

# Macroeconomics

## *for Emerging East Asia*

Calla Wiemer

11 November 2019

## 7. Finance

### Elements of a Financial System

*Financial Intermediaries*

*Financial Markets*

### Financial Deepening and Innovation

*Financial Deepening*

*Financial Innovation*

*US Credit Boom of the 2000s*

### Finance in Emerging East Asia

*Depth*

*Liquidity*

*Volatility & Fragility*

### The Special Case of Hong Kong

*Hong Kong Monetary Institutions*

*Hong Kong As a Global Financial Hub*

### Interest Rates and Asset Prices

*Interest Rate Determination*

*Relationship between Interest Rates and Asset Prices*

### Finance and the Macroeconomy

#### Data Note

#### Bibliographic Note

#### Bibliographic Citations

#### List of Boxes

7.1 "Everyone can create money ..."

7.2 Securitization – Liquidity is generated, debt is piled on

### 7.3 The great divergence in finance

#### List of Charts

- 7.1 Financial Asset to GDP Ratios, Select Economies, 2017
- 7.2 Bonds Outstanding, Select Economies, 2017
- 7.3 Securities Turnover, Select Economies, 2018
- 7.4 Bank Z-Scores, Select Economies, 2017
- 7.5 Stock Return Standard Deviation, Select Economies, 1998-2017

#### List of Figures

- 7.1 Market for Loanable Funds

## 7. Finance

*A financial system channels funds from those who wish to save to those who wish to spend. But it does more than that, for the pie need not be fixed in size. Through its power of credit creation, the financial system can fuel economic expansion. The process is prone to fragility, however, and financial weakening can send an economy into a downward spiral.*

The Great Financial Crisis that swept the world in the late 2000s focused new attention on the role of finance in macroeconomic fluctuations. The economics profession was caught off guard by such an event emanating from the U.S. Financial crises had come to be regarded as a malady of the developing world. In retrospect, the U.S. financial system is clearly seen to have succumbed to excess. But the clarity of that hindsight has not made foresight and prevention any more assured, in the U.S. or anywhere else.

We begin this chapter by outlining the basic elements of a financial system, then go on to examine the dynamics of financial deepening and financial innovation. Through the course of this discussion, we develop notions of risk and consider mechanisms for dealing with it. We flesh out the concepts with an empirical overview of the economies of Emerging East Asia which reveals widely differing stages of financial development across the region. Hong Kong is featured for in depth discussion in view of its position as a globally important financial hub. Foundations laid, we develop the link between the financial system and the macroeconomy by explaining how the market for loanable funds determines a key macroeconomic price, the interest rate, and then trace the implications of interest rate movements for asset valuation. We end with a brief statement foreshadowing later chapters on how the vital function of the financial system to support growth is prone to instability.

### Elements of a Financial System

The essential function of a financial system is to bridge the gap between those operating in surplus as net providers of funds and those operating in deficit as net users of funds. The efficiency of a system is judged by how well it allocates funds among competing uses to generate the highest returns adjusted for risk. Risk is inherent in the financing of undertakings that incur costs up front in exchange for benefits to be realized in the future. Will investment in a new business tap into a profitable market? Will research in product development yield a breakthrough? Will pursuing a college degree lead to a well remunerated job? Will buying a home establish a family in a sustainable lifestyle? Will a public infrastructure project boost growth and expand a community's tax base to enable debt servicing? All such endeavors involve risk and uncertainty for both users and suppliers of funds. For those on the supply side, the risks are compounded by the difficulty of discerning the reliability of potential users of funds and the worthiness of their projects, and of monitoring those projects once they are underway.

A financial system embodies an array of mechanisms to contain and package risk to suit the varied characteristics and preferences of market participants. In this section we consider how

the elements of a financial system are designed to handle risk at the micro level, reserving for the next section attention to risk at the macro, or systemic, level. Risk at the micro level involves events specific to individual parties, whereas at the systemic level the events hold economy-wide implications. Particular financing arrangements that appear to carry only moderate risk at the individual level may nonetheless combine to heighten systemic risk when such arrangements are pursued in numbers. For example, a home loan to an individual of low credit standing may not seem highly risky in and of itself provided the lender has recourse to repossess the home and sell it to recover the loan amount. However, if a great many such loans are made and default occurs on a wide scale, property values may be driven down in general such that the debts become broadly unrecoverable. Guarding against systemic risk is no easy task.

In categorizing the elements of a financial system, a basic distinction is made between financial intermediaries, which issue claims against themselves in order to provide funds to users, and financial markets, which facilitate the direct exchange of claims between suppliers of funds and users of funds. We consider financial intermediaries and financial markets in turn.

### *Financial Intermediaries*

Commercial banks are the quintessential financial intermediary. Their core business has traditionally involved taking deposits and making loans. By intermediating between lenders and borrowers, banks mitigate and spread risk. There are two forms of risk that banks specialize in managing. One is the adverse selection process that tends to make less creditworthy candidates more eager to seek loans. This is sometimes known as the “lemons” problem, borrowing terminology applied to defective motor vehicles. Lemons are particularly likely to end up on used car lots because their owners want to get rid of them. In credit transactions, the problem arises due to asymmetric information between borrowers and lenders. Lenders generally do not know as much about borrowers as borrowers know about themselves with regard to the likelihood of repayment. To overcome this problem, banks develop screening methods to assess creditworthiness and are able to apply these methods systematically across a large pool of prospective borrowers to select those of the highest quality.

The other form of risk that banks are in a position to ameliorate is moral hazard. Once a borrower gets a loan, he is spending other people’s money and, left unsupervised, may not be as prudent as if the money were his own. Banks typically develop multi-faceted relationships with their borrowing clients, providing them with a range of financial services and keeping tabs on their affairs. This affords bankers scope to monitor activity and enforce compliance with the terms of the loan.

Financial intermediaries that are similar to banks in taking deposits and making loans include credit unions and savings and loan associations. Credit unions confine their business to a particular organizational clientele, such as a university, while savings and loan associations have traditionally focused their lending narrowly on real estate and construction.

For the protection of depositors – and in turn the economy broadly – deposit taking institutions are favored with government support in various guises but are at the same time subject to a high degree of regulation. Support takes the form of governments insuring bank deposits to ward off any sudden losses of confidence that would tend to be self-fulfilling if large numbers of people sought withdrawals simultaneously. Further, central banks stand ready to act

as lenders of last resort to commercial banks should they become stressed for liquidity in meeting the demand for withdrawals. For their part, banks are required to hold reserves against customer deposits and to maintain capital (owners' equity) at a prescribed threshold relative to assets. In addition, they are subject to extensive disclosure requirements. The upshot is that holding wealth in the form of bank deposits is subject to very low risk, but commensurately, returns are also low.

Types of financial intermediaries that do not rely on deposit taking, known as fiduciaries, include mutual funds, pension funds, hedge funds, private equity funds, insurance companies, and finance companies. This is the realm of "shadow banking", broadly conceived. The Financial Stability Board, an international body housed at the Bank for International Settlements, defines shadow banking as "credit intermediation involving entities and activities outside the regular banking system." The nature of such entities and how their activities can contribute to the build up of systemic risk will be fleshed out in the next section of this chapter which deals with financial innovation.

The various non-deposit-taking intermediaries are differentiated by the forms of assets and liabilities they hold. Assorted types of investment funds obtain resources from shareholders for the purchase of defined asset types that differ by risk and expected return. Mutual funds and pension funds invest largely in tradable securities of the sort described in the next sub-section. Hedge funds, in original concept, were meant to pursue investment strategies that would result in gains whether securities markets rose or fell, meaning they could hold short positions (commitments to sell or repay instruments they do not own). As the construct has evolved, however, hedge funds have turned to supporting all manner of bets on market outcomes. These funds are highly leveraged (indebted) and lightly regulated, but impose investment thresholds that limit access to all but the highest net worth individuals who are presumed able to assess and tolerate the risks involved. Private equity funds take full ownership of corporations with the intent of reorganizing them and selling at a profit, either as a whole or in parts. Finance companies lend to certain kinds of borrowers or for certain kinds of purchases, for example, automobiles. Insurance companies obtain funds from policy holders who collect on condition of specific untoward contingencies.

Financial intermediaries contribute positively to the economy in a number of ways. They aggregate funds to spread risk and achieve economies of scale in investment. They mitigate risk by screening and monitoring borrowers. And they provide liquidity to their depositors, who may typically withdraw funds on short notice, even as they offer long term credit to borrowers. Such liquidity transformation is possible because withdrawals and deposits occur in large numbers that tend to be offsetting, thereby allowing long term loans to rest on a base of funding that remains stable in the aggregate.

### *Financial Markets*

Financial markets place claims on users of funds directly into the hands of providers of funds without intermediation by banks or fiduciaries. These claims are broadly distinguished between equity and debt. In addition, derivatives are a type of security that derive their value from changes in the value of underlying assets. Of final note, markets have developed for

securities denominated in foreign currencies which effectively move transactions beyond the reach of government regulation that applies in the home country.

Equities, or stocks, represent ownership shares in a corporation. Shareholders are the residual claimants on the profits of corporations after all debt obligations have been met. The price of a stock, in principle, reflects the present value of the expected stream of future earnings of a corporation. Given the uncertainties surrounding future earnings, stock prices tend to fluctuate a great deal, and stock ownership thus involves considerable risk.

Debt instruments are differentiated by term to maturity. Money market instruments carry terms of less than one year. These include commercial paper, letters of credit, bank acceptances, and short-term government securities such as US treasury bills. Commercial paper is generally backed by a bank loan commitment which effectively guarantees the paper to the bearer thus shifting the risk of loss to the bank. Letters of credit and bank acceptances also involve bank commitments. Bonds are debt instruments with terms of one year or more. Interest rates on bonds are typically fixed, so bonds are often referred to as “fixed income securities”, although bonds with variable interest rates do exist. Bond holders face two types of risk: credit risk that the issuer of the bond will default; and market risk that prevailing interest rates will rise and prices of bonds outstanding will consequently fall to realign their value with the new higher yields available in the marketplace. To guide purchasers in assessing credit risk, bonds are rated by independent agencies. The market for bonds and equities combined is known as the capital market.

Derivatives are contracts linked to the value of any manner of assets – stocks, bonds, loans, commodities, or foreign currencies. They serve to hedge risk for parties who hold the underlying assets, or, in effect, to allow the placing of bets for parties who do not. Swaps, options, and forwards are important types of derivatives. Interest rate swaps involve the exchange of interest obligations between two parties, a fixed rate commonly being swapped for a floating rate. Currency swaps involve an exchange of payment obligations across currencies. Options entitle the holder to buy (call option) or sell (put option) a given amount of a financial asset at a fixed price within a specified period of time. Forwards are more constrained, requiring the exchange of a given amount of a financial asset at a fixed price at a specified point in time. Normally with derivatives, the assets themselves are not transacted; rather, only the difference between the value of the asset at the contracted price and its realized market value changes hands. Derivatives carry a high degree of risk since their value is extremely sensitive to market price fluctuations. In the Great Financial Crisis of 2008, losses on derivatives brought down major financial institutions.

Markets operating in one country for securities denominated in the currency of another country took off with “Eurodollars” in the 1970s. The name originated in reference to U.S. dollar assets in Europe and traces to before the days of the euro (lower case ‘e’) as a currency. The accumulation of U.S. dollars in the hands of oil exporting nations motivated a demand for investment opportunities beyond the control of U.S. regulatory and taxing authorities. Eurodollar deposits and Eurodollar bonds offered investment vehicles in competition with U.S. based financial products. The terminology has stuck (confusingly) to encompass Eurocurrencies other than the dollar and outside Europe. For example, a Euro yen bond may be floated in Hong Kong to raise Japanese yen with Europe in no way involved.

Transactions in financial markets are facilitated by brokers and dealers under the umbrella of investment banking, also known as merchant banking. Dealers take ownership of assets temporarily on their own accounts while brokers manage the transfer of assets between other parties. A vital function of investment banks is the launch of new corporate share issues. Investment banks underwrite the new shares, purchasing them on their own account, then selling them through their client networks to raise funds for corporate expansion. For a company selling shares to the public for the first time, the issuance is known as an initial public offering (IPO). Established public companies may also issue new shares to raise capital. Once issued, public shares trade on secondary markets with their prices reflecting market expectations about a company's future earnings.

In the U.S., investment banks and commercial banks were strictly separated for more than half a century from 1933 to 1999 under the Glass Steagall Act. By contrast, banking in Europe and Japan followed a universal model with all manner of financial services provided under one roof. The U.S. has more recently moved in the direction of universal banking with institutional divisions blurring as commercial banks have been permitted to expand into the securities business and investment banks have been allowed to take up lending to customers. This presents regulatory challenges to ensure that depositors are protected even as commercial banks pursue higher risk investment strategies.

## **Financial Deepening and Innovation**

In the course of economic development, financial systems grow in size relative to GDP and become more complex. Up to a point, this secular process of financial deepening is a positive force. Evidence suggests, however, that the beneficial effects reach a plateau, and moreover, that excessively rapid growth in credit can be destabilizing. Episodes of very rapid credit growth can spring from innovations in financial products or organizational forms. That such innovations have overshot their usefulness is too often revealed only in the aftermath. In this section, we take up the topics of financial deepening and financial innovation, then apply the concepts to interpreting the credit boom in the U.S. that led to the Great Financial Crisis of 2008.

### *Financial Deepening*

In the early stages of economic development, saving and investment rates are typically low, with the mobilization of saving for investment purposes taking place largely through internal or informal means. Small business investment and major household purchases are generally funded by family and friends or by local money lenders. Bigger businesses may have access to bank credit, but still tend to rely heavily on retained earnings to support expansion.

As economic development takes off, saving rates rise while at the same time production becomes more capital intensive creating a need for greater concentration of funds. The resulting opportunities for financial intermediation between savers and investors stimulate growth of the banking industry. For businesses to grow larger still and for savers to reap higher returns in conjunction with taking on more risk, direct forms of financing via capital markets must come into play. Capital market development requires significant advances in legal and regulatory capacity to ensure investor protections and foster competition. This involves structures for enforcing contracts and property rights, for implementing accounting and disclosure standards,

and for promoting effective corporate governance. In many emerging market economies, stock markets have been jump started by share issuance of state enterprises. Similarly, bond markets have been launched through government debt offerings. Thus kindled, these formative capital markets in time come into their own to take on mobilization of funds for private sector investment. The ultimate in financial maturity is marked by the emergence of derivatives markets for hedging risk.

At its best, a financial system serves economic development by allocating funds to their highest valued uses. It does this by aggregating diffuse savings to support large projects and broaden risk sharing; by affording borrowers access to long-term funding while preserving liquidity to lenders through short-term deposits and active secondary markets in securities; by identifying and packaging risk, and subjecting it to market pricing and exchange; and by providing oversight of managerial performance and exposing laxity. These many benefits of a strong financial system notwithstanding, empirical work indicates that a positive correlation between financial depth and economic development exists only to a point. Beyond some threshold, further financial deepening fails to yield discernible increments to growth. Explanations proposed for a disappearing or even negative relationship are that a bloated financial sector may divert resources, especially human talent, from more productive uses, and that taken to excess, financing becomes fragile and inclined toward feeding speculation rather than supporting productive investment.

The concern that financial depth leads to increased speculative activity and thus macroeconomic fragility is not supported empirically, however. Indeed, to the contrary, the evidence suggests that greater financial depth affords more resilience and better capacity for shock absorption. Simple bank dominated systems in less developed countries have a storied history of susceptibility to crisis. Nevertheless, complex financial systems in advanced countries can spill into crisis as well, the U.S. offering a notable example in 2008. Rather than the level of depth, the rapidity with which credit expands seems to be the more telling predictor of instability. Rapid expansion of credit often follows from innovations in financial instruments or financial organization. Let us proceed to explore the nature of financial innovation, with particular attention to the origins of the Great Financial Crisis of 2008.

### *Financial Innovation*

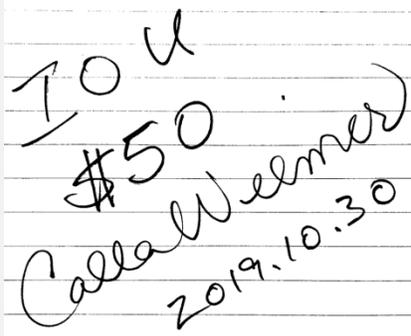
Recall from Chapter 6 that money, in effect, represents claims on an economy. Creating money seems easy enough. Central banks do it by issuing liabilities against themselves in exchange for government debt securities or other assets. Commercial banks do it by establishing deposits in support of new lending. In principle, the capacity to create money is even broader than this. As Hyman Minsky put it, “Everyone can create money ....” How that is so is described in Box 7.1.

### Box 7.1: “Everyone can create money ...”

The quote in the header is from Hyman Minsky, known for his work on business cycles. In full it reads:

*Everyone can create money; the problem is to get it accepted.*

Minsky (2008), p. 255.



Here’s how it works: Suppose the author of this text writes an IOU (I owe you) as depicted at left. Perhaps the payee has lent \$50 in cash to the author or maybe he has rendered some service to be met with delayed compensation. This IOU note captures what Minsky means by creating money. The problem getting such a thing accepted is obvious. Even if Wiemer’s credit is good with the original payee, for that individual to find someone else who will likewise accept this note as payment will not be easy.

In principle, the inking of this note is no different than what a bank does when it creates money. In granting a loan, the bank issues debt (an IOU) in the form of a deposit liability. This deposit can then be spent – through the writing of a check or the use of a debit card – moving on to become someone else’s deposit at some other bank. The money supply would expand in the same way if Wiemer’s IOU were to pass from hand to hand in support of purchases.

Money issued as debt of the banking system supports spending. Banks grow their business by increasing the amount of this debt in tandem with the loan assets that go with it. For the economy as a whole, however, excessive infusions of debt-fueled purchasing power are inflationary, as explained in Chapter 6. When channeled into asset markets, increases in purchasing power can give rise to bubbles, sowing the seeds of later collapse. Governments therefore impose regulations to limit growth in the financial sector’s balance sheet. Inevitably, however, entrepreneurial financiers devise ways around such regulation with new and creative ways to expand bank lending. Box 7.2 demonstrates how the process can work.

The loan securitization process described in Box 7.2 increases credit in the economy in circumvention of the power of the central bank to control the amount of deposit money. This new credit supports growth in spending. The increase in credit is associated with an increase in debt of a short term, highly liquid nature even as the lending it supports may be long term. The commercial paper issued by the shadow banks is indeed so liquid that it is included in broad definitions of the money supply. Expansion of the financial sector balance sheet in this way can be expected to have a stimulatory effect on the economy.

### Box 7.2: Securitization – Liquidity is generated, debt is piled on

Commercial banks generate revenue by charging interest on loans. The more they lend, the better for business (provided of course the loans don't go bad). Bank lending is constrained, however, by regulatory requirements to hold minimum reserves against deposits and maintain adequate capital relative to assets. Banks naturally look for ways around these impediments to "making money". One ploy is to securitize loans and move them off bank balances sheets with the aid of the shadow banking system. The process is outlined in the T-accounts below.

COMMERCIAL BANK				SHADOW BANK			
<b>Round 1</b>				<b>Round 1</b>			
Assets		Liabilities		Assets		Liabilities	
Loans	120	Deposits	180				
Reserves	30						
Other	50	Capital	20				
<b>Round 2</b>				<b>Round 2</b>			
Loans	20	Deposits	180	Securities	100	Commercial Paper	90
Reserves	130					Capital	10
Other	50	Capital	20				
Off Balance Sheet Vehicle							
Loans	100	Securities	100				
<b>Round 3</b>				<b>Round 3</b>			
Loans	120	Deposits	180	Securities	100	Commercial Paper	90
Reserves	30					Capital	10
Other	50	Capital	20				
Off Balance Sheet Vehicle							
Loans	100	Securities	100				

In Round 1 the commercial bank holds capital at 10 percent of assets, and reserves at about 17 percent of deposits. Let us suppose these ratios are pressing up against regulatory limits.

In Round 2, the commercial bank finds a way to unleash new lending potential. It bundles together \$100 in loans and sells claims on the income streams from the loans (net of bank servicing fees) in the form of tradable securities. Since the new holders of these asset-backed securities bear the risk exposure to the loans, and bank depositors and owners do not, the bank is able to move the package of loans and securities into a special purpose vehicle off its balance sheet. The asset backed securities are purchased by the shadow bank providing the commercial bank with a \$100 increment to its reserves. To obtain the necessary funds to make the purchase, the shadow bank is established with \$10 in capital and issues \$90 in commercial paper.

Finally in Round 3, the commercial bank lends out the \$100 it raised by selling securities in Round 2. Since this brings it back up against its lending limit, the bank may wish to repeat the securitization exercise all over again.

To sum up the results: the financial system expanded with the establishment of a shadow bank and a special purpose vehicle off the balance sheet of the commercial bank; liquidity increased through the transformation of illiquid loans into tradable securities; and the overall level of debt rose through multiple channels involving asset-backed securities, commercial paper, and new loans. All this occurred despite regulation on bank reserves intended to keep lending in check.

Historically, entrepreneurs have proven adept at devising all manner of new methods for expanding the financial sector balance sheet. Important innovations in this spirit that have become established elements of today's financial landscape include checking accounts, credit cards, and mutual funds. Regulatory authorities strive to keep pace with new developments. The trick is to facilitate financial innovation that is supportive of economic growth yet to impose enough restraint on the process to prevent asset bubbles from inflating and unsustainable debt loads from accumulating.

### *US Credit Boom of the 2000s*

The U.S. credit boom of the 2000s had its basis in the model of Box 7.2 – securitization of loans supported by a shadow banking system that was itself funded by short term debt. Securitization of loans per se was nothing new. The basic concept is that income streams, most notably in the form of interest paid on loans (with other possibilities ranging from real property rents to credit card receivables to student loan payments) are bundled and used as collateral to back the issue of tradable debt instruments. The innovation of the 2000s was a form of securitization known as a collateralized debt obligation (CDO). The motivating principle was that even in a high risk bundle of loans, not all would go bad even if all the borrowers as individuals were poor credit risks. Mortgage backed securities were structured into tranches such that the bottom tranche would be exposed to losses from default first while the top tranche would bear exposure only if the entire pool fell into default. The top tranches were granted high AAA ratings and were much in demand. The less desired lower tranches were submitted to a further round of bundling and structuring with the top tranches again emerging as AAA rated products. In this way, mortgage loans made to borrowers of poor “subprime” credit standing were transformed into ostensibly low risk investment vehicles.

A number of factors facilitated the proliferation of these risky securities. First, to encourage home ownership, U.S. government sponsored enterprises (Fannie Mae, Freddie Mac, and Ginnie Mae) were charged with securitizing mortgages with the debt they issued (a la the off balance sheet securities in Round 2 of Box 7.2) presumed to be backed by the U.S. government. Second, a derivative was invented to hedge against losses on CDOs. These credit default swaps (CDSs) paid off in the event that CDOs went into default and thus made holding them more appealing. CDSs could be purchased by anyone, however, whether they held CDOs or not, and some investors made billions by foreseeing the coming collapse and purchasing them. Third, the rating agencies were captured, or at least fooled, by securities issuers, and all too readily gave their AAA seal of approval. Fourth, investment banks in the US had been transformed from private partnerships where manager/owners bore the consequences of their risking taking to publicly listed corporations where management was compensated based on transactions while diffuse shareholders bore the risk of loans going bad. The incentive for managers was to rake in short-term gains regardless of the build-up of longer term risks. And finally, the sense that the major players in the financial industry were too big to fail and that the U.S. government would bail them out created a situation of moral hazard. Managers were incentivized to do the wrong thing because government was expected to bear any losses while private parties would receive any gains.

The delusion the marketplace succumbed to was that complicated financial products had diversified risk and transferred it to willing bearers for a higher expected return. In fact, however, all sight of risk had been lost in an opaque piling on of complicated debt instruments. The forgotten reality was that subprime mortgages were widely configured for interest rate resets that would hit fragile borrowers in a nationwide wave. Meanwhile, property values had been bid up to unsustainable levels which stimulated an oversupply of new construction. Collapse was in the cards. By 2007, hedge funds and investment banks were taking sizeable losses on subprime mortgage securities as mortgage debt went into default.

The bankruptcy of investment bank Lehman Brothers in September 2008 sent the financial sector into full-on panic. The next year would see a series of financial giants fail or succumb to acquisition. All told, bank losses in the US are estimated by the IMF to have reached \$855 billion with total global losses put at \$2.28 trillion.

## Finance in Emerging East Asia

Variation among the economies of Emerging East Asia is nowhere more stark than in the realm of finance. Hong Kong is home to the world's highest ratio of financial assets to GDP while in the least developed economies of the region banking systems are rudimentary and capital markets little more than an idea. In this section we compare measures of financial sector development and performance and consider the implications. With respect to standard indicators of depth, liquidity, volatility, and fragility, the range of outcomes runs the gamut.

### *Depth*

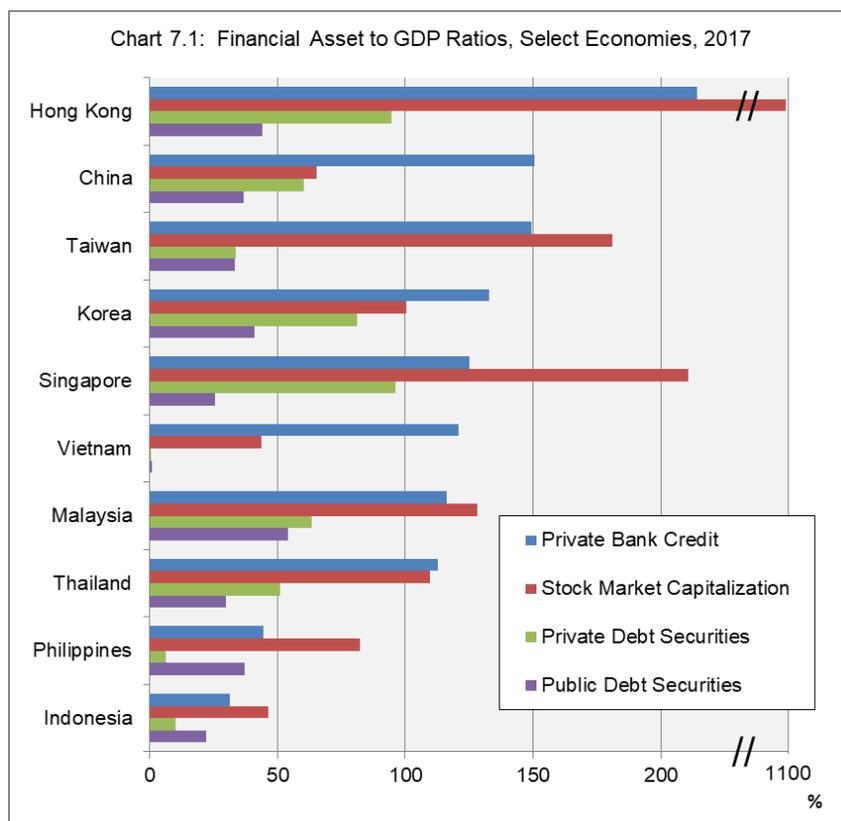
The Asian Financial Crisis of 1997-98 was taken as a warning throughout the region of the pressing need for local capital market development. In the run up to the crisis, domestic saving had been diverted outward through both official reserve accumulation and private acquisition of foreign assets. Meanwhile capital flowed inward in the form of foreign direct investment and loans, the latter being in large measure short term yet applied to the funding of long-term projects. This resulted in a double mismatch on domestic corporate balance sheets: long-term, illiquid assets against short-term liabilities in need of ongoing rollover; and domestic currency assets against foreign currency liabilities. When local currencies depreciated sharply, many borrowers found themselves unable to pay back or refinance their debts. The conclusion drawn from the crisis was that domestic capital markets were needed to provide better local investment opportunities for savers and to generate long-term domestic currency funding for capital formation.

From a small base, capital markets have developed impressively since the crisis in much of Emerging East Asia, although bank finance still predominates in Cambodia, Laos, Myanmar, and Vietnam. Chart 7.1 presents asset to GDP ratios in 2017 for four asset categories: private bank credit; stock market capitalization; private debt securities; and public debt securities. Debt securities include both local and foreign currency issues, although the latter are generally tiny (as visible in Chart 7.2). Hong Kong serves as a financial center for all of China and hence appears as an extreme outlier when its own GDP is taken as the reference point.

The ratio of private bank credit to GDP lies in a fairly tight range of 110 to 150 percent for China, Taiwan, Korea, Singapore, Vietnam, Malaysia, and Thailand. For Hong Kong the ratio is much higher while it is lower for the Philippines and Indonesia, as well as the economies not shown in the chart (Cambodia, Laos, and Myanmar) due to data limitations.

Stock market capitalizations (total market value of all shares traded in a given market) in Emerging East Asia have received a major boost from the listing of state-owned enterprises. Two record breaking initial public offerings (IPOs) involved Chinese state-owned banks: Industrial and Commercial Bank of China in 2006 for US\$21.9 billion and Agricultural Bank of China in 2010 for US\$22.1 billion. These share issues were launched simultaneously on the Hong Kong and Shanghai stock exchanges. Given the high degree of market capitalization accounted for not

just by state shares sold to the public but also by shares still held by the state, this indicator overstates the role of the stock market in raising capital for new investment. Hong Kong's extraordinary near-1100 percent ratio of stock market capitalization to GDP speaks to its role as a financial center for China. Singapore with a ratio of 211 percent also serves a vast hinterland. Taiwan's stock market, too, bears the imprint of external forces with major listed firms (TSEC, Acer, ASUS) that are manufacturing giants in Mainland China. Ratios of 100 percent or more for Korea, Malaysia, and Thailand indicate well developed stock markets serving domestic corporations.



Ratios of private debt securities to GDP lie in the range of 50 to 100 percent for Hong Kong, China, Korea, Singapore, and Malaysia, and fall below this level for Taiwan, the Philippines, and Indonesia. Across the region, these ratios have risen sharply since the Great Financial Crisis. For public debt securities, ratios to GDP are under 50 percent for all but Malaysia.

Although in broad terms financial deepening is readily seen to accompany economic development, the structure of financial systems varies greatly even among the world's most advanced economies. The U.S. in 2017 had a ratio of private bank credit to GDP of only 52 percent in contrast to Britain's 131 percent and Germany's 76 percent. Conversely, the U.S. ratio of stock market capitalization to GDP was 153 percent versus 117 percent for the U.K. and 54 percent for Germany. Europe in general relies more on bank financing, the U.S. more on capital markets. Many factors influence these outcomes, important among them regulatory environment

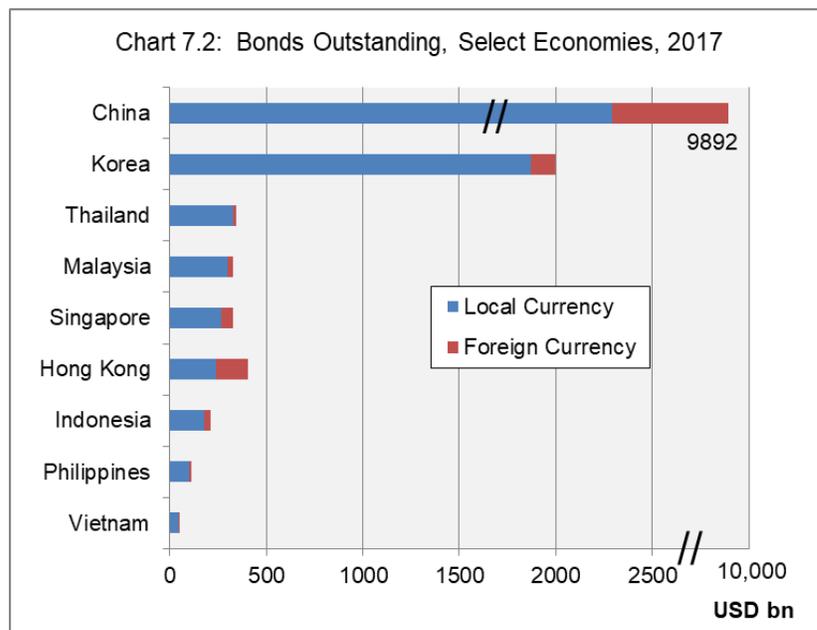
and tax provisions. Over time, though, a common trend is apparent for a broad cross section of economies in an expanding role for capital markets relative to bank finance. This is a result of stock and bond markets becoming increasingly accessible to savers, both directly and through fiduciaries, to offer the liquidity of banks but with higher expected returns for those prepared to bear the risk.

### Liquidity

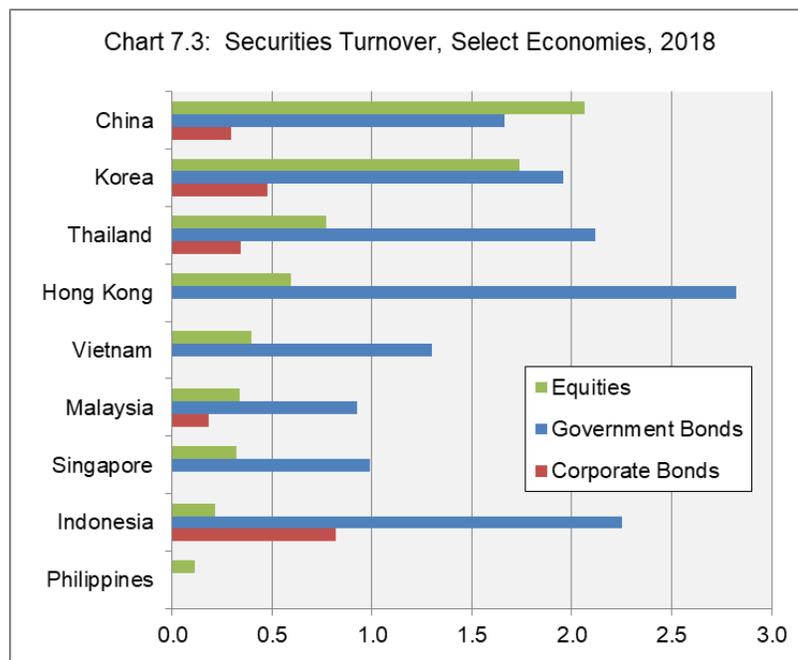
Liquidity is vital for effective functioning of financial markets. Without it, meaningful asset prices cannot be arrived at. In debt markets, pricing involves the determination of interest rates and the assessment of risk. In equity markets, pricing is a vital tool of corporate governance, serving as a mechanism to assess manager performance.

The size and liquidity of an asset pool tend to be related. More liquid assets attract more investors because the assets can be readily converted back to cash, and consequently the asset pool grows. In turn, the bigger an asset pool and the greater the number of investors, the more transactions tend to be generated. A greater volume of transactions lowers transactions costs. In debt markets this results in lower spreads between the interest rates paid by borrowers and those received by lenders. The importance of scale economies in financial markets is evident from the high degree of concentration of assets among a small number of global financial centers.

Securities markets in Emerging East Asia remain generally small in size by global standards, which inhibits liquidity. The value of bonds outstanding for the region's economies in both local and foreign currencies is shown in Chart 7.2. Because China's economy is so large, even a relatively small ratio of bonds to GDP implies a large asset pool, at USD 9.9 trillion in 2017, and the potential for healthy liquidity. Korea is a distant second in bonds outstanding, with other economies positioned much further behind at only a few hundred billion U.S. dollars.



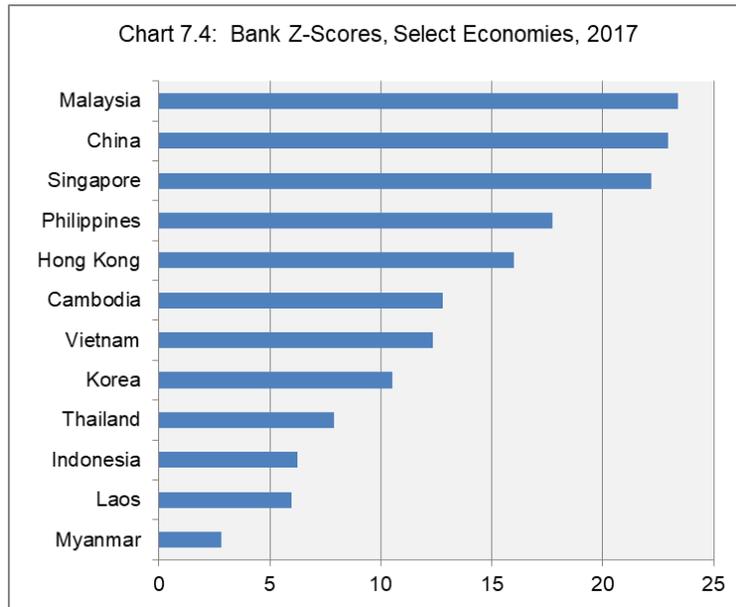
A key indicator of liquidity is turnover, measured as the ratio of transactions value during a given period of time to the stock of an asset. Turnover ratios for equities, government bonds, and corporate bonds for 2011 are shown in Chart 7.3. Equities exhibit turnover of close to two in the Chinese and Korean markets. This is on par with rates seen in mature financial markets, although equity turnover is prone to high variability from year to year with the numbers shooting up in times of stress. Equity turnover ratios are well below this level in other Asian markets. Markets for government bonds are generally more liquid than those for corporate bonds. For benchmarking purposes, it is worth noting that annual turnover for U.S. corporate bonds stands around one and for U.S. treasury bonds reaches a very liquid 30. In the Emerging East Asia setting, bonds are more often bought and held to maturity which depresses liquidity.



### *Volatility & Fragility*

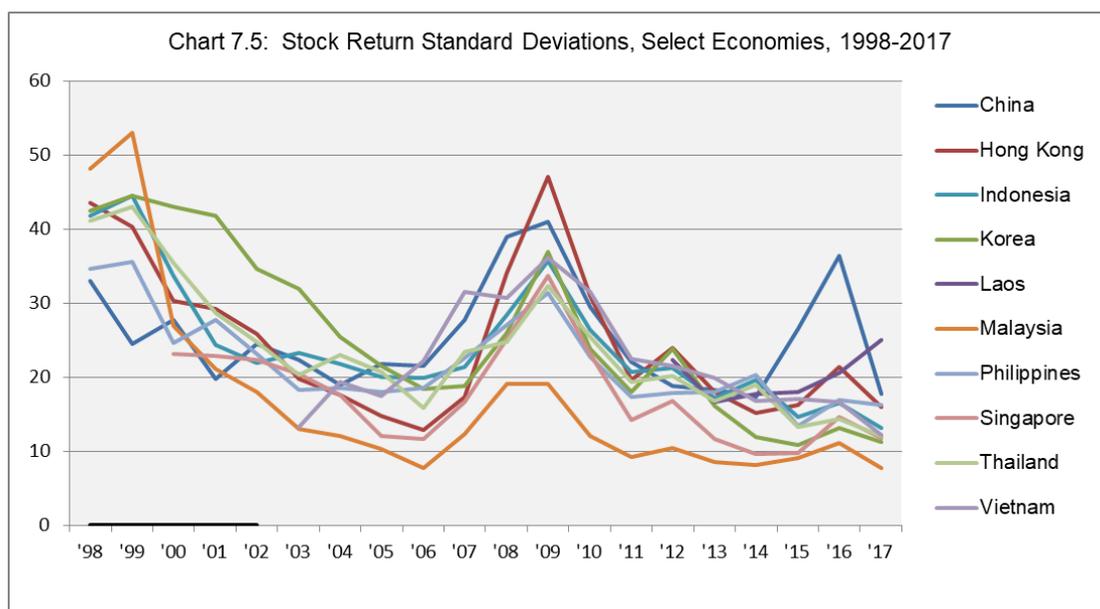
Following the Asian Financial Crisis, financial systems in the region were strengthened through the build up of buffers against shock. One important buffer is bank capitalization, which is the ratio of owners' equity to the value of bank assets. High capitalization rates ensure that owners bear the brunt of any losses in asset value thus shielding depositors and limiting the need for government bailouts. High rates of return on assets also serve as a buffer against shocks, but returns are inevitably volatile with this volatility undermining the buffering effect. A standard measure of bank fragility that takes these factors into account is the Z-score. For an individual bank, a Z-score is calculated as the sum of the return on assets and the capitalization ratio divided by the standard deviation of the return on assets. For an economy as a whole, the Z-score is derived as the weighted average of individual bank Z-scores with bank assets used as weights. The higher the Z-score for an economy, the more secure its banking system.

Chart 7.4 plots bank Z-scores for the economies of Emerging East Asia. Malaysia, China, and Singapore all have Z-scores over 20, meaning banks in these countries have high rates of return on assets and/or high capitalization ratios relative to volatility in the return on assets. At the opposite end of the spectrum with the greatest risk in their banking systems are Myanmar and Laos. Z-scores in Emerging East Asia have not been prone to high volatility over time. Even the Great Financial Crisis caused no serious perturbations as the region's banks had little exposure to troubled U.S. debt securities.



For stock markets, however, the story has been quite different. Chart 7.5 depicts market volatility as measured by the standard deviation in stock returns. The impact of the Great Financial Crisis comes through clearly with the spike in volatility in 2009. In particular, the case of Hong Kong with its very open capital markets stands out, the standard deviation on returns rising from 17 in 2007 to peak at 47 in 2009. Further back in history, volatility during the Asian Financial Crisis was similarly very high. A more recent and isolated spike in volatility stands out for China in connection with rounds of stock market boom and bust in 2015-16. Rather than being driven by foreign capital flows, however, this extended spate of volatility was driven by domestic sentiment which in China responds more to reading government signals than to assessing corporate fundamentals.

A diversified financial system presents a multiplicity of channels for absorbing shocks. Provided diverse components of the system respond differently to various stressors, the overall effect of diversification is to increase resilience. The economies of Emerging East Asia bore the great financial crisis through increased stock price volatility but no loss of security in their banking systems. A stable footing for banking facilitated recovery even as stock price fluctuations may have hindered the raising of equity capital. Under other circumstances, another kind of a shock could well have the opposite effect of destabilizing banking systems but leaving capital markets functioning effectively to support economic activity.



## The Special Case of Hong Kong

Hong Kong is unique in having its own currency and its own customs and immigration authorities despite being a city subsumed under a sovereign state. It functions as a distinct economy even as it interacts symbiotically with Mainland China. While Hong Kong has long served as an international financial hub, the last decade has seen a sharp ratcheting up of renminbi finance in particular as the Mainland set course toward greater internationalization of its currency. So far, the strategy has worked smoothly. But former Chief Executive of the Hong Kong Monetary Authority (HKMA) and principle architect of Hong Kong's monetary infrastructure, Joseph Yam, writing in 2012, questioned the sustainability of the trajectory:

Is it realistic to expect the monetary system of a jurisdiction with 7 million people ... to serve the needs of international financial intermediation between a jurisdiction with 1.3 billion people and the rest of the world, and maintain domestic monetary and financial stability at the same time?

In this section, we first look at Hong Kong's monetary institutions and their tailoring to the territory's distinctive circumstances. We then expand on the territory's role as a global financial hub and more particularly a platform for the internationalization of the renminbi.

### *Hong Kong Monetary Institutions*

Hong Kong's monetary system rests on an exchange rate peg. If at the fixed rate of 7.8 Hong Kong dollars to the U.S. dollar the supply of U.S. dollars exceeds the demand, the HKMA intervenes to buy the excess U.S. dollars. Conversely, if at the fixed rate the demand for U.S. dollars exceeds the supply, the HKMA steps in to sell the U.S. dollars needed to meet the

shortfall. Full backing of Hong Kong's monetary base by U.S. dollar reserves ensures the capacity of the HKMA to meet any market demand for U.S. dollars. Such a system, whereby the monetary base is determined by an exchange rate peg, is known as a currency board, and the specific implementation of this system in Hong Kong is referred to as the Linked Exchange Rate System.

The peg at HK\$7.8 to the U.S. dollar was established in 1983 to halt a downward spiral in the value of the Hong Kong currency precipitated by concerns about Hong Kong's future upon the expiry of the British lease on the New Territories. The fixing was intended to restore confidence, and succeeded in doing so. Hong Kong has stood by its peg through the handover to Chinese sovereignty, the swirling of financial crises, and much currency volatility in the region at large, with the credibility of the peg consequently well established.

With discretion removed from currency issuance, responsibility for this function in Hong Kong is delegated to commercial banks, although the government still mints the coins. Three commercial banks are granted note issuance privileges: Hong Kong and Shanghai Bank; Standard Chartered Bank; and the Bank of China. To issue Hong Kong dollar notes, the authorized banks are required to submit U.S. dollars to the HKMA Exchange Fund for which they obtain "Certificates of Indebtedness" that serve as backing for the currency. Conversely, redemption of Hong Kong dollars for U.S. dollars involves the note issuing banks submitting Certificates of Indebtedness back to the HKMA and withdrawing U.S. dollars from the Exchange Fund.

This system has the advantage of being free of the intrusion of politics into monetary affairs. The Hong Kong money supply expands or contracts in response to market forces. The process is simple, transparent, and predictable, at least insofar as market forces themselves are so. A further advantage is that exchange rate risk is eliminated vis-à-vis the U.S. dollar. Trade in goods and services and the transfer of financial claims can thus proceed without worry about exchange rate fluctuations disrupting relative valuations across currencies.

The main disadvantage of a currency board is that exchange rate adjustment cannot serve as a buffer in absorbing shock. Shocks may occur, for example, in the form of movement in the U.S. dollar exchange rate relative to other currencies, fluctuations in world commodity prices, or changes in U.S. interest rates. Adjustment must instead be effected through domestic prices, broadly conceived to encompass wages, interest rates, and asset values as well as product prices. Hong Kong's highly agile market economy generally allows for fairly quick and effective responses to maintain competitiveness. And the strong position of government fiscal affairs means repercussions for public debt are not a concern. Yet in times of broad based and steep depreciation in regional currencies such as occurred during the Asian Financial Crisis, the burden to absorb economic adjustment without recourse to the exchange rate has proven difficult to bear. Nevertheless, in the judgment of Hong Kong decision makers the benefits of the system have outweighed the costs. A policy environment rooted in transparency, consistency, and integrity has been vital to Hong Kong's development as a regional financial center.

### *Hong Kong As a Global Financial Hub*

Hong Kong is an entrepot for finance just as it is for trade in goods and services. Financial institutions from all over the world set up shop in the territory with minimal barriers to

entry. Banks take deposits and make loans not only in Hong Kong dollars but in other currencies as well, serving customers from near and far. Foreign companies list on the Hong Kong stock exchange, raising funds from investors worldwide. Business thrives in the managing of wealth for global private clients and the raising of venture capital for far-flung start-up firms. In 2019, Hong Kong's foreign exchange market turnover ranked fourth globally, behind the U.K. and the U.S., and essentially tied with Singapore.

Referring to Chart 7.1, the asset class in which Hong Kong stands out most dramatically is stock market capitalization. Early in the reform and opening of Mainland China in the 1980s, state enterprises began to tap funding indirectly in Hong Kong dollars. So-called "red chip" stocks were issued by firms incorporated in Hong Kong but with controlling share ownership tracing to the Mainland. Later on, firms incorporated on the Mainland began listing "H-shares" in Hong Kong, the first instance of this occurring with Tsingtao Brewery in 1993. Typically H-share listings involve parallel listings on Mainland exchanges in "A-shares" that are denominated in Rmb.

Historically, the debt market figured little in Hong Kong finance. An important reason for this is that the strong fiscal position of the Hong Kong government left it with no need to borrow. And without active trading in government debt, the market lacked benchmark interest rates to signal a baseline low-risk cost of funds. To fill this void, the Hong Kong Exchange Fund initiated an aggressive program of debt issuance beginning in 2009. The Exchange Fund bills and notes sold under the program present a range of maturities from three months to 10 years in order to generate a yield curve for market reference. Once the public debt market was established, growth in the corporate debt market accelerated. This market includes issuance of Rmb denominated bonds, known as "dim sum" bonds, the first being issued by McDonald's in 2010.

Banks in Hong Kong began taking retail deposits in Rmb as early as 2003. However, not until cross-border settlement of payments was established in 2010 did holding Rmb deposits find wide appeal. The banking and bond developments of 2010 set the Rmb on a path to internationalization even as capital controls continued to limit the currency's flow across the Mainland border and to restrict access by foreign investors to markets onshore. China's trade has increasingly been invoiced in Rmb, with Hong Kong meeting related demand for payment processing and credit. In 2018, more than 70 percent of international Rmb payments were processed in Hong Kong.

Even as the Mainland has driven growth in Hong Kong's financial markets, its own onshore markets have overtaken those of Hong Kong in absolute terms. As of the end of 2018, the Hong Kong and Shanghai stock markets were roughly equivalent in capitalization with the Shenzhen market boosting the Mainland's total by an additional two-thirds. As for bond markets, Hong Kong's is minuscule relative to China's, as shown in Chart 7.2.

Against the backdrop of the Mainland's own mammoth financial markets, the question of how much China needs Hong Kong as a financial entrepot has drawn attention in 2019, prompted by demonstrations in Hong Kong against Chinese authority. Editorials in western publications have argued that despite the size of the Mainland financial system, Hong Kong's role remains vital, a headline in the *Wall Street Journal* reading "Hong Kong is the Lung through Which Chinese Banks Breathe" (11 September 2019). Critically, what Hong Kong has that the Mainland lacks is the rule of law. This establishes the basis for an institutional framework of

corporate governance, disclosure standards, property rights, and dispute adjudication within which a financial system can function effectively. The viability of the system rests on public trust in this framework. Public trust in Hong Kong is deep rooted, which is what has allowed the territory to serve as a nexus between the Mainland and the rest of the world.

As highlighted at the beginning of this section, former HKMA Chief Joseph Yam has questioned whether tiny Hong Kong can shoulder the load of financial intermediary between Mainland China and the rest of the world while still safeguarding its own domestic macroeconomic stability. His concerns pertain to the handling of massive flows of capital in and out of Hong Kong and to the taking on of heavy bank debt exposure to external borrowers, located increasingly on the Mainland. The arrangement seems rife for shock. IPOs prompt foreign currency inflows that must be met with a supply of local currency at the fixed exchange rate to accommodate the demand. An increase in Mainland interest rates could lead to a huge shift in borrowing demand to Hong Kong banks. And a downturn in the Mainland economy could result in widespread loan defaults.

Yam's conclusion is that the lack of any precedent for Hong Kong's exposure to international financial intermediation relative to the size of its domestic economy makes judging the risks difficult. But he takes heart in how readily Hong Kong could break with its peg and allow exchange rate adjustment to absorb shock should the day come when such action was warranted. Under his tenure at the HKMA, the framework for an activist central bank was put in place. We must defer full discussion of what such a framework entails to Chapter 11 on monetary policy under managed exchange rates. For now, suffice to say that breaking with a peg of more than 30 years standing would be a radical move.

## **Interest Rates and Asset Prices**

The financial system channels funds from savers to spenders. Savers seek to earn a return on the funds they supply, with that return meant to be higher the greater the risk and the longer the time commitment. Users of funds must be prepared to meet repayment obligations inclusive of the return. Generally, then, borrowed funds are directed toward investment – in plant and equipment, in education, in research and development, in infrastructure, or in assets that will appreciate in value over time.

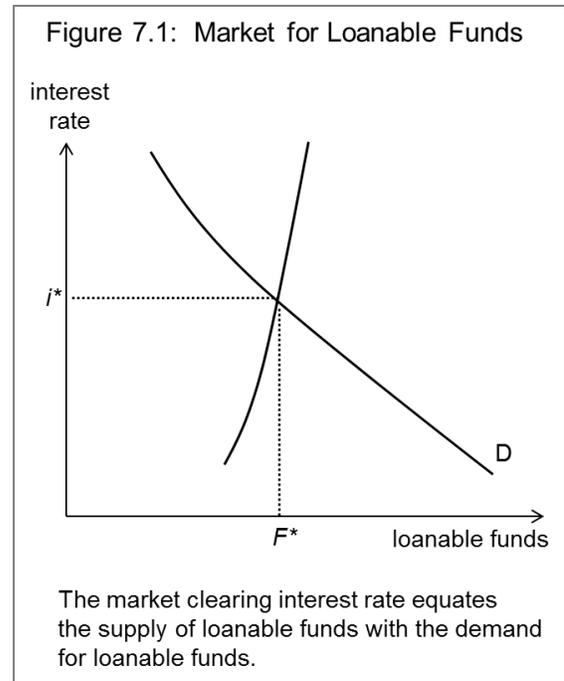
The interest rate represents the price that lenders receive and borrowers pay for funds. In this section we first consider how the interest rate is determined in the market for loanable funds. We then examine the relationship between the interest rate and asset prices.

### *Interest Rate Determination*

Macroeconomics routinely references “the” interest rate. “The” interest rate is pivotal for an economy due to its effect on investment and in turn GDP growth. The notion of a singular interest rate is an abstraction, of course, for in actuality, the market for loanable funds generates a wide spectrum of interest rates. The range of rates reflects differences in risk and time commitment within the loan pool. Nevertheless, in normal times the full spectrum of interest rates tends to move in sync so that as an analytic construct “the” interest rate serves to capture the essence of the macroeconomic dynamic.

In analyzing the response of savers and investors to changes in the interest rate, the focus is on the interest rate in real terms. The real interest rate is the nominal rate minus the rate of inflation. The nominal interest rate must be at least as high as the inflation rate for the purchasing power of funds to be preserved over time. In practice, loan contracts are generally specified in nominal terms with the real interest rate revealed only in hindsight when the inflation rate becomes known. If inflation surprises on the high side, the real interest rate ex post will be lower than was anticipated ex ante, and vice versa. When inflation accelerates unexpectedly, the real interest rate can turn negative if the nominal rate has been set low enough. This amounts to a boon for borrowers, but a setback for lenders.

The market for loanable funds determines the interest rate, as represented in Figure 7.1. Savers enter the market on the supply side, investors on the demand side. In the microeconomic analysis of product markets, studied in Chapter 3, the representation of the supply curve as upward sloping rests on the argument that a rising price permits resources to be drawn at increasing opportunity cost from competing uses. Such an argument does not fit in this situation for we are looking at the choice to save in the aggregate rather than the choice to absorb saving in one use as opposed to others. To assess whether the supply of saving in the aggregate increases with the interest rate, we must inquire as to why people save. Saving represents the sacrifice of current consumption for future consumption. A higher interest rate yields a higher payoff for deferred consumption, and that may well be enticing to some savers. For others, however, if saving is motivated by a desire to reach a particular goal – a comfortable retirement, the purchase of a big ticket item, a basic sense of security against the unknown – a higher interest rate would make the goal more easily attainable with lower saving. In principle, then, the supply curve could slope backward. Given the ambiguity, Figure 7.1 shows the aggregate saving function as highly inelastic, as is supported empirically.



The demand for loanable funds reflects borrower expectations about the prospects for making a return on various investment opportunities. As the interest rate falls, more potential projects are seen as viable and the quantity of funds demanded increases. A given demand relationship rests on the assumption that all factors other than the interest rate remain constant. Any change in an exogenous factor causes the entire demand curve to shift. The demand for loanable funds relationship is in fact prone to pronounced volatility. This is because the decision to borrow money and commit to an investment project hinges on expectations about the future. Crowd psychology tends to take over such expectations. During boom times, optimism prevails and the demand to borrow runs high. Graphically, the demand curve shifts to the right and the interest rate rises. But booms are prone to overreaching. In the collapse that ensues, investor

sentiment succumbs to pessimism and the demand curve shifts left dragging the interest rate down. Even as interest rates approach a lower bound of zero, investors may show limited desire to borrow. Interest rate adjustment may thus fail to revive a failing economy.

While the notion of a single interest rate is useful for certain purposes in macroeconomics, the contours of the spectrum of rates can be telling for other purposes. The range of interest rates reflects differences in maturity and risk. The profile of interest rates associated with different maturities, which can extend from overnight to thirty years, is known as the term structure or yield curve. Normally, the yield curve rises as terms lengthen to reflect a premium paid to tie up funds and take on the greater uncertainty associated with the more distant future. Any expectation that inflation will increase will tilt the yield curve, as expressed in nominal terms, upward. In rare circumstances, the yield curve can become inverted meaning that short term loans command higher interest rates than long term loans. This pattern usually indicates fear of impending recession, which will increase the risk of loan default, perhaps combined with expectations of softening inflation.

The range of interest rates associated with perceived risk of borrower default is known as the credit spread. Credit spreads are prone to the psychology of boom and bust. In times of optimism and robust economic expansion, risk sensitivity relaxes and credit spreads narrow. Conversely, when the economy is in the doldrums and hopelessness prevails, risk sensitivity intensifies and credit spreads widen.

In emerging economies with immature financial systems, markets are not very effective in pricing risk. Nor do they generate a meaningful yield curve if trading across the range of maturities is not highly liquid. In such situations, financial markets show limited resonance with macroeconomic conditions. The dissociation is often compounded by government intervention in setting interest rates, sometimes coupled with outright assumption of bank ownership. Typically in such cases, governments repress interest rates and get involved in allocation of the resulting short supply of funds. This strategy is motivated by a well-intentioned desire to lower the cost of publicly supported investment projects. The outcome, however, is that interest rates are neither fully responsive to macroeconomic conditions nor readily manipulated as policy instruments in macroeconomic management (the subject of Chapter 11).

### *Relationship between Interest Rates and Asset Prices*

The interest rate provides the link between present and future value. In the simplest application of this link, an asset currently valued at  $A$  that yields a rate of return  $i$  will be worth  $A(1+i)$  a year from now. Two years from now, it will be worth  $A(1+i)^2$ , allowing for the compounding of interest.

In the reverse calculation, the present value of the return on an asset is derived by discounting the returns the asset is expected to deliver in the future. Letting  $R_1$  represent a return on an asset to be yielded one year hence, the present value of the return is  $A = R_1/(1+i)$ . A return to be yielded after two years,  $R_2$ , has a present value of  $A = R_2/(1+i)^2$ . For a stream of annual returns extending to year  $t$ , where the final sum,  $R_t$ , includes the redemption value of the asset, the present value of the asset is given as:

$$A = \frac{R_1}{(1+i)} + \frac{R_2}{(1+i)^2} + \cdots + \frac{R_t}{(1+i)^t}. \quad (7.1)$$

The interest rate in the above formula serves to discount, or capitalize, future payments. The higher the interest rate, the steeper the trade-off between present and future. Discounting a given stream of future returns at a higher interest rate will result in a lower present value for the asset. Conversely, applying a lower interest rate means less differentiation between present and future resulting in a higher present value for given returns.

The relationship between interest rates and asset values may be illustrated with a bond. The face value of a bond is the amount to be paid at maturity. Consider a zero-coupon bond (meaning no payments are received prior to maturity) with a face value of \$100 maturing in 10 years. At the time of issue, let the risk appropriate market rate of interest be 6.0 percent. The price of the bond is then  $\$100/(1.06)^{10}$ , or \$55.84. If over the ensuing year the market interest rate remains constant, the price of the bond will rise to  $\$59.19 = \$100/(1.06)^9$  reflecting the shorter time to maturity. But suppose instead that the market interest rate were to rise to 7.5 percent. The price of the bond would then drop to  $\$52.16 = \$100/(1.075)^9$ . The increase in the interest rate results in steeper discounting to keep the price of the bond competitive with new bonds being issued with higher yields, and this effect in our example dominates the shortening of time till maturity. If the market interest rate had instead fallen, an existing bond issued at the previously higher interest rate would see its price rise. The risk that the price of a bond will fluctuate due to changes in market interest rates is known as interest rate risk.

Asset classes other than bonds are similarly subject to valuation changes in response to interest rate movements. In times of falling interest rates, asset values become generally buoyant. The couple of decades leading up to the Great Financial Crisis was such a time. This period saw real interest rates drop to unprecedented worldwide lows. Driving this, in the view of many observers including former chairman of the U.S. Federal Reserve Alan Greenspan, was an abundance of global saving. Low inflation in virtually all economically important nations, and expectations for that to be sustained, also had a damping effect on interest rates in nominal terms. This stimulated a broad based increase in asset values. Feeling wealthier, people in turn spent with enthusiasm. This powered a great economic boom. The concern must be, however, that when the inevitable rise in interest rates comes to pass, events will play out in reverse with asset values falling and spending contracting to the detriment of economic growth. Some analysts believe that with the passing of another decade of low interest rates subsequent to the Great Financial Crisis, asset prices have again become inflated and are destined for a fall.

## Finance and the Macroeconomy

The financial system supports economic growth by channeling saving to investment. But beyond the static transfer, the system generates new debt to drive dynamic increases in spending. This is achieved by banks making loans through the creation of new deposit money. Managing the pace of debt creation is a challenge. If debt grows too quickly, the additional spending can drive inflation. Inflation in product prices is readily monitored and gauged against a stable course. Increases in asset prices, however, are trickier to benchmark. The value of assets represents the discounted value of expected returns stretching into the distant future. Real factors, such as technological advance and globalization, can boost productivity to justify sustained increases in

asset prices. But speculative fervor too can lift asset prices. And fueled by debt, a bubble can inflate, where a bubble by its nature must burst.

Finance is a pillar of growth but also a driver of volatility. Expansions are supported by new lending. Contractions are aggravated by a dearth of lending. Fluctuations up and down are amplified by the fickleness of risk perception – that in booms, the wildest gambles will pay off and in busts, risk is to be altogether shunned. Monetary authorities attempt to rein in volatility through a combination of manipulating the monetary base and fixing the ratio of deposit money to the monetary base. Nevertheless, financiers have proven adept at circumventing regulation when the boom is on and steadfast in hunkering down when boom turns to bust.

The economies of Emerging East Asia present particular vulnerabilities to financial instability. The Asian Financial Crisis demonstrated how quickly a crisis in one economy can spread across the region. The economies hit hardest showed similar weaknesses in their external debt profiles. But beyond the specifics of balance sheets, public perception is important in the timing and severity of a crisis, and perception is sensitive to circumstantial triggers. Changes in perception surrounding one economy can have a contagion effect. Greater openness to financial flows increases exposure to external shock even as it brings much in the way of benefit for economic development. Some economies in the region are already highly open to international capital flows, while others are moving tentatively in the direction of greater openness. The chapters to follow address guarding against and coping with shock, and more generally the steering along a steady course of an open economy with an impressionable financial system.

We end this chapter with a take on finance in the broad sweep of human history. Box 7.3 presents the case that the innovations of paper money in the East and bonds in the West set the course for a divergence of the most fundamental order in the evolution of social institutions.

### **Box 7.3: The great divergence in finance**

By one read of history, the great divergence between East and West in economic development traces to an early divergence in financial systems. Both regions gave rise to major innovations in finance around the same time. In China the innovation was paper money in the 11<sup>th</sup> century, as detailed in Box 6.1. In Europe, it was bonds in the 12<sup>th</sup> century. For each region, the new financial instrument provided crucial support for waging war on a large scale, and rebuilding in the aftermath. With that need met, the impetus for redundant mechanisms to serve a given purpose was seemingly undermined. In neither region did the innovation of the other arrive until centuries later.

China under the Song Dynasty (960-1279) incurred a heavy burden defending its northern frontiers. Merchants who provisioned the garrisons were paid in government-issued paper notes, initially redeemable for coin through the cash-rich monopoly bureau. The northern region of the Song empire was eventually overrun by Jin invaders from the northeast, who themselves finally succumbed to the Mongols from the northwest. Holding its border cost the Song empire dearly. Wanton printing of money through the Song's waning decades resulted in severe debasement of the currency, leaving the conquering Mongols to start afresh with their own currency upon consolidating the Yuan Dynasty (1272-1368). But the Mongols fell victim to the same temptation to pay their bills with notes until finally paper currency in China was debased to the point that it fell into obsolescence.

The Europeans took a different tack to finance their wars and reconstructions. In the 12<sup>th</sup> century, Italian city-states began borrowing from their citizenry. Initially the loans were voluntary, the wealthy being lured in by attractive interest rates. But as the need grew to fund wars against the Byzantines, the Turks, and each other, the city-states imposed bond purchase mandates on a broader populace at less compensatory remuneration. The need thus arose for a secondary market for the unloading of bonds by unwilling buyers. The Venetians led the way in institutionalizing a system of negotiable bonds. Bond prices fluctuated with the state of war and peace, and the general degree of market confidence that payment obligations would be met.

Over the next few centuries bond financing became established routine for governments throughout Europe, although until the early 1800s the routine was limited to raising funds domestically in local currency. A new era was ushered in when the Rothschilds took the bond market international. With five brothers positioned each in a different country, the family was ideally situated to conduct financial business across borders. In the wake of the Napoleonic wars, European governments were in dire need of funds to pay off war debts in foreign currencies and recover from sovereign bankruptcy. The Rothschilds came to the rescue by launching an Austrian government bond in London that raised capital in sterling and commanded interest payments in the same. In the years that followed, bonds would come to be issued simultaneously in multiple countries with interest payments collectible in a city of the bearer's convenience. Not only did this significantly broaden access to capital and diversify risk, it reoriented the nature of wealth and power away from landed aristocracy to a much more mobile – geographically and socially – capitalist class. Thus, arguably, was Europe's development path reoriented in a direction very different from that of China where a landed gentry held onto local power.

Source: Goetzmann and Rouwenhorst (2005).

## Data Note

A vast trove of financial data is available in the World Bank's *Global Financial Development Database*, launched in 2012 along with a new publication series, the *Global Financial Development Report*. The database is compiled from primary data maintained by diverse institutions, including the Bank for International Settlements, Bankscope, Bloomberg, the International Monetary Fund, and Standard & Poor's, as well as the World Bank's own data collections. Data on financial depth for Chart 7.1, on stock market turnover for Chart 7.3, on bank Z-scores for Chart 7.4, and on stock market volatility for Chart 7.5 are mostly drawn from this source. However, although the World Bank database contains the debt securities variables of Chart 7.1, for more up-to-date and complete (including Taiwan) information, the numbers were derived from the original source, the Bank for International Settlements.

In support of bond market development in the Asia region, the Asian Development Bank provides a wealth of data and analysis through its website *Asian Bonds Online*. The data for bonds outstanding in Chart 7.2 and bond turnover in Chart 7.3 are culled from this source.

Data for Taiwan in Chart 7.1 are drawn from the following sources: for bank credit, Central Bank of the Republic of China (Taiwan); and for stock market capitalization, Taiwan Stock Exchange.

Stock market capitalization magnitudes for Hong Kong, Shanghai, and Shenzhen in 2018 are from the World Federation of Exchanges.

The IMF has put out a *Global Financial Stability Report* since 2002, now semi-annual that is also a useful source of data and insight. The estimates of bank losses associated with the Great Financial Crisis of 2008 are drawn from the IMF report of April 2010 (p. 12).

## Bibliographic Note

A good general reference on finance is Smith, Walter, and Delong (2012).

The claim that financial deepening supports economic development only up to a point finds support in an IMF study by Arcand et al (2012). Also from the IMF, Goyal et al. (2011) argue that greater financial depth increases resilience against shocks. Taylor (2012) makes the case that too rapid growth in credit can be destabilizing.

An accessible account of how the U.S. spawned the Great Financial Crisis of 2008 and a few shrewd investors profited enormously from it may be found in Lewis (2010). A more technical analysis of the crisis is contained in Smith, Walter, and Delong (2012).

On Hong Kong finance, Ho, Scott, and Wong (2005) is of historical value while the website of the Hong Kong Monetary Authority provides ongoing updates. The quote from Joseph Yam, former Chief Executive of the Hong Kong Monetary Authority, is drawn from his

paper on Hong Kong's future (p. 16) which broaches the subject of change in a monetary system grounded in three decades of history.

The role of finance in driving business cycles has been incisively articulated by Hyman Minsky (1986), whose insights are laid out more fully in Chapter 10.

## Bibliographic Citations

Arcand, Jean-Louis, Enrico Berkes, and Ugo Panizza, 2012. "Too Much Finance?", IMF Working Paper WP/12/161 (Washington, DC: International Monetary Fund).

Asian Development Bank, 2013. *Asian Bonds Online*.

[http://asianbondsonline.adb.org/regional/data/bondmarket.php?code=LCY\\_in\\_GDP\\_Local](http://asianbondsonline.adb.org/regional/data/bondmarket.php?code=LCY_in_GDP_Local) (accessed 20 November 2013).

Financial Stability Board, *Global Shadow Banking Monitoring Report 2012* (Basel, Switzerland: FSB).

Goetzmann, William N. and K. Geert Rouwenhorst (eds.), 2005. *The Origins of Value : The Financial Innovations that Created Modern Capital Markets* (New York: Oxford University Press). Of special note: Goetzmann and Rouwenhorst, "Introduction: Financial Innovations in History", pp. 3-16; Richard von Glahn, "The Origins of Paper Money in China", pp. 65-89; Luciano Pezzolo, "Bonds and Government Debt in Italian City-States", pp. 145-163; Niall Ferguson, "The First 'Eurobonds'", pp. 313-325.

Goyal, Rishi, Chris Marsh, Narayanan Raman, Shengzu Wang, and Swarnali Ahmed, 2011. "Financial Deepening and International Monetary Stability", IMF Staff Discussion Note, SDN/11/16.

Greenspan, Alan, 2010. "The Crisis" (Washington, DC: Brookings)

[http://www.brookings.edu/~media/Projects/BPEA/Spring%202010/2010a\\_bpea\\_greenspan.PDF](http://www.brookings.edu/~media/Projects/BPEA/Spring%202010/2010a_bpea_greenspan.PDF) (accessed 20 November 2013).

Ho, Simon S., Robert Haney Scott, and Kie Ann Wong, 2005. *The Hong Kong Financial System: A New Age*, 2<sup>nd</sup> Edition (Hong Kong: Oxford University Press (China)).

Hong Kong Monetary Authority, 2012. *Half-Yearly Monetary and Financial Stability Report, September 2012* (Hong Kong: Hong Kong Monetary Authority).

International Monetary Fund, 2004. "Are Credit Booms in Emerging Markets a Concern?" In *World Economic Outlook* (Washington, DC: IMF).

International Monetary Fund, 2010. *Global Financial Stability Report*, April 2010 (Washington, DC: IMF).

Lewis, Michael, 2010. *The Big Short: Inside the Doomsday Machine* (New York: W.W. Norton).

Minsky, Hyman, [1986] 2008. *Stabilizing an Unstable Economy* (New York: McGraw Hill).

- Sheng, Andrew, 2012. “How to Develop Capital Markets in East Asia”, in Masahiro Kawai and Andrew Sheng (eds.), *Capital Market Reform in Asia: Towards Developed and Integrated Markets in Times of Change* (New Delhi, India: SAGE Publications).
- Smith, Roy C., Ingo Walter, and Gayle Delong, 2012. *Global Banking*, 3<sup>rd</sup> Edition (Oxford, UK: Oxford University Press).
- Taylor, Alan M., 2012. “The Great Leveraging”, NBER Working Paper 18290 (Cambridge, MA: National Bureau of Economic Research).
- World Bank, 2012. *Global Financial Development Database* (Washington, DC: World Bank). [www.worldbank.org/financialdevelopment](http://www.worldbank.org/financialdevelopment) (accessed 2012 November 15).
- World Bank, 2012. *Global Financial Development Report, 2013: Rethinking the Role of the State in Finance* (Washington, DC: World Bank).
- World Economic Forum, 2012. *The Financial Development Report, 2012* (New York: World Economic Forum USA).
- World Federation of Exchanges, 2019. Statistics Portal. <https://www.world-exchanges.org/> (accessed 2019 November 9).
- Yam, Joseph, 2012. “The Future of the Monetary System of Hong Kong”, Working Paper No. 9 (Hong Kong: Institute of Global Economics and Finance, Chinese University of Hong Kong). [http://www.igef.cuhk.edu.hk/igef\\_media/working-paper/IGEF/igef\\_working\\_paper\\_no\\_9\\_eng.pdf](http://www.igef.cuhk.edu.hk/igef_media/working-paper/IGEF/igef_working_paper_no_9_eng.pdf) (accessed 2013 October 25).