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Abstract:

Au3 This chapter surveys several mechanisms that explain the composition of international capital flows: foreign direct investment, foreign portfolio investment and debt flows (bank loans and bonds). It focuses on information frictions such as adverse selection and moral hazard and exposure to liquidity shocks, and discusses the following implications for composition of capital flows: (1) home-court information advantage; (2) panic-based capital flow reversals; (3) information–liquidity trade-off in the presence of source and host country liquidity shocks; (4) moral hazard in international debt contracts; and (5) risk-sharing role of domestic bonds in the presence of home bias in goods and equities.

Keywords: Asymmetric information and capital flows; Debt flows; Equity flows and liquidity shocks; Foreign direct investment (FDI); Foreign investment and banking crises; Foreign portfolio investment (FPI); Home bias in equity and bonds; Moral hazard and lending

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CHAPTER

41

c0205

Composition of International Capital Flows

A Survey

Au2

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OUTLINE

WHAT THE CHAPTER IS ABOUT

s0010

p0125 In an integrated, world capital market with perfect information, all forms of capital flows are indistinguishable. Information frictions and incomplete risk sharing are important elements that needed to differentiate between equity and debt flows, and between different types of equities. This survey puts together models of debt, foreign direct investment (FDI), and foreign portfolio investment (FPI) flows to help explain the composition of capital flows. With information asymmetry between foreign and domestic investors, a country which finances its domestic investment through foreign debt or foreign equity portfolio issues will inadequately augment its capital stock. FDI flows, however, have the potential of generating an efficient level of domestic investment. In the presence of asymmetric information between sellers and buyers in the capital market, FDI is associated with higher liquidation costs due to the adverse selection. Thus, the exposure to liquidity shocks determines the volume of FDI flows relative to portfolio investment flows. In particular, the information–liquidity trade-off helps explain the composition of equity flows between developed and emerging countries, as well as the patterns of FDI flows during financial crises.

p0130 FDI investors get more efficient outcomes than FPI investors under their direct control over management, due to having better information about the firm's

*The views expressed in this chapter are those of the authors. No responsibility for them should be attributed to the Bank of Canada. np0010

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productivity, which allows them to make informed investment and management decisions. However, the better information mires FDI investors with a 'lemons' problem: if an investment project has to be liquidated prematurely, market participants would not know whether the firm is sold because of exogenously determined liquidity needs, or because the more informed investors find some negative aspects about the asset productivity. The consequence is that the market will place a discount on assets that a direct investor liquidates to be sold below assets that portfolio investors liquidate. The magnitude of the discount depends on the market's perception of the likelihood of a liquidity shock.

p0135 Theory predicts that the composition of foreign equity investment entails relatively more FPI and less FDI if a country is expected to experience aggregate liquidity problems. The idea is that direct investments are more costly to liquidate. Hence, expecting greater liquidity needs in the future, investors tend to tilt their investments toward the liquid asset, which is a portfolio investment. This hypothesis does not depend on the source of illiquidity faced by direct investors.

p0140 Liquidity shocks to individual investors are triggered by some country-specific aggregate liquidity shock. Individual investors are forced to sell their investments early, particularly at times when there are aggregate liquidity problems. In such times, some individual investors have deeper pockets than others, and thus are less exposed to the liquidity issues. Thus, once an aggregate liquidity shock occurs, some individual investors will need to sell, but they will get a low price because buyers do not know if they have deep pockets and sell because of adverse information or because they are truly affected by the aggregate liquidity crisis. An equilibrium property is that the composition of current flows depends on the composition of past flows. In a pooled equilibrium, where FDI investors are heterogeneous with regard to their idiosyncratic future liquidity needs, low-liquidity need investors generate negative externalities on the high-liquidity need investors. The market naturally evaluates the liquidity risk as an average between the high and the low probabilities of the shocks to liquidity. ~~If a high-liquidity need investor has to liquidate his/her investment, the market perceives that the premature sale has to coincide with joint occurrences of some idiosyncratic low-productivity liquidity realizations.~~ Common knowledge concerning the distribution of idiosyncratic productivity and liquidity shocks helps the market to evaluate the liquidated assets, although imperfectly, because of the information asymmetry. Thus an FDI asset is sold at a discount.

Au5

p0145 Another implication arises from the existence of information-based externality. Ideally, if the high-liquidity need investors could somehow separate themselves from the low-liquidity need investors, the former can sell their assets at a better price. But this is not possible in the pooling equilibrium. This means that high-liquidity need investors generate a positive information externality over low-liquidity need investors among direct investors. An increase in the number of FDI investors comes from high-liquidity need investors, which reinforces such externality, thereby lowering the price discount, and creating incentives for even more investors to choose to become direct investors rather than FPI investors. Pooling equilibrium is therefore characterized by strategic complementarity. A dynamic implication is that the larger the past and present share of FDI flows, the larger will also be the future share of FDI flows.

p0150 The asymmetric information between domestic investors (as borrowers) and foreign investors (as lenders) with respect to investment allocation leads to moral hazard and thus generates an inadequate amount of borrowings. The moral hazard problem, coupled with limited enforcement, can explain why countries experience debt outflows in low-income periods, in contrast to the predictions of the complete-market paradigm. Finally, a risk-diversification model is analyzed, where bond holdings hedge real exchange rate risks, while the equities hedge nonfinancial income fluctuations. An equity home bias emerges as a calibratable equilibrium outcome.

INTRODUCTION

s0015

p0155 Economists tend to favor capital mobility across national borders as it allows capital to seek out the highest rate of return. Unrestricted capital flows further offer several advantages. First, international flows reduce risk through the diversification of lending and investment. Second, the global integration of capital markets can contribute to the spread of best practices in corporate governance, accounting standards, and legal practices. Third, the global mobility of capital limits the ability of governments to pursue bad policies. In an integrated, world capital market with perfect information, all forms of capital flows would be indistinguishable. Information frictions and incomplete risk sharing are important elements ~~needed~~ to differentiate between equity and debt flows, and between different types of ~~equities~~.

Au6

p0160 Capital flows can be classified into the following types: FDI, FPI, and debt. Capital flows that have equity-like features (FDI and FPI) are presumed to be more stable and less prone to reversals. Among equity flows, FDI yields more benefits than others because it comes with more direct control of management. In contrast, foreign debt flows, consisting of bank loans and bonds, are regarded as more volatile.

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p0165 The purpose of this survey is to elucidate some important mechanisms that explain the key features of international capital flows:

o0010 1. With information asymmetry between foreign and domestic investors, a country which finances its domestic investment through foreign debt or foreign equity portfolio flows will inefficiently allocate its capital. FDI, however, has the potential to generate an efficient level of domestic investment.

o0015 2. Exposure to liquidity shocks makes financial institutions vulnerable to runs by domestic investors and foreign creditors. Maturity mismatch when long-term investment is financed with short-term debt may induce, and exacerbate, financial crisis and lead to sudden reversals of short-term international capital flows.

o0020 3. FDI is associated with higher liquidation costs due to the adverse selection. The exposure to liquidity shocks in the source and host countries affects the volume of FDI flows relative to portfolio investment flows, based on a trade-off between information and liquidity. This trade-off helps to explain the composition of equity flows between developed and emerging countries, as well as the patterns of FDI flows during financial crises. In particular, it explains why the developing countries tend to attract a larger share of capital in the form of FDI than the developed countries.

o0025 4. Moral hazard problem in conjunction with willingness to repay debt obligations, coupled with limited enforcement, helps explain why countries experience debt outflows in a low-income period in contrast to the predictions of the complete-market paradigm.

o0030 5. Bond holdings become a better hedge against real exchange rate risks than equities in the presence of home bias in goods, which induces home bias in equities. The latter provide the hedge against nonfinancial income risks.

p0195 The organization of the survey is as follows. Section 'Home-Court Information Advantage' describes the pecking order between FDI, FPI, and debt in the presence of home-court information advantage. Section 'Debt Flows' surveys panic-based models of bank loans. Section 'Equity Flows and Liquidity Shocks' highlights the distinction between FDI and FPI in the presence of asymmetric information and liquidity risks. Section 'Moral Hazard in Debt Contracts Under Limited Enforcement' captures the effect of moral hazard in international debt contracts. Section 'Role of Bonds in the Presence of Home Bias in Goods and Equities' focuses on models with home bias in goods and services. Section 'Conclusion' provides a conclusion.

HOME-COURT INFORMATION ADVANTAGE

s0020

p0200 Strong evidence exists of a home-court advantage in international portfolio investment. One explanation is an information asymmetry between domestic and foreign investors about expected performance of domestic firms. As demonstrated later, an information asymmetry can cause an aggregate production inefficiency and lead to foreign underinvestment and domestic oversaving. As a result, the marginal productivity of capital at home is high relative to the home country marginal cost of importing capital.

p0205 Empirical studies by Portes et al. (2001) as well as Loungani et al. (2002) suggest that informational asymmetries significantly contribute to the negative relationship between asset trade and distance. The gravity models predict that bilateral international transactions are related positively to the size of the two economies and negatively to the distance between them. Distance is measured as a proxy for informational frictions, transaction, and transportation costs.

p0210 According to Froot and Stein (1991), Klein and Rosengren (1994), as well as Klein et al. (2002), the hypothesis is that FDI is information-intensive, and thus FDI investors, who know more about their investments than outsiders, face a problem in raising resources for their investments. Gordon and Bovenberg (1996) assume asymmetric information between domestic investors and foreign investors to explain the home bias phenomenon. Razin and Sadka (2003) analyze the gains from FDI when foreign direct investors have superior information on the fundamentals of their investment, relative to foreign portfolio investors.

p0215 Razin et al. (1998) explored a pecking order among the three types of capital flows – debt, equity, and FDI – in the context of a model in which domestic savers and FDI investors are endowed with better information than the portfolio foreign investors. The ranking of capital inflows is somewhat similar to the pecking order of corporate capital structure. Recall that in corporate finance the hypothesis maintains that the firms prefer internal finance (retained earnings, the analog of FDI in the case of international flows) to external finance. If the latter is required, then firms will issue the safest security (the analog of debt flows), and they will issue new equity (the analog of equity portfolio flows) only as a last resort.

Pecking Order of Capital Flows

s0025

p0220 Pecking order in corporate finance ranks internal finance at the top, debt finance in the middle, and equity finance at the bottom. A driving force behind international finance efficiency ranking is that domestic

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Au7 investors are better informed than their ~~domestic~~ counterparts. The pecking order puts FDI first and debt and portfolio equity second. This is because while asymmetric information plagues debt and portfolio equity foreign investment, direct foreign investors, by having control over management, neutralize the information advantage of domestic investors.

p0225 Accordingly, Razin et al. (1998) consider a small, capital-importing country referred to as a home country. There are N ex ante risk-neutral identical domestic firms. There are two time periods. Each firm chooses capital input K in the first period. In the second period, the output is equal to $F(K)(1+\varepsilon)$, where $F(\cdot)$ is a production function exhibiting diminishing marginal productivity of capital and ε is a random productivity factor. The productivity factor ε is independent across firms, it has zero mean, and is bounded below by -1. The cumulative distribution function of the productivity shock ε is $\Phi(\cdot)$. The domestic interest rate is denoted by r and the foreign rate by r^*.

s0030 *Foreign debt investment*

p0230 Investment decisions through debt finance are made by firms before ε is observed. Given its investment decision (K) at a stage when uncertainty is unresolved, a firm may choose to default on its debt if $F(K)(1+\varepsilon)$ is smaller than $K(1+r)$. Therefore, firms with productivity $\varepsilon > \varepsilon_0$ will fully repay their nonrecourse loans, where ε_0 is a threshold level of ε, such that $F(K)(1+\varepsilon_0) = K(1+r)$. So, the fraction of solvent firms is $N(1-\Phi(\varepsilon_0))$.

p0235 Assume that domestic firms are better informed than the foreign lenders. They are able to observe productivity ε before making their loan decisions. Thus domestic lenders will extend loans only to firms with productivity $\varepsilon > \varepsilon_0$. In contrast, foreign lenders will advance loans to all firms as they do not observe ε at this stage. β denotes the fraction of solvent firms financed by foreign lenders. Therefore, the expected payoff of foreign lenders is given by

$$\text{Payoff} \equiv \beta N(1-\Phi(\varepsilon_0))K(1+r) + N\Phi(\varepsilon_0)F(K)(1+e^-) \tag{41.1}$$

where $e^- \equiv E[\varepsilon \mid \varepsilon \le \varepsilon_0]$. The amount of loans given by foreign lenders is given by $\text{Loan} \equiv (\beta N(1-\Phi(\varepsilon_0)) + N\Phi(\varepsilon_0))K$.

p0240 The expected value of the representative firm is

$$V \equiv F(K) - [(1-\Phi(\varepsilon_0))K(1+r) + \Phi(\varepsilon_0)F(K)(1+e^-)] \tag{41.2}$$

p0245 Accordingly, the value maximizing level of K is such that

$$F'(K) = \frac{(1-\Phi(\varepsilon_0))K(1+r)}{1-\Phi(\varepsilon_0)(1+e^-)} \tag{41.3}$$

which implies that due to the possibility of default,

$$F'(K) < 1+r \tag{41.4}$$

p0250 This inequality represents an oversaving inefficiency: domestic stock of capital is larger than what domestic savers are willing to pay for in terms of foregone present consumption.

p0255 The expected payoff of the foreign lender should be equal to the capital income on loans, which implies that $r^* < r$ and

$$F'(K) > 1+r^* \tag{41.5}$$

p0260 This means that aggregate production is inefficient and the country can potentially gain from the debt-financed increase in the stock of domestic capital.

p0265 Although debt instruments specify that the issuer of these instruments must pay a fixed value, in the case of default the lender becomes an equity holder. Thus inefficient foreign financing also applies to FPI, as demonstrated in the next section.

s0035 *Foreign portfolio investment*

p0270 As before, all firms choose investment level K in the first period before the random productivity factor ε is observed. All firms are originally owned by domestic investors, who equity-finance their capital investment. Foreign investors do not observe the productivity ε when they purchase shares in existing firms. Therefore, they offer to buy all firms, with low and high productivity, at the same price. The price therefore reflects the average productivity of the firms foreigners invest in. As a result, there is a threshold level of productivity ε_0 such that initial owners of firms whose productivity is above ε_0 will not be willing to sell at that price.

p0275 The value of the representative firm is equal to $F(K)(1+\varepsilon)$. Thus the threshold productivity ε_0 is defined by

$$\frac{F(K)(1+e^-)}{(1+e^*)} = \frac{F(K)(1+\varepsilon_0)}{(1+r)} \tag{41.6}$$

p0280 If foreigners have positive holdings in domestic firms, then it is necessary that $r^* < r$.

p0285 Then, the amount of FPI is given by

$$\text{FPI} = \frac{N\Phi(\varepsilon_0)F(K)(1+e^-)}{(1+r^*)} \tag{41.7}$$

p0290 The firm's expected market value net of the original capital investment is

$$V = \Phi(\varepsilon_0)\frac{F(K)(1+e^-)}{(1+r^*)} + (1-\Phi(\varepsilon_0))\frac{F(K)(1+e^+)}{(1+r)} - K \tag{41.8}$$

p0295 Maximizing this expression with respect to K yields the following condition:

$$\Phi(\varepsilon_0)\frac{F'(K)(1+e^-)}{(1+r^*)} + (1-\Phi(\varepsilon_0))\frac{F'(K)(1+e^+)}{(1+r)} - 1 = 0 \tag{41.9}$$

Because the firm knows, when making its capital investment decision, that it will be sold at a premium if

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faced with low-productivity events, it tends to overinvest relative to the rate of return to domestic investors and underinvest relative to the rate of return to foreign investors:

$$(1 + r^*) < F'(K) < (1 + r) \tag{41.10}$$

p0300 As in the case with debt flows, the information asymmetry between domestic and foreign investors creates inefficiencies, such as oversaving by domestic investors and underinvestment by foreigners, that reduce the gains from international capital flows.

s0040 ***Foreign direct investment***

p0305 The foreign direct investor buys a domestic firm before the investment decision is made. So the foreign investors and direct investors are equally informed. The capital K^* is imported from the foreign country, and the output is $F(K^*)(1+\varepsilon)$. J is the number of firms bought by foreign investors. The market value of the firm sold to foreign direct investors is

$$V^* = \frac{F(K^*)}{(1 + r^*)} - K^* \tag{41.11}$$

Therefore, the amount of FDI is given by

$$\text{FDI} = J(K^* + V^*) \tag{41.12}$$

p0310 In an equilibrium with a positive number of firms owned by both domestic and foreign investors, $V^* = V$, where $V = (F(K)/(1+r)) - K$.

p0315 The optimal level of capital investment K^* and K should satisfy

$$F'(K^*) = 1 + r^* \tag{41.13}$$

$$F'(K) = 1 + r$$

When FDI investors have access to the domestic debt market, then $r = r^*$ and $F'(K^*) = (1+r^*) = F'(K) = 1+r$. That is, global capital markets are efficient. In the case of FDI, the asymmetric information problems are alleviated due to the actual exercise of management and control.

DEBT FLOWS

s0045

p0320 Debt flows remain the dominant form of flows to developing economies, although their relative importance has declined over time. The empirical literature on financial globalization documents a systematic empirical link between exposure to debt flows and the likelihood and severity of financial crises. Rodrik and Velasco (1999) find that countries with a larger short-term debt stock than reserves are more likely to experience a financial flows reversal. Tong and Wei (2009) find that a large pre-crisis exposure to non-FDI capital inflows tends to be associated with a more severe credit crunch during the crisis. However, debt flows can be beneficial in certain circumstances. A country that has no access to equity or FDI inflows might still be able to benefit from debt inflows to finance illiquid investments (Diamond and Rajan, 2001).[1]

p0325 Wei (2006) argues that sudden reversals of capital flows are more likely to occur among countries that rely relatively more on portfolio debt flows, including bank loans, and less on FDI. Moreover, short-term bank loans to developing countries tend to increase during booms and rapidly decrease during economic slowdowns. Claessens et al. (1995) find that long-term debt flows are often as volatile as short-term flows. The procyclicality and high volatility of debt flows can lead to inefficient capital allocation and generate moral hazard. McKinnon and Pill (1996) show that financial liberalization without adequate supervision can result in overborrowing by banks. Furthermore, banks may expose their balance sheets to currency risk if taking speculative open positions in foreign exchange is permitted.

Bank Loans and Banking Crises

s0050

p0330 Banks engage in maturity transformation: consumers deposit money in their bank account, and banks invest a part of these deposits in long-term investments. Therefore, there is a mismatch between the maturities of the liquid deposits of the consumers and the illiquid investments of the bank. Such maturity mismatch makes them vulnerable to bank runs. If too many consumers decide to withdraw their funds simultaneously from a bank, the bank may fail. Diamond and Dybvig (1983) demonstrate that (with common knowledge about the fundamentals of investment returns) there is a possibility of self-fulfilling bank run equilibrium.

p0335 In the Diamond and Dybvig (1983) model there are three periods (0, 1, 2), one good, and a continuum [0, 1] of consumers. Each consumer is born in period 0 with endowment of one unit of the good. Consumption occurs only in periods 1 or 2 (c_1 and c_2 denote corresponding consumption levels). Each consumer can be of two types: with probability λ the consumer is impatient and with probability $(1-\lambda)$ the consumer is patient. Consumers privately learn their types at the beginning of period 1, and their types are i.i.d.[2] Impatient agents derive utility only from consumption in period 1, $u(c_1)$.

[1] See Kose et al. (2006) for a survey of the literature on the volatility and risk of debt flows. np0015

[2] Since there is no aggregate uncertainty, λ is also a fraction of impatient consumers in the economy. np0020

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Patient agents can consume at either period. The expected utility is given by $\lambda u(c_1)+(1-\lambda)u(c_2)$. There is a productive long-term technology: for each unit of input in period 0, the technology generates 1 unit of output in period 1 or R units of output in period 2 where $R>1$.

p0340 A bank offers *demand deposit* contracts to consumers. Each consumer deposits his endowment in the bank in period 0. The contract gives a depositor the right to withdraw his deposit in period 1, and to receive a fixed payment r_1 which is larger than the short-term return of 1. However, if a depositor waits until period 2, he/she receives a random payoff of r_2, which is the amount of nonliquidated investments divided by the number of remaining depositors. These payments are maintained as long as the bank has enough resources to pay every depositor who withdraws early. If the bank does not have sufficient amount of resources, it liquidates all the investments and divides them among consumers who demand withdrawal in period 1. In that case, consumers who wait until period 2 receive nothing.

p0345 As long as the expected period 2 payment is higher: $u(((1-\lambda r_1)/(1-\lambda))R)>u(r_1)$, all patient consumers would prefer to wait until period 2. This is the first-best equilibrium. There exists also a second equilibrium in which all consumers demand early withdrawal. When they do so, the first period payment is $r_1=1$ and the second period payment is $r_2=0$. In this case, it is indeed optimal for consumers to withdraw their deposits early. Therefore, if there is common knowledge about the fundamentals, there exist multiple equilibria. This means that at each realization of the fundamental, consumers may coordinate on any one of these multiple equilibria. Bank runs arise because of a coordination failure. When many run on the bank, it can fail due to the illiquidity generated by the run.

p0350 Figure 41.1 illustrates the welfare levels for (i) autarky equilibrium (A), (ii) first-best equilibrium, and (iii) bank run equilibrium. There is a clear welfare ranking: first-best equilibrium is superior to an autarky, and an autarky is superior to an equilibrium with bank runs.

p0355 Goldstein and Pauzner (2005) assume that consumers do not have common knowledge regarding the fundamentals of the economy, but instead receive noisy signals. The model with noisy signals has a unique equilibrium in which the fundamentals determine whether a bank run will occur.

p0360 Suppose the long-term technology has a random payoff: R with probability $p(\theta)$ and 0, otherwise. The state θ is random, and it is unknown before period 2. The consumer receives an imperfect private signal θ_i about the true value of θ, before he/she decides on whether or not to withdraw his/her deposit. The signal has two effects. First, it provides information about the fundamental (or the probability $p(\theta)$); a larger signal implies a higher forecasted probability, $p(\theta)$, consequently, the incentive to run on the bank by a patient consumer who receives the signal is reduced. Second, the signal provides information about the signals received by others. The higher the signal, the more probable it is that others receive high signals too. This effect also reduces the incentive of a patient consumer to run on the bank. There is consequently a unique threshold signal, θ^*, in which patient consumers run if they observe a signal below a certain threshold and do not run if the above is true. A patient consumer's action is uniquely determined by his/her signal: he/she demands early withdrawal if and only if his/her signal is below a certain threshold.

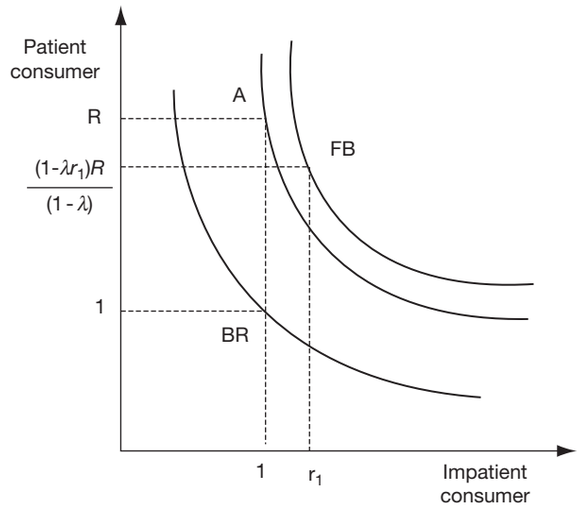

FIGURE 41.1 Equilibrium types. f0010

p0365 Specifically, there are three regions of the fundamental. In the lower region, the bank is insolvent and the run occurs. In the middle region, the bank is solvent, but only a fraction of the late consumers withdraw their deposits. In the high region, a bank run does not occur. As the signals are positively correlated with the fundamental θ, the fraction of consumers who withdraw their deposits in period 1 is decreasing in θ: the higher is θ, the lower is the incentive to run. Therefore, the bank will take this probability into account in designing deposit contracts and depositors will coordinate on θ_i as it provides information about the signals received by others: the higher θ_i is, the more likely that others receive high θ_i, hence, less incentive to run.

p0370 The following two policy measures are adopted to prevent bank runs: suspension of convertibility and deposit insurance. However, there are costs associated with each policy. Suspension of convertibility may deny consumption to agents who face early liquidity needs. By providing deposit insurance the government eliminates runs in the middle region. However, the government creates moral hazard, providing an incentive for

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the bank to offer an excessively high deposit rate, which increases the region of insolvency. As a result, banks become more vulnerable to runs when they offer more risk sharing. Therefore, moral hazard creates a systemic risk. The way to avoid this effect is to put restrictions on banks' decision. In the model, it means limiting the deposit rate.

Capital Flow Reversals

Banks tend to finance long-term investment with short-term debt. Such debt maturity structure makes financial institutions vulnerable to bank runs. Even a small shock may result in financial distress, leading to costly asset liquidation and a large decline in asset prices. Furthermore, domestic bank runs may interact with panics by foreign creditors.

Chang and Velasco (2001) apply the Diamond–Dybvig model to international capital flows, to explain sudden reversals of short-term international capital flows. They show that if the financial system's potential short-term obligations exceed the liquidation value of assets, the domestic financial system may collapse. For example, almost all the countries that experienced financial crises in the 1990s had the combination of large short-term liabilities[3] and relatively scarce internationally liquid assets (Furman and Stiglitz, 1998). Furthermore, in the economy which has access to the international capital markets, bank runs may be associated with balance-of-payment crises and currency crises.

Chang and Velasco (1998) provide an analysis of how capital mobility can cause a collapse of a fixed exchange rate system. The ability of governments to come to the rescue of domestic banks under attack is severely limited by the availability of international reserves. In the economy with fixed exchange rate regime, foreign currency outflows put pressures on the currency peg. In the probability that the currency crash increases, bank runs become more likely, which in turn puts even more pressure on the currency. As a result, in emerging economies financial crises are usually accompanied by a currency crisis.

Moreover, foreign creditors in emerging economies may have better access to the world capital markets than domestic investors. Therefore, foreign creditors may be more likely to run on the bank than domestic creditors. With a high fraction of foreign credits, bank failures may coincide with capital flow reversals, thereby creating a balance-of-payment crisis. Krugman (2000) developed a general equilibrium model where the endogenously determined real exchange rate interacts with the balance sheet of domestic investors, because their borrowings are financed by foreigners. A depreciation of the real exchange rate negatively affects investors' balance sheets, causing a sharp fall in investment spending. Self-fulfilling multiple equilibria ensue.

Real exchange depreciation may cause bank runs as well as aggravate their impact on the economy. Since assets are typically denominated in the domestic currency while debt is denominated in a foreign currency, an unanticipated depreciation or devaluation increases the value of debt. For example, a substantial amount of debt denominated in a foreign currency was a prominent feature of financial markets in Latin America in the 1990s (Mishkin, 1996).

EQUITY FLOWS AND LIQUIDITY SHOCKS

An empirical regularity is that the share of FDI in total foreign equity flows is larger for developing countries than for developed countries. Regarding the second moments of foreign equity flows, it is known that the volatility of FDI net inflows is, in general, much smaller than that of FPI net inflows. Moreover, empirical analysis has established that the differences in volatility between FPI and FDI flows are much smaller for developed economies than for developing economies.

Rossi and Volpin (2004) find that the volume of M&A activity is significantly larger in countries with better corporate governance standards and stronger investor protection. Albuquerque (2003) argues that financially constrained countries borrow more through FDI because FDI is harder to expropriate. Albuquerque et al. (2005) analyze the dynamic of FDI in response to increased integration of capital markets. They find that financial integration increases the relative importance of global factors as drivers of foreign investment. Furthermore, developing countries' exposure to global factors has increased faster than that of developed countries.

Goldstein and Razin (2006) focus on the information–liquidity trade-off of FDI relative to FPI. FDI investors are in effect the managers of the firms under their control, whereas FPI investors effectively delegate decisions to managers. Consequently, direct investors are more informed than portfolio investors regarding the prospects of their projects. This information enables direct investors to manage their projects more efficiently.[4] This

[3] In Mexico in 1995, Russia in 1998, and Brazil in 1999, the debt was mostly owned by government; in Indonesia, Korea, and Thailand in 1997, it was primarily owned by private banks and firms.

[4] The idea that control increases efficiency and value of the firm is supported empirically by recent papers in the international finance literature (Perez-Gonzalez, 2005; Chari et al., 2005).

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informational advantage, however, comes at a cost. If investors need to sell their investments before maturity because of liquidity shocks, the price they can get will be typically lower when buyers know that they have more information on the fundamentals of the investment project. A key implication of the model is that the choice between FDI and FPI will be linked to the likelihood with which investors expect to get a liquidity shock.

s0065 Information–Liquidity Trade-Off Between FDI and FPI

p0415 Information advantage in the case of FDI can turn into a disadvantage due to an adverse selection problem when assets must be liquidated prematurely when a source country liquidity shock occurs.

p0420 Accordingly, Goldstein and Razin (2006) consider a small economy faced by a continuum [0, 1] of foreign investors. Each foreign investor has an opportunity to invest in one investment project. Foreign investment can occur in one of two forms: either as a direct investment or as a portfolio investment. A direct investor effectively acts like a manager, whereas in the case of a portfolio investment, the project is managed by an outsider.

p0425 There are three periods of time: 0, 1, and 2. In period 0, each investor decides whether to make a direct investment or a portfolio investment. In period 2, the project matures. The net cash flow from the project is given by

$$R(K,\varepsilon) = (1+\varepsilon)K - \frac{1}{2}AK^2 \tag{41.14}$$

where ε is an idiosyncratic random productivity factor, which is independently realized for each project in period 1, and K is the level of capital input invested in the project in period 1, after the realization of ε. The parameter A reflects production costs. The productivity shock ε is distributed between -1 and 1 with mean 0, and the cumulative distribution function $\Phi(\cdot)$, and the density function $f(\cdot)=\Phi'(\cdot)$. Investors choose the form of investment that maximizes (ex ante) expected pay-off.

p0430 In period 1, after the realization of the productivity shock, the manager of the project observes ε. Thus, if the investor owns the project as a direct investment, he/she observes ε and chooses K, so as to maximize the net cash flow: $K^d(\varepsilon)=(1+\varepsilon)/A$.

p0435 Therefore, the ex ante expected net cash flow from a direct investment, if held until maturity, is

$$\mathrm{EV_D} = \frac{E((1+\varepsilon)^2)}{2A} \tag{41.15}$$

p0440 In the case of a portfolio investment, the owner has an arm's-length relationship with the manager, and thus he/she cannot observe ε. In this case, the owner maximizes the expected return absent any information on the realization of ε, and decisions are based on the ex ante 0 mean. Thus, the manager will be instructed to choose $K^p=K^d(0)=1/A$. Then, the ex ante expected payoff from a portfolio investment, if held until maturity, is

$$\mathrm{EV_P} = \frac{1}{2A} \tag{41.16}$$

Comparing Eq. (41.15) with Eq. (41.16), it is seen that if p0445 the project is held until maturity, it yields a higher payoff as a direct investment than as a portfolio investment. This reflects the efficiency that results from a hands-on management style in the case of a direct investment.

There are also costs for FDI investment, however. p0450 First, an FDI investor has to incur a fixed cost to acquire the expertise to manage the project directly. This cost, which is exogenously given in the model, is denoted by C. Second, there is an endogenous cost arising from the possibility of liquidity shocks occurring in period 1. There is a discount when selling a project managed as direct investment due to information asymmetries, as demonstrated below.

In period 1, before the value of ε is observed, the p0455 owner of the project might get a liquidity shock. With the realization of a liquidity shock, the investor is forced to sell the project in period 1. This feature of the model is similar to the preference-shock assumption made by Diamond and Dybvig (1983): an investor who is subject to a liquidity shock derives her/his utility only from period-one consumption. If, however, she/he is not subject to a liquidity shock, she/he derives her utility from period 2 consumption. The probability of a liquidity shock is denoted by λ. It is assumed that there are two types of foreign investors. In particular, half of the investors will need to sell with probability λ_H and half with probability λ_L such that $1>\lambda_H>(1/2)>\lambda_L>0$, and $\lambda_H+\lambda_L=1$. Investors know ex ante whether they are of a λ_H type or a λ_L type and this is their private information. In addition to liquidity-based sales, there is a possibility that an investor will liquidate a project in period 1 if he/she observes a low realization of ε. Then the price that buyers are willing to pay for a direct investment that is being sold in period 1 is

$$P_D = \frac{1}{2A}\frac{(1-\lambda_D)\int_{-1}^{\underline{\varepsilon}_D}(1+\varepsilon)^2 f(e)\mathrm{d}\varepsilon + \lambda_D}{(1-\lambda_D)\Phi(\underline{\varepsilon}_D)+\lambda_D} \tag{41.17}$$

Here, $\underline{\varepsilon}_D$ is a threshold level of ε, set by the direct investor, below which the direct investor is selling the project without being forced to do so by a liquidity shock; λ_D is the probability, as perceived by the market, that an FDI investor gets a liquidity shock. In Eq. (41.17), it is assumed that if the project is sold due to a liquidity shock, that is, before the initial owner observes ε, the value of ε is not recorded in the firms before the sale. Therefore, the buyer does not know the value of ε. However, if the

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project is sold for low-profitability reasons, the owner will know the value of ε after the sale. The threshold $\underline{\varepsilon}_D$ is determined in equilibrium. The initial owner sets the threshold level $\underline{\varepsilon}_D$, such that given P_D, when observing $\underline{\varepsilon}_D$, an investor is indifferent about selling or not selling the project in the absence of a liquidity shock. Thus:

$$P_D = \frac{(1+\underline{\varepsilon}_D)^2}{2A} \tag{41.18}$$

Eqns. (41.17) and (41.18) together determine P_D and $\underline{\varepsilon}_D$ as functions of the market-perceived probability of sale due to the liquidity shock (λ_D). These functions are denoted as $\underline{\varepsilon}_D(\lambda_D)$ and $P_D(\lambda_D)$.

p0460 When a portfolio investor sells the projects in period 1, everybody knows he/she does it because of a liquidity shock. Thus, the price of the project is given by

$$P_P = \frac{1}{2A} \tag{41.19}$$

p0465 Comparing the price of FDI, which is determined by Eqns. (41.17) and (41.18), with the price of FPI, which is determined by Eq. (41.19), it is seen that the resale price of a direct investment in period 1 is always lower than the resale price of a portfolio investment in that period. The intuition is that if a direct investor prematurely sells the investment project, the market price must reflect the possibility that the sale originates from inside information on low prospects of this investment project. This constitutes the second (liquidity) cost of FDI.

p0470 Based on this analysis, the ex ante expected net cash flow from FDI can be written as

$$\mathrm{EV}_D(\lambda_i,\lambda_D,A,C) = \left[(1-\lambda_i)\left(\frac{(1+\underline{\varepsilon}_D(\lambda_D))^2}{2A}\Phi(\underline{\varepsilon}_D(\lambda_D)) + \int_{\underline{\varepsilon}_D}^{1}(\lambda_D)\frac{(1+\varepsilon)^2}{2A}f(\varepsilon)\mathrm{d}\varepsilon\right) + \lambda_i\frac{(1+\underline{\varepsilon}_D(\lambda_D))^2}{2A}\right] - C \tag{41.20}$$

The ex ante expected net cash flow from FPI is simply

$$\mathrm{EV}_P(A) = \frac{1}{2A} \tag{41.21}$$

Then, the difference between the expected value of FDI and the expected value of FPI is

$$\mathrm{Diff}(\lambda_i,\lambda_D,A,C) \equiv \mathrm{EV}_D(\lambda_i,\lambda_D,A,C) - \mathrm{EV}_P(A) \tag{41.22}$$

Clearly, investors will choose FDI (FPI) when Diff(λ_i, λ_D, A, C) >0 (<0) and will be indifferent between the two (that is, may choose either FDI or FPI) when Diff(λ_i, λ_D, A, C) $=0$.

To complete the description of the equilibrium, it remains to specify λ_D, the market-perceived probability that an FDI investor will get a liquidity shock. Assuming that rational expectations hold in equilibrium, λ_D has to be consistent with the equilibrium choice of the two types of investors between FDI and FPI, such that p0475

$$\lambda_D = \frac{\lambda_H\lambda_{H,FDI} + \lambda_L\lambda_{L,FDI}}{\lambda_{H,FDI} + \lambda_{L,FDI}} \tag{41.23}$$

where $\lambda_{H,FDI}$ is the proportion of λ_H investors who choose FDI in equilibrium and $\lambda_{L,FDI}$ is the proportion of λ_L investors who choose FDI in equilibrium.

There are five possible cases that can potentially be observed in equilibrium. Case 1: All investors choose FDI. Case 2: λ_L investors choose FDI; λ_H investors split between FDI and FPI. Case 3: λ_L investors choose FDI; λ_H investors choose FPI. Case 4: λ_L investors split between FDI and FPI; λ_H investors choose FPI. Case 5: All investors choose FPI. Equilibrium outcomes depend on production cost A, and liquidity preferences (λ_L, λ_H). As the production cost A increases, it is more likely that investors observe FPI and less likely that they observe FDI in equilibrium. As the difference in liquidity needs between the two types of investors increases, it is more likely that a separating equilibrium will be seen, where different types of investors choose different forms of investment. p0480

Suppose now that an aggregate liquidity shock occurs in period 1 with probability q. Conditional on the realization of the aggregate liquidity shock, individual investors have to sell their investment in period 1 with probabilities λ_L and λ_H. This implies that as the probability of an aggregate liquidity shock q increases, there will be more FPI and less FDI in equilibrium. Thus, the ratio of FPI to FDI will increase. The intuition is that as the probability of an aggregate liquidity shock increases, agents know that they are more likely to sell the investment early, in which case they will get a low price as buyers do not know whether they sell because of an individual liquidity need or because of adverse information on the productivity of the investment. As a result, the attractiveness of FDI decreases. p0485

The empirical prediction is that countries with a higher tendency for liquidity problems will be the source of a higher ratio of FPI to FDI. Goldstein et al. (2008) find empirical evidence that a higher probability of a liquidity crisis in the source country has a significant positive effect on the ratio between FPI and FDI. p0490

Composition of Equity Flows and Financial Crises s0070

Emerging economies have countercyclical current accounts and experience large capital outflows during crises. The theoretical literature argues that financial crises lead to an exit of foreign investors even if there are no p0495

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shocks to fundamentals. The following papers link financial crises and liquidity through models of self-fulfilling investor runs. Chang and Velasco (2001) place international illiquidity at the center of financial crises. They argue that a small shock may result in financial distress, leading to costly asset liquidation, liquidity crunch, and a large drop in asset prices. Caballero and Krishnamurthy (2001) argue that during a crisis, self-fulfilling fears of insufficient collateral may trigger a capital outflow.

p0500 However, financial crises may be associated with an outflow of FPI and a simultaneous inflow of FDI. This behavior reflects the *fire-sale FDI* phenomenon when domestic companies and assets are acquired by foreign investors at fire-sale prices. Krugman (2000) notes that the Asian financial crisis was accompanied by a wave of inward direct investment. Furthermore, Aguiar and Gopinath (2005) analyze data on mergers and acquisitions in East Asia between 1996 and 1998 and find that the liquidity crisis is associated with an inflow of FDI. Moreover, Acharya et al. (2007) observe that FDI inflows during financial crises are associated with acquisitions of controlling stakes. Baker et al. (2008) argue that FDI flows may also reflect arbitrage activity by multinationals as well as the purchase of undervalued host country assets.

p0505 Kirabaeva (2009) developed a model to analyze the composition of investment (direct vs. portfolio) across two countries in the presence of heterogeneity in liquidity risk and asymmetric information about investment productivity. During liquidity crises (an increase in liquidity preferences), the level of FDI may increase or decrease depending on the equilibrium. The dual effect of an increase in the liquidity risk on the capital flows corresponds to the empirically observed pattern of FDI during liquidity crises.[5] The model offers an alternative explanation of the fire-sale FDI phenomenon based on adverse selection. At the same time, it provides the possibility of a decrease in FDI through self-fulfilling expectations.

p0510 The characteristic features of direct investment are higher profitability and access to private information about investment productivity. Portfolio investment represents holdings of assets which allow for risk diversification (investing into multiple projects) and greater liquidity. Taking advantage of the inside information, direct investors may sell low-productive investments and keep the high-productive ones under their ownership. This generates a 'lemons'[6] problem: the buyers do not know whether the investment is being sold because of its low productivity or due to an exogenous liquidity shock. Therefore, due to this information asymmetry, there is a discount on the prematurely sold direct investment (relative to the prematurely sold portfolio investment).

There are two types of equilibria. In the first type, only p0515
investors from the country with a lower liquidity risk choose to hold direct investment. In the second type, investors from both countries hold direct investments. In this case, there is strategic complementarity in choosing direct investment. This generates a possibility of multiple equilibria through the self-fulfilling expectations. If countries have the same fundamentals, the country with a higher liquidity risk attracts less inward foreign investment, but a larger share of it is in the form of FDI. Also, the country with a higher level of asymmetric information about investment productivity attracts more FDI relative to FPI as the marginal benefits from private information are larger.

These results are consistent with the empirical find- p0520
ings that countries that are less financially developed and have weaker financial institutions tend to attract more capital in the form of FDI. Furthermore, it can explain the phenomenon of bilateral FDI flows among developed countries, and one-way FDI flows from developed to emerging countries.

A crisis is associated with an increase in the liquidity p0525
risk. Such an increase results in the drying up of market liquidity as more investors have to sell their risky asset holdings. At the same time, it becomes more likely that if a direct investment is sold before maturity, it is sold due to exogenous liquidity needs rather than adverse information about investment productivity. This reduces the adverse selection problem and therefore results in a smaller discount on prematurely sold direct investments. This effect captures the phenomenon of fire-sale FDI during liquidity crises. If an economy is in the unique equilibrium, then higher liquidity risk leads to a higher level of FDI. However, if there are multiple equilibria, then FDI may decline as the liquidity risk becomes higher. In this case, an outflow of FDI is induced by self-fulfilling expectations.

MORAL HAZARD IN DEBT CONTRACTS UNDER LIMITED ENFORCEMENT s0075

With access to complete international credit markets, p0530
an economy would be able to borrow to finance a stable level of consumption and investment. However,

[5] Financial crises may be associated with an outflow of FPI and a simultaneous inflow of FDI, for example, the 1994 crisis in Mexico and the late 1990s crisis in South Korea. However, there is also evidence that some crises have been accompanied by an outflow of foreign investment, including FDI, for example, the 2001 crisis in Argentina and the 1990s crisis in Indonesia. np0035

Au11 [6] Akerlof (1970). Ap0040

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empirical findings suggest that countries often experience capital outflows in very low-income periods.

p0535 Eaton and Gersovitz (1981) analyze a model with incomplete international credit market and risk of repudiation. The level of debt is the minimum of the credit demands of the economy and the credit constraints by lenders. Borrowing occurs in periods of relatively low income and must be fully repaid in the following period. Failure to repay prevents borrowing in the subsequent period. Atkeson (1991) studies a model of lending that contains both a moral hazard problem and an enforcement problem. The introduction of moral hazard due to asymmetric information between borrower and lender explains why the occurrence of especially low output realizations prompt international lenders to ask these countries for repayments. Tsyrennikov (2007) shows that the capital outflows in the lowest output state in a model with only moral hazard can be quantitatively significant and larger than in a model which also includes limited enforcement.

p0540 Atkeson's (1991) model features moral hazard associated with willingness to repay debt obligations under limited enforcement. A risk-averse borrower lives for $t=0, 1, 2, \ldots$ At period 0, he/she is endowed with Q_o units of the good, and in each period the borrower has access to the investment technology $Y_{t+1}=f(I_t, \varepsilon_{t+1})$, where I_t are units of goods invested and ε_{t+1} is an i.i.d. random variable. The probability density of Y_{t+1} conditioned on I_t is $g(Y_{t+1}, I_t)$.[7] The borrower's preferences are represented by

$$(1-\delta)E_o\sum_{t=0}^{\infty}\delta^t u(c_t)$$

where $\beta\in(0,1), u'(c)>0, u''(c)<0$.

p0545 In the autarky environment with no access to the international credit market, the optimal value function $V_{aut}(Q)$ satisfies the following Bellman equation:

$$V_{out}(Q)=\max_{I\in[0,Q]}\left\{(1-\delta)u(Q-I)+\delta\sum_{Q'}V_{out}(Q')g(Q',I)\right\} \tag{41.24}$$

p0550 The risk-neutral lender can observe the borrower's investment choice, and there is complete enforcement. The borrower can issue Arrow securities that pay out d_i in state i, and $q(Y_i, I)$ is the price of such security given in the last period investment I. Since the lender is risk-neutral, the Arrow securities are priced such that $q(Y_i, I)=\delta g(Y_i, I)$.

p0555 The optimal value function $V_{compl}(Q)$ satisfies the Bellman equation:

$$\begin{aligned}V_{compl}(Q)=\max_{I\in[0,Q]}\Bigg\{&(1-\delta)u(c)\\&+\delta\sum_{Y'}V_{AD}(Y'-d(Y'))g(Y',I^*)\\&+\mu\left(Q-c+\sum_{Y'}q(Y',I^*)d(Y')-I^*\right)\Bigg\}\end{aligned} \tag{41.25}$$

where I^* is the optimal investment level such that it maximizes the project's present value evaluated at the Arrow securities prices $\max_{I\geq 0}-I+\delta\sum_{Y'}Y'g(Y',I)$.

The borrower borrows a constant amount $\sum_{Y'}q(Y',I^*)$ p0560
$d(Y')$ and invests I^* each period, and makes high repayment when Y' is high and low repayment when Y' is low. This is a full-insurance solution.

Next, consider the environment with *moral hazard*, p0565 where the lender cannot observe the investment choice I_t which affects the probability distribution of returns Y; and the environment with *limited enforcement*, where the borrower can default on the promised repayment.

The risk-neutral lender lives for two periods and is p0570 endowed with M units of the good in each period. He is willing to lend or borrow at the risk-free rate of $1/\delta$. The lender observes Q but does not observe I or c. The optimal recursive contract takes the following form:

$$\begin{aligned}&d_{t+1}=d(Y_{t+1},Q_t)\\&Q_{t+1}=Y_{t+1}-d_{t+1}\\&b_t=b(Q_{t+1})\\&c_t+I_t-b_t=Q_t.\end{aligned} \tag{41.26}$$

The value function $V_{Atk}(Q)$ satisfies the following p0575 Bellman equation:

$$\begin{aligned}&V_{Atk}(Q)=\max_A\\&\left\{(1-\delta)u(c)+\delta\sum_{Y'}V_{Atk}(Y'-d(Y',Q))g(Y',I)\right\}\\&\text{s.t. (i) } c+I-b\leq Q, b\leq M, -d(Y',Q)\leq M, c\geq 0, I\geq 0\\&\text{(ii) } b\leq\delta\sum_{Y'}d(Y',Q)g(Y',I)\\&\text{(iii) } V_{Atk}[Y'-d(Y')]\geq U(Y')\\&\text{(iv) } I=\arg\max\Bigg\{(1-\delta)u(Q+b-I)\\&\qquad+\delta\sum_{Y'}V_{Atk}(Y'-d(Y',Q))g(Y',I)\Bigg\}\end{aligned} \tag{41.27}$$

The optimal contract can be constructed by iterating p0580 to convergence on constraint conditions.

[7] Several assumptions are imposed on $g(Y, I)$ to make the model tractable. np0045

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p0585 The capital outflow in states with low output is characterized by the following conditions: the optimality condition

$$V_{\mathrm{Atk}}(Q) = \max_{I\in[0,\,Q+b]} \left\{ u(Q+b-I) + \delta \sum_{Y'} V_{\mathrm{Atk}}(Y' - \mathrm{d}(Y', Q)) g(Y', I) \right\} \quad (41.28)$$

and the participation constraint

$$V_{\mathrm{Atk}}(Q) \geq V_{\mathrm{aut}}(Q+b) \quad (41.29)$$

Therefore, in the states with low output Y_i, $b \leq d(Y_i)$, that is, there are no capital inflows for these states.

p0590 Capital outflows in bad times provide good incentives because they occur only at output realizations so low that they are more likely to occur when the borrower has undertaken too little investment. Their role is to provide incentive for the borrower to invest enough to make it unlikely that those low output states will occur.

s0080 ROLE OF BONDS IN THE PRESENCE OF HOME BIAS IN GOODS AND EQUITIES

p0595 Despite the increased cross-border financial transactions, international portfolios remain heavily tilted toward domestic assets.[8] The literature on international portfolios emphasizes the link between home equity bias and home consumption bias (Coeurdacier, 2009; Engel and Matsumoto, 2008; Obstfeld, 2009; Obstfeld and Rogoff, 2000).

p0600 Coeurdacier (2009) characterizes the constant equity portfolio that reproduces the locally complete market allocation through trades in claims to domestic and foreign equities. The structure of these optimal portfolios reflects the hedging properties of relative equity returns against real exchange rate fluctuations. With CRRA preferences, the optimal equity position is related to the covariance between the excess return on domestic equity (relative to foreign equity) and the rate of change of the real exchange rate. When the CRRA coefficient exceeds unity, home equity bias arises if excess domestic equity returns are positively correlated with an appreciation of the real exchange rate. In that case, efficient risk sharing requires that domestic consumption expenditures increase as the real exchange rate appreciates. If domestic equity returns are high precisely at that time, domestic equity provides the appropriate hedge against real exchange rate risk, and investors will tilt their portfolio toward domestic equity.

p0605 Coeurdacier and Gourinchas (2009) introduce an additional source of risk, so that the optimal portfolio allocation will typically require simultaneous holdings of equities and bonds. Since relative bond returns are strongly positively correlated with the real exchange rate, it is optimal for investors to use bond positions to hedge real exchange rate risks while equities are left to hedge the impact of additional sources of risk on investors' total wealth. This is consistent with the empirical finding that correlation between excess equity returns and the real exchange rate is too low to explain observed equity home bias (van Wincoop and Warnock, 2006).

p0610 Furthermore, they show that home equity bias arises if the correlation between the return on nonfinancial wealth and the return on equity, conditional on bond returns, is negative (a generalization of both Baxter and Jermann, 1997; Heathcote and Perri, 2007). The reason is that an increase in domestic equity holdings increases its implicit domestic currency exposure. Investors optimally undo this exposure by shorting the domestic currency bond. The overall domestic bond position reflects the balance of these two effects, so it is possible for a country to have short or long domestic currency debt positions. This is in line with recent empirical evidence (Lane and Shambaugh, 2007, 2009) that suggests large heterogeneity across countries in the currency denomination of external bond holdings. On average, advanced countries hold long (but small) domestic currency debt positions but some large countries, most notably the United States, are short in their own currency debt.

Home Bias in Goods and Equities s0085

p0615 To understand the relationship between home bias in goods and equities, consider a two-good world economy[9] where output of the domestic and foreign goods are

$$x_{\mathrm{H}}(\alpha) = \theta_{\mathrm{H}}(\alpha)\bar{x}_{\mathrm{H}}$$

$$x_{\mathrm{F}}(\alpha) = \theta_{\mathrm{F}}(\alpha)\bar{x}_{\mathrm{F}}$$

where α denotes the state of the world, θ is a random productivity factor, and $\bar{x}_{\mathrm{H}}$, and $\bar{x}_{\mathrm{F}}$ denote output endowments of the domestic and foreign goods, H and F, respectively. Domestic consumers' utility function is given by $u(c_{\mathrm{H}}(\alpha), c_F(\alpha))$, where $c_j(\alpha)$ denotes state α consumption of good j, j=H, F. Thus, the goods–indifference curve is given by $u(c_{\mathrm{H}}(\alpha, c_{\mathrm{F}}(\alpha)))$=constant. A unit of domestic equity is a promise to give $\theta_{\mathrm{H}}(\alpha)$ units

[8] See French and Poterba (1991), Tesar and Werner (1995), and Ahearne et al. (2004). np0050

[9] The benchmark model without home bias in equity portfolio is in Helpman and Razin (1978). np0055

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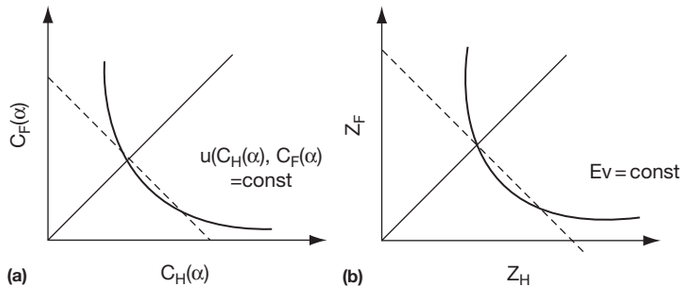

Au1 f0015 FIGURE 41.2

of the good in state of the world α. Let $u(p(\alpha); \theta_H(\alpha)z_H, + p(\alpha)\theta_F(\alpha)z_F)$ denote the indirect utility function, which is derived from $u(c_H(\alpha), c_F(\alpha))$, where z_j is holdings of equity j, $j = H, F$ in the portfolio. The equity–indifference curve is given by $Ev(p(\alpha); \theta_H(\alpha)z_H, + p(\alpha)\theta_F(\alpha)z_F) =$ constant. Now assume that the domestic consumer is biased toward the domestically produced good, which is the basis for returns $\theta_H(\alpha)$, accruing to the domestic equity. Induced preference over equities is then biased toward the Au13 home equity. The diagram in Figure 41.2(a) shows a goods–indifference curve which is tilted toward the domestic good. The induced equity–indifference curve, skewed toward the domestic equity, is shown in Figure 41.2(b). Figure 41.2(a) and 41.2(b) demonstrate the proposition that equity home bias is derived from good home bias.

s0090 Real Exchange Risks and Financial Risks: Bonds Versus Equities

p0620 Coeurdacier and Gourinchas (2009) consider a two-period endowment economy model. There are two symmetric countries, Home (H) and Foreign (F), each with a representative household. Each country specializes in the production of one tradable good. Agents consume both goods with a preference toward the local good. In period 0, no output is produced and no consumption takes place, but agents trade financial claims. In period 1, country i receives an exogenous endowment y_i of good i. Countries are symmetric and $E_0(y_i) = 1$ for both countries, where E_0 is the conditional expectations' operator, given that $t = 0$ information. Once stochastic endowments are realized in period 1, households consume using the revenues from their portfolio chosen in period 0 and their endowment received in period 1. Country i household has the standard CRRA preferences.

p0625 The Home terms of trade, the relative price of the Home tradable good in terms of the Foreign tradable good, is denoted by $q \equiv p_H/p_F$. Trade in stocks and bonds occurs in period 0. In each country, there is one Lucas-style stock, a share δ of the endowment in country i is distributed to stockholders as dividend, while a share $(1-\delta)$ is not capitalizable (labor income) and is distributed to households of country i. The supply of each type of share is normalized at unity. Agents can trade a bond in each country denominated in the composite good of country i. Buying one unit of the Home (Foreign) bond in period 0 gives one unit of the Home composite (Foreign) good at $t = 1$. Both bonds are in zero net supply. Initially, each household fully owns the local stock equity, and has zero initial foreign assets.

p0630 Denote a country's holdings of local stock by S, and its holdings of bonds denominated in its local composite good by b. The vector $(S; b)$ thus describes international portfolios. Symmetry of preferences and distributions of shocks imply that equilibrium portfolios are symmetric. $S > 1/2$ means that there is equity home bias on stocks, while $b < 0$ means that a country issues bonds denominated in its local good, and simultaneously lends in units of the foreign good. The equilibrium equity portfolio position (in the symmetric steady-state where $y = 1$ and $b = 0$) is given by

$$S^* = \frac{1}{2}\left(\frac{2\delta - 1}{\delta} + \frac{(1 - 1/\sigma)(2a - 1)}{\delta(1 - \lambda)}\right) \qquad (41.30)$$

where $\lambda \equiv \phi(1-(2a-1)^2)+(2a-1)^2/\sigma$ represents the equilibrium terms of trade elasticity of relative output.

p0635 When $\delta < 1$, the optimal equity portfolio has two components. The first term inside the brackets represents the position of a log-investor ($\sigma = 1$). The domestic investor is already endowed with an implicit equity position equal to $(1-\delta)/\delta$ through nonfinancial income. Offsetting this implicit equity holding and diversifying optimally implies a position $S = (2\delta - 1)/2\delta < 1/2$ for $\delta < 1$. The second component of the optimal equity portfolio represents a hedge against real exchange rate fluctuations. It only applies when $\sigma \neq 1$, that is, when total consumption expenditures fluctuate with the real exchange rate. This hedging demand is a complex and nonlinear function of the structure of preferences summarized by the parameters σ, ϕ, and a. For reasonable parameter values, this hedging demand can contribute to home equity bias only when $\lambda < 1$, that is, when the terms of trade impact of

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relative supply shocks is large. Also, this hedge component can be rewritten as a function of the covariance/variance ratio between excess equity returns and the real exchange rate.

p0640 Now consider the settings with bonds and an additional independent risk factor $\hat{\varepsilon}$. The model can be summarized by the (log-linearized) intertemporal allocation across goods and the budget constraint. Relative returns on equities ($\hat{R}_e$), nonfinancial wealth ($\hat{R}_n$), and bonds ($\hat{R}_b$) are represented by

$$\begin{aligned}\hat{R}_e &= \hat{q} + \hat{y} + \gamma'_e\hat{\varepsilon}\\ \hat{R}_b &= (2a-1)\hat{q} + \hat{y} + \gamma'_b\hat{\varepsilon}\\ \hat{R}_n &= \hat{q} + \hat{y} + \gamma'_n\hat{\varepsilon}\end{aligned} \tag{41.31}$$

p0645 The solution for the optimal portfolio is given by

$$\begin{aligned}S^* &= \frac{1}{2}\left(1 - \frac{1-\delta}{\delta}\beta_{n,e} + \frac{(1-1/\sigma)}{\delta}\beta_{RER,e}\right)\\ b^* &= \frac{1}{2}\left(1 - \frac{1-\delta}{\delta}\beta_{n,b} + \frac{(1-1/\sigma)}{\delta}\beta_{RER,b}\right)\end{aligned} \tag{41.32}$$

where $\beta_{.,.}$ are asset returns loadings on the real exchange rate and on nonfinancial income such that

$$\begin{aligned}\hat{RER} &= \beta_{RER,b}\hat{R}_b + \beta_{RER,e}\hat{R}_e + u_{RER}\\ \hat{R}_n &= \beta_{n,b}\hat{R}_b + \beta_{n,e}\hat{R}_e + u_n\end{aligned} \tag{41.33}$$

p0650 The intuition is that the equilibrium bond and equity positions will hedge optimally the components of real exchange rate and nonfinancial income fluctuations with which they are correlated. Because bond returns offer a better hedge against real exchange rate risk than equities, holdings of equities take care of the exposure to other sources of risk, conditional on bond returns. Home equity bias will arise when $\mathrm{Cov}(R_e, R_n/R_b) < 0$.

CONCLUSION

s0095

p0655 This survey has focused on key mechanisms through which market frictions such as information imperfections and liquidity shocks affect composition of international capital flows. To offer a self-contained presentation, only a few stylized models (a small subset of the wide range of models in the literature) were selected. Selection of models was guided by the unique and empirically relevant features they convey, so that they help the reader to distinguish the major types of capital flows.

p0660 In the international finance context, information asymmetries are the rule rather than the exception. So are contract enforcement problems and political risks (Kesternich and Schnitzer, 2010). These topics, as well as global imbalances, which may trigger reversals of net capital flows, remain outside the focus of this survey.

Acknowledgment

s0100

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Glossary

s0105

dt0010 **Adverse selection** This refers to a situation in which only low-quality products are available in the market because one party to a financial contract has better information than the other.

dt0015 **Bank run** This occurs when a large number of customers decide to withdraw their deposits because they believe the bank is or may become insolvent.

dt0020 **Foreign direct investment (FDI)** FDI is typically defined as a long-term financial or physical investment in a foreign country. In national and international accounting standards, FDI is defined as involving an equity stake of 10% or more.

dt0025 **Foreign portfolio investment (FPI)** FPI represents holdings of foreign assets which do not entail active management or control. In national and international accounting standards, FPI is defined as involving an equity stake of $<10\%$.

dt0030 **Maturity mismatch** This refers to financing long-term investment with short-term debt.

dt0035 **Moral hazard** This occurs when one party does not take the full responsibility of its actions, and therefore has a tendency to act less carefully, leaving another party responsible for the consequences of those actions.

References

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Acharya, V., Shin, H., Yorulmazer, T., 2007. Fire-sale FDI. Working Paper.

Aguiar, M., Gopinath, G., 2005. Fire-sale foreign direct investment and liquidity crises. The Review of Economics and Statistics 87 (3), 439–452.

Ahearne, A., Griever, W., Warnock, F., 2004. Information costs and home bias: an analysis of US holdings of foreign equities. Journal of International Economics 62, 313–336.

Albuquerque, R., 2003. The composition of international capital flows: risk sharing through foreign direct investment. Journal of International Economics 61 (2), 353–383.

Albuquerque, R., Loayza, N., Serven, L., 2005. World market integration through the lens of foreign direct investors. Journal of International Economics 66 (2), 267–295.

Atkeson, A., 1991. International lending with moral hazard and risk of repudiation. Econometrica 59 (4), 1069–1089.

Au15

Baker, M., Foley, C., Wurgler, J., 2008. Multinationals as arbitrageurs: the effect of stock market valuations on foreign direct investment. Review of Financial Studies.

Baxter, M., Jermann, U., 1997. The international diversification puzzle is worse than you think. American Economic Review 87 (1), 170–180.

Caballero, R., Krishnamurthy, A., 2001. International and domestic collateral constraints in a model of emerging market crises. Journal of Monetary Economics 48 (3), 513–548.

Chang, R., Velasco, A., 2001. A model of financial crises in emerging markets. Quarterly Journal of Economics 116 (2), 489–517.

Claessens, S., Dooley, M., Warner, A., 1995. Portfolio capital flows: hot or cold? The World Bank Economic Review 9 (1), 153.

Coeurdacier, N., 2009. Do trade costs in goods market lead to home bias in equities? Journal of International Economics 77 (1), 86–100.

Coeurdacier, N., Gourinchas, P., 2009. When Bonds Matter: Home Bias in Goods and Assets. NBER Working Paper.

Diamond, D., Dybvig, P., 1983. Bank runs, deposit insurance, and liquidity. Journal of Political Economy 91 (3), 401–419.

Comp. by: MNatarajan Stage: Proof Chapter No.: 41 Title Name: GLFI3
Date:29/5/12 Time:15:29:38 Page Number: 14

B978-0-12-397874-5.00019-1, 00019

Diamond, D., Rajan, R., 2001. Banks, short-term debt and financial crises: theory, policy implications, and applications. Carnegie-Rochester Confer. Series on Public Policy 54 (1), 37–71.

Eaton, J., Gersovitz, M., 1981. Debt with potential repudiation: theoretical and empirical analysis. Review of Economic Studies 48 (2), 289–309.

Engel, C., Matsumoto, A., 2008. International Risk Sharing: Through Equities or Bonds? NBER Working Paper.

French, K., Poterba, J., 1991. International diversification and international equity markets. American Economic Review 81 (2), 222–226.

Froot, K., Stein, J., 1991. Exchange rates and foreign direct investment: an imperfect capital markets approach. Quarterly Journal of Economics 106 (4), 1191–1217.

Furman, J., Stiglitz, J., 1998. Economic crises: evidence and insights from East Asia. Brookings Papers on Economic Activity 1998 (2), 1–135.

Goldstein, I., Pauzner, A., 2005. Demand–deposit contracts and the probability of bank runs. Journal of Finance 60 (3), 1293–1327.

Goldstein, I., Razin, A., 2006. An information-based trade off between foreign direct investment and foreign portfolio investment. Journal of International Economics 70 (1), 271–295.

Goldstein, I., Razin, A., Tong, H., 2008. Liquidity, Institutional Quality and the Composition of International Equity Outflows. NBER Working Paper.

Gordon, R., Bovenberg, A., 1996. Why is capital so immobile internationally? Possible explanations and implications for capital income taxation. American Economic Review 86 (5), 1057–1075.

Heathcote, J., Perri, F., 2007. The International Diversification Puzzle Is Not As Bad As You Think. NBER Working Paper.

Helpman, E., Razin, A., 1978. Uncertainty and international trade in the presence of stock markets. Review of Economic Studies 45, 239–250.

Kesternich, I., Schnitzer, M., 2010. Who is afraid of political risk? Multinational firms and their choice of capital structure. Journal of International Economics.

Kirabaeva, K., 2009. International Capital Flows and Liquidity Crises. Working Paper.

Klein, M., Peek, J., Rosengren, E., 2002. Troubled banks, impaired foreign direct investment: the role of relative access to credit. American Economic Review 92 (3), 664–682.

Klein, M., Rosengren, E., 1994. The real exchange rate and foreign direct investment in the United States: relative wealth vs. relative wage effects. Journal of International Economics 36 (3–4), 373–389.

Kose, M., Prasad, E., Rogoff, K., Wei, S., 2006. Financial Globalization: A Reappraisal. NBER Working Paper.

Krugman, P., 2000. Fire-sale FDI. Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies. University of Chicago Press, Chicago pp. 43–60.

Lane, P., Shambaugh, J., 2007. Financial Exchange Rates and International Currency Exposures. NBER Working Paper.

Lane, P., Shambaugh, J., 2009. The Long or Short of it: Determinants of Foreign Currency Exposure in External Balance Sheets. NBER Working Paper.

Levy-Yeyati, E., 2011. Are capital controls effective? VoxEU.org, 20 January.

Loungani, P., Mody, A., Razin, A., 2002. The global disconnect: the role of transactional distance and scale economies in gravity equations. Scottish Journal of Political Economy 49, 526–543.

Magud, N., Reinhart, C.M., Rogoff, K., CEPR Vox, 24 March 2011.

McKinnon, R., Pill, H., 1996. Credible liberalizations and international capital flows: the overborrowing syndrome. Financial Deregulation and Integration in East Asia 7, 42.

Mishkin, F., 1996. Understanding Financial Crises: A Developing Country Perspective. NBER Working Paper.

Obstfeld, M., 2009. International Risk Sharing and the Costs of Trade. NBER Working Paper.

Obstfeld, M., Rogoff, K., 2000. The Six Major Puzzles in International Macroeconomics: Is There a Common Cause? NBER Working Paper.

Portes, R., Rey, H., Oh, Y., 2001. Information and capital flows: the determinants of transactions in financial assets. European Economic Review 45 (4–6), 783–796.

Razin, A., Sadka, E., 2003. Gains from FDI inflows with incomplete information. Economics Letters 78 (1), 71–77.

Razin, A., Sadka, E., 2007. Foreign Direct Investment: Analysis of Aggregate Flows. Princeton University Press.

Razin, A., Sadka, E., Yuen, C., 1998. A pecking order theory of capital flows and international tax principles. Journal of International Economics 44 (1), 45–68.

Rodrik, D., Velasco, A., 1999. Short-term Capital Flows. NBER Working Paper.

Rossi, S., Volpin, P., 2004. Cross-country determinants of mergers and acquisitions. Journal of Financial Economics 74 (2), 277–304.

Tesar, L., Werner, I., 1995. Home bias and high turnover. Journal of International Money and Finance 14 (4), 467–492.

Tong, H., Wei, S., 2009. The Composition Matters: Capital Inflows and Liquidity Crunch during a Global Economic Crisis. NBER Working Paper.

Tsyrennikov, V., 2007. Capital Outflows and Moral Hazard. Working Papers.

van Wincoop, E., Warnock, F., 2006. Is Home Bias in Assets Related to Home Bias in Goods? NBER Working Papers.

Wei, S., 2006. Connecting two views on financial globalization: can we make further progress? Journal of the Japanese and International Economies 20 (4), 459–481.

GLFI, 978-0-12-397874-5

Comp. by: MNatarajan Stage: Proof Chapter No.: 41 Title Name: GLFI3
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