presentation of Staff's Analysis or Views

Page 9, para. 10, line 4: for “tightly controlled exchange rate with the U.S.”
read “an exchange rate linked to the U.S. dollar,”

Page 10, Box I.1, para. 1, line 2: for “they may deviate.”
read “several factors can cause the two rates to deviate.”

para. 2, line 2: for “Forward HK\$ rates can lie outside of the trading band
and there” read “Specifically, there”

Page 27, para. 28, line 4: for “fund managers,” read “fund management companies,”

line 5: for “establish wholly owned subsidiaries or joint ventures”
read “establish subsidiaries”

line 6: for “to serve Mainland clients.”
read “to operate relevant businesses.”

line 15: for “late June” read “July”

last line: for “relatively unattractive yields and a small deposit base.”
read “a small renminbi deposit base.”

para. 29, line 9: for “Developing a more”
read “In addition to expanding Hong Kong SAR's role in
Mainland intermediation, developing a more”

Typographical Errors

Page 4, para. 4, line 2: for “medium-run and saving” read “medium-run saving”
para. 5, line 2: for “which on depend on” read “which depend on”

Page 5, footnote 7: for “to thanks Hans Genburg” read “to thank Hans Genberg”

Page 27, para. 28, line 4: for “China Securities and Regulatory Commission,”
read “China Securities Regulatory Commission,”

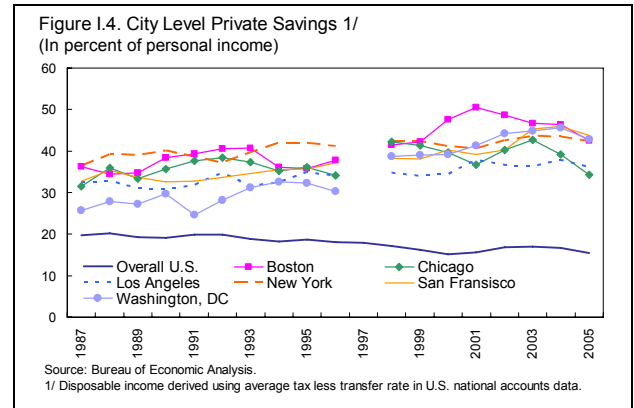
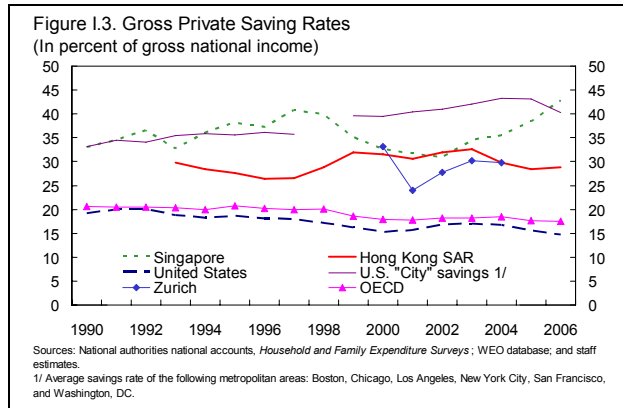
Questions may be referred to Mr. Aziz (ext. 37693) and Mr. Porter (ext. 37316) in APD.

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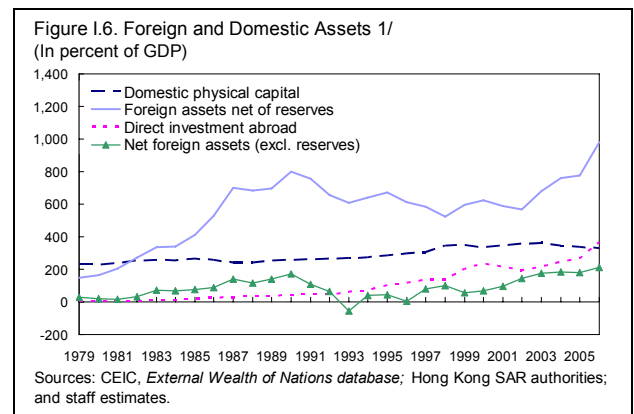
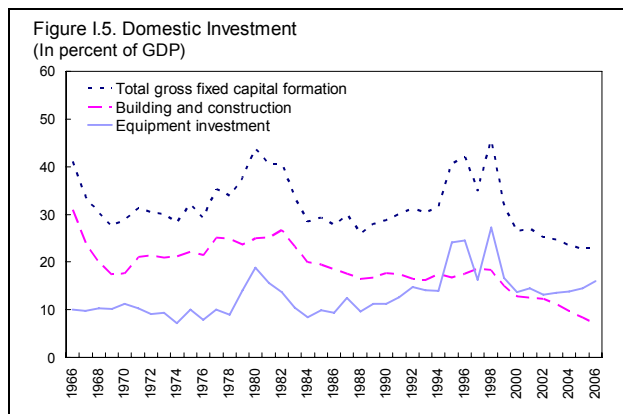
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manufacturing. Given their nature, these cities tend to have highly concentrated economic bases, and it seems likely that their higher savings could partly reflect precautionary motives (due to potentially volatile income and capital flows) in addition to life-cycle motives. Investment, at least in certain types of capital,



may also be lower than in manufacturing-centered cities, although city-level investment data is hard to come by.⁴ In the case of Hong Kong SAR, the transition out of manufacturing which began in the 1980s reduced the need for domestic physical capital, especially in the form of structures. With the domestic capital stock growing broadly in line with GDP, Hong Kong SAR's high savings have been largely invested externally, a trend that may reverse in coming decades if many Hong Kong SAR residents retire there.



3. While directly using city level data would be the most natural way to analyze the saving and investment patterns in Hong Kong SAR and its peers, data limitations preclude this. Not only does coverage differ significantly across countries—household expenditure

⁴ There is no available city-level investment data for U.S. cities. However, in a broad panel of 85 economies Hori (2007) find industry structure to be a significant determinant of investment demand, with service-oriented economies generally investing less. Consequently, service-oriented cities may require less capital in production.

data is available for many U.S. cities, but not European cities—but comparability in terms of time coverage, not to mention differences in the measurement of variables such as income are problematic. Given these issues, the econometric analysis in the next section uses national data from a set of six economies that are heavily reliant on financial services—Belgium, Luxembourg, Hong Kong SAR, the Netherlands, Singapore, and Switzerland. Sensitivity analysis to including additional Asian and advanced countries is also undertaken to assess how the determinants of financial center saving and investment patterns differ from those of other economies.

4. This chapter finds that population dynamics, volatility, and growth are the main drivers of both short- and medium-run saving and investment behavior. Moreover, the results show that increased volatility around the Asian crisis led to a substantial and persistent structural decline in investment relative to savings in Asian financial centers, leading to a structural rise in the current account surplus. At a business cycle frequency, shocks to effective import prices and international financial linkages (through interest rates) and the efficiency of investment turn out to be particularly important for Hong Kong SAR's saving and investment patterns.

B. Medium-Run Saving and Investment Trends in Service-Oriented Economies

5. An extensive literature has studied the determinants of saving and investment. Many of these studies estimate saving-investment relationships which depend on factors highlighted in intertemporal optimizing models. Underpinning savings are income, interest rates, factors that drive precautionary savings (income volatility and access to insurance and credit markets), and life-cycle savings ahead of retirement. Underpinning investment include measures of income and prospective growth, uncertainty and volatility, and factors that capture the cost of funds. The analysis in this section focuses on service-oriented economies to understand the principal drivers of saving and investment in city states. To understand how saving and investment in these cities differ from more diversified economies, the reduced form relationships are also estimated with broader samples of countries, first including several advanced Asian economies, and then a set of 28 economies classified as advanced by the IMF's *World Economic Outlook* (WEO).⁵

6. Old-age dependency and the impact of the Asian crisis are key determinants of the medium-run saving rate, while short run saving growth is driven by economic growth and medium-run adjustment.⁶ The estimated parameters (Table I.1) suggest that the determinants

⁵ The first set of economies (financial centers) comprise Belgium, Luxembourg, Hong Kong SAR, the Netherlands, Singapore, and Switzerland. The second set (financial centers and advanced Asia) adds Australia, Japan, Korea, New Zealand, and Taiwan POC.

⁶ In the estimated medium-run saving relation, indicators of volatility (both the standard deviation of growth and an Asian crisis dummy) were included along with old-age dependency, while in the short-run saving

(continued)

of medium-run saving are the same across the three different sets of economies, although their importance does differ. The significance of old age dependency indicates a strong life-cycle effect, with saving in financial centers seemingly much more responsive to dependency than that in the more diversified set of countries. This could reflect the stylized fact that in financial centers young professionals come and accumulate savings, but leave and are replaced by other young professionals before reaching retirement, while the old remain and dissave in the more broadly based advanced economies.⁷ The significance of the Asian crisis dummy likely reflects the decline in fiscal savings in affected countries that followed the crisis, although with the Asian crisis being a huge volatility event for the countries affected, the significance of the dummy is indicative of the importance of precautionary savings.^{8 9}

Table I.1. Saving Error-Correction Parameter Estimates						
	Financial Centers		Financial Centers and Advanced Asia		Financial Centers and Advanced Countries	
	Coef.	t	Coef.	t	Coef.	t
Short-run coefficients						
$\Delta \log$ (saving)	0.10	1.16	0.17	2.3	0.16	3.14
$\Delta \log$ (GDP)	0.97	2.60	0.83	2.96	0.96	8.61
MR adjustment	-0.25	-2.21	-0.29	-3.10	-0.23	-4.60
SR R^2		0.43		0.44		0.70
Medium-run coefficients						
Dependency ratio	-0.44	-63.1	-0.37	-4.2	-0.16	-4.0
Asian crisis	-0.11	-5.1	-0.14	-7.1	-0.11	-6.4
MR R^2		0.66		0.79		0.74
Source: Staff estimates.						

7. Volatility is the main driver of medium run investment, although investment in financial centers is also very responsive to economic growth in the short run. The estimated relationship posits that medium-run investment is dependent on volatility and industry

relation growth, the ex post real interest rate, and lagged saving growth were included. General-to-specific techniques were used to choose the final estimated relationship.

⁷ We would like to thank Hans Genberg for suggesting this interpretation.

⁸ Although the estimates presented in Table I.1 reflect our preferred structure, the fact that when the medium-run saving relationship is re-estimated without the Asian crisis dummy, the standard deviation of growth becomes strongly significant for the financial centers and Asia and financial centers panels suggests the dummy captures the impact of volatility.

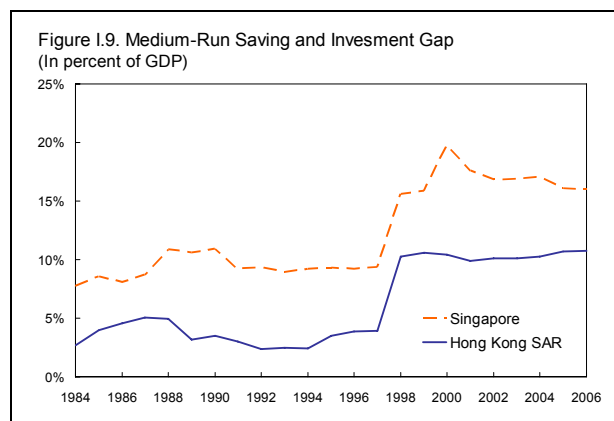
⁹ In the case of Hong Kong SAR, this dummy could also capture uncertainty generated by the 1997 return of the SAR to China.

structure with the possibility of a break in the relationship around the Asian crisis, while short-run dynamics potentially depend on the persistence of investment growth, GDP growth, and an ex post real interest rate. The same factors broadly drive investment across advanced economies, although short-run investment growth is only significant outside of Asia and financial centers. Moreover, the magnitude of the impact differs across types of economies—medium-run investment has been more responsive to volatility in financial centers (and especially in Asia) than in more diversified advanced economies.

	Financial Centers		Financial Centers and Advanced Asia		Financial Centers and Advanced Countries	
	Coef.	t	Coef.	t	Coef.	t
Short-run coefficients						
$\Delta \log$ (investment)	-0.06	-0.76	0.04	0.62	0.24	2.69
$\Delta \log$ (GDP)	1.33	3.75	1.05	4.20	0.65	2.70
MR adjustment	-0.25	-3.70	-0.30	-4.60	-0.28	-4.70
SR R^2		0.60		0.55		0.49
Medium-run coefficients						
Volatility	-1.35	-0.70	-3.05	-5.08	-0.69	-3.28
Asian crisis	-0.33	-4.89	-0.22	-7.09	-0.23	-5.83
MR R^2		0.64		0.67		0.63
Source: Staff estimates.						

8. Medium-run saving and investment rates have been fairly stable in the financial centers outside Asia (Figures I.7 and I.8). There are distinct breaks (around the Asian crisis) in the medium-run saving and investment rates for Hong Kong SAR and Singapore, with the rates largely stationary around the break. Nonetheless, changing volatility since 2000 has led to some small increase in Hong Kong SAR's medium-run investment rate. Cyclical (short run) factors seem more important as determinants of the actual path of saving and investment in Hong Kong SAR and Singapore, with the adjustment in actual investment lagging medium-run breaks in Hong Kong SAR and Singapore, and an apparent overshooting of the decline in investment in Singapore. Slightly rising trends in medium run saving in the Netherlands and Switzerland are driven by movements in the dependency ratio. Overall, the results suggest that for Hong Kong SAR and Singapore the Asian crisis (and for Hong Kong SAR the reunification with the Mainland), and any accompanying changes in perceived volatility, have resulted in a widening of the medium-run saving-investment gap, with an even greater widening for Singapore.

9. Three conclusions follow from the above analysis for Hong Kong SAR: First, a high saving rate is likely to persist for some time due to aging of the workforce. Second, the investment rate should rise if economic uncertainty continues to decline, but it is very unlikely to revert to its level immediately prior to the Asian crisis in Hong Kong SAR and Singapore. Consequently, a large equilibrium current account surplus and large external private investment are likely to continue for some time.



C. Determinants of Saving and Investment Over the Business Cycle

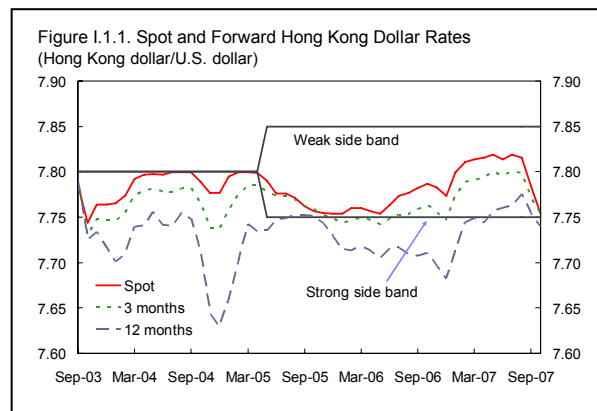
10. In this section factors that are particularly important drivers of saving and investment dynamics over the business cycle are identified for Hong Kong SAR. A two country dynamic stochastic general equilibrium (DSGE) model designed to capture many of Hong Kong SAR's unique and salient features—an exchange rate linked to the U.S. dollar, resultant high sensitivity to foreign monetary policy, prudent fiscal policy and large fiscal savings, economic structure as a trade intermediating hub, and flexible markets—is used.¹⁰ This analysis highlights the role that changes to financial linkages (through the gap in interbank—HIBOR-LIBOR—interest rates), trade linkages (through effective import prices), domestic monetary conditions, foreign (U.S.) monetary policy, as well as changes to the efficiency of investment (possibly reflecting the changing cost of capital) play in determining saving and investment dynamics.¹¹ Estimation and inference are based on an approximate linear unobserved components representation of this DSGE model, with estimation by Bayesian techniques. Following Vitek (2006a, 2006b), cyclical components are modeled by linearizing equilibrium conditions around a stationary deterministic steady state equilibrium, while trend components are modeled as random walks. The data set consists of quarterly seasonally adjusted observations on the levels of thirty-three macroeconomic variables for Hong Kong SAR and the United States over the period 1983Q4 through 2007Q2. The results are summarized through the responses of saving and investment to shocks (impulse responses functions), decomposition of volatilities into the shocks that drive them, and a decomposition of historical saving and investment into the factors that drive them.

¹⁰ Details of this model are elaborated in Porter and Vitek (2007).

¹¹ See Box I.1 for a discussion of factors that drive the gap between HIBOR and LIBOR interest rates.

Box I.1. Explaining the Hong Kong Dollar and the U.S. Dollar Interest Rate Gap¹

Under a pure currency board system, Hong Kong dollar and U.S. dollar interest rates should move together; however, under the LERS with its “convertibility zone,” several factors can cause the two rates to deviate. Unless there is speculation that the zone may be breached, the extent of any deviation should be limited so that HK\$/US\$ forward rates remain within the trading band. In recent years, local interbank rates (HIBOR) have mostly remained below their U.S. dollar counterparts (LIBOR), and have done so in a way that, consistent with covered interest parity, has seen the HK\$ forward rates remain outside the strong side of the band for significant periods. The difference in these rates rose to over 200 basis points in late 2004. Although this gap largely disappeared in May 2005 when the HKMA introduced the three refinements (including the convertibility zone) to the LERS, it reemerged throughout 2006 before narrowing again in 2007.



The factors that drive the gap can give rise to anomalies in the relationship between interest rates and the exchange rate. Specifically, there can be insufficient adjustment of local interest rates to liquidity changes, as recently demonstrated. Empirical estimates (see equation below) suggest the gap is explained by several liquidity supply and demand factors in addition to Mainland-specific factors. The estimates are based on OLS regressions using a sample of monthly data from September 2000 through October 2007. The difference between 12-month HIBOR and LIBOR (*gap*) is the dependent variable. Key results are that the gap is highly persistent—three fifths of the previous period’s gap carries over, and:²

- ◆ *Expectations that the HK\$ would be allowed to follow an appreciating renminbi were only important prior to the May 2005 refinements of the LERS.* During this period, the HK\$ was seen by some market participants as a renminbi proxy, and speculative inflows into the HK\$ market increased domestic interbank liquidity to unprecedented levels, depressing local interest rates. Specifically, before May 2005, an expected 1 percentage point appreciation in the renminbi/US\$ exchange rate (implied by the 12-month nondeliverable forward rate, e^{rmbusd}) led to a 4 basis point reduction in the gap. A dummy for the 2005 refinements ($d1 = 1$ after May 2005) is statistically insignificant, suggesting that speculative pressures ended then.
- ◆ *Strong foreign appetite for Hong Kong assets helps keep HK\$ interest rates relatively low.* Inflows attracted by large IPOs (in particular for Mainland banks) have been widely cited as a possible factor driving down local interest rates. Indeed, for each HK\$1 billion increase in IPO funds raised (*ipo*) the gap falls by one fifth of a basis point. Local equity market returns (*hsidji*) are also significant, with a 1 percentage point rise in returns in the Hang Seng relative to the Dow Jones reducing the gap by ½ basis point.
- ◆ *A temporary excess supply of funds also reduces the gap, but high stock market turnover tends to offset this.* Local interest rates also decline with the loan-to-deposit ratio (*ltd*); it is estimated that the gap will fall by nearly 2 basis points for each percentage point loans grow by less than deposits. In contrast, higher stock market and IPO activity—captured through turnover (*dailyto*) and a higher ratio of HK\$ to foreign currency deposits (*hkdfc*)—usually increases demand for local currency, thereby increasing local interest rates. For a HK\$1 billion rise in daily stock market turnover or a 1 percentage point rise in the ratio of HK\$ to foreign currency deposits, the gap is estimated to rise by ½ basis point.

$$gap = -12.2 + 0.616 gap_{-1} - 0.042(1 - d1)\Delta e^{rmbusd} - 0.002 ipo + 0.018 ltd + 0.005 hkdfc - 0.006 hsidji + 0.004 dailyto - 0.672 d2$$

Adjusted $R^2 = 0.906$ adjusted DW test (p-value) = 0.2 LM serial autocorrelation test (p-value) = 0.71

1/ The principal author of this box is Cynthia Leung; the results are based on Gruenwald and Leung (2007).

2/ Diagnostic tests indicate serially correlated errors. A plot of residuals reveals two outliers (October and December 2004), and a dummy variable $d2$ was added to correct this serial correlation.

within the region at some US\$400 billion, and boost its world share from 1.1 percent to 1.5 percent.²³

28. Moreover, recent administrative measures seem to underscore Hong Kong SAR's privileged role in China's gradual capital account liberalization for portfolio flows. Under the latest round of the Mainland and Hong Kong Closer Economic Partnership Agreement, Mainland fund management companies, with approval of the China Securities Regulatory Commission, will be allowed to establish subsidiaries in Hong Kong SAR to operate relevant businesses. Moreover, the Qualified Domestic Institutional Investor (QDII) program is being expanded to allow investment in overseas stock markets (in addition to fixed income products previously), with Hong Kong SAR being an attractive destination given its preeminence in listings of Mainland companies. Finally, in mid-August, the Chinese authorities announced a pilot project under which local retail investors can directly invest in non-Mainland securities. With the pilot initially restricted to the Hong Kong SAR market (given the need to agree on a memorandum of understanding with the relevant Mainland regulators), trading activity should be bolstered here, although the modalities are still to be set. The first Chinese renminbi-based bond issuance in Hong Kong SAR in July offers another avenue of growth, although prospects are limited for now owing to a small renminbi deposit base.

29. As a result, Hong Kong SAR is likely to enjoy a first-mover advantage as the Mainland's financial system further integrates with the world, but how to preserve this momentum will be critical in the long run. Hong Kong SAR's traditional strengths vis-à-vis domestic centers in terms of a first-rate financial sector infrastructure and skills base could diminish over time relative to its disadvantage regarding cultural proximity, expert knowledge of the local economy, or access to local distribution networks for financial products. This calls for a development strategy that balances reaping the nearer-term benefits from the special China role with the need to transcend into a truly international center in the long run. In addition to expanding Hong Kong SAR's role in Mainland intermediation, developing a more geographically diverse base for financial services that relies less on a domestic economy or hinterland can be done, as evidenced by the examples of London at the global level, or Singapore in Asia. It would require maintaining Hong Kong SAR's competitive edge on skills, legal and institutional infrastructure, as well as regulation, thereby creating an environment that promotes both stability and innovation. Further improving English language skills will also be critical as English is not only the language of global finance, but also the lack of its use in other sectors of society would make it difficult to attract and retain a globally diversified pool of human talent. Similarly, quality of life issues, including cultural vibrancy and a clean environment, are likely to become increasingly

²³ In addition, it is conceivable that some form of "round tripping" may also occur with portfolio investments to the extent that investments through Hong Kong SAR-based firms and products offer advantages over direct domestic investments in the Mainland.

important factors.²⁴ Developing new markets and instruments, including emissions trading or aging-related products, could bolster further Hong Kong SAR's role as a less China-centric and more international financial center.

²⁴ While quality of life has been ranked only 11th for a global financial centers index compiled by Mainelli and Yeandle (2007), this does not capture its indirect impact, e.g., by reducing the availability of skilled labor.