For much of the twentieth century, the dominant view in macroeconomics was that cross-border finance needed to be regulated. This was seen as the way to balance the “impossible trinity” first sketched by John Maynard Keynes in his two books on monetary theory—especially in the post-Depression industrialized countries seeking to achieve full employment. The dominant view in development economics during the same period was that cross-border capital flows needed to be regulated for similar reasons and also to mobilize domestic resources for economic development.

A strong tradition remained in the impossible trinity literature as the century went on and is experiencing a revival in the wake of the global financial crisis. In contrast, the view that capital mobility was something to be constrained had fallen out of favor in mainstream economics by the 1980s and 1990s. The dominant view into the 1990s was that international financial flows were efficient and balancing forces, and that regulating capital was inherently distortionary and delayed adjustment.

The experience of numerous financial crises in the past twenty years has spawned new economic theories that re-introduce the notion that cross-border finance can cause financial instability. Two of the new theories are remarkably similar. One strand of new theory picks up from Ragnar Nurske and builds on the work of Hyman Minsky and others. This view has become popular in many emerging market capitals and in the UN system, and in part, it inspired Brazil to regulate capital flows in the wake of the global financial crisis. Another strand of
new theory on capital flows and financial stability comes from modern welfare economics and is gaining ground in mainstream economics, the central banks, and the Bretton Woods institutions. This second strand played a key role in transforming the IMF thinking on capital controls in the wake of the global financial crisis (see chapter 6). In this chapter, I first outline the macroeconomic stability and developmentalist approaches to regulating capital flows that dominated the Bretton Woods era. I then examine the theory and evidence with respect to capital account liberalization and outline the contours of new economic thought in the Keynesian tradition and the new welfare economics of regulating cross-border finance.

The Trilemma: Keynes, Macroeconomic Stability, and Development Economics

Keynes’s monetary theories and their extensions became mainstream during the Bretton Woods era. Such thinking pointed to the need to regulate cross-border finance for nations to maintain the Bretton Woods exchange rate regime and to have an independent monetary policies for growth and employment. This line of thinking became formalized in the Mundell-Fleming model and spawned an entire economic subtradition of its own. Economists in this tradition became the dominant macroeconomists in industrialized countries, at the IMF, and at the World Bank.

Development economists writing during the same era extended Keynes’s theories, arguing that capital flows needed to be regulated in accordance with the Mundell-Fleming model as well. These economists also developed models whereby foreign capital needed to be regulated to generate resources from domestic sources to channel finance toward a process structural transformation in the economy—while, at the same time, preventing overspeculation that would result in financial crises that could derail that process of transformation and development. These economists came to dominate many of the UN institutions, as well as the finance ministries and central banks of key emerging-market and developing countries (EMDs).

Here I outline these two lines of economic thought to give a context for the movement that discredited these lines of thinking and dismantled the policies associated with it in the 1980s and 1990s. This also helps guide our understanding of the antecedents of the latest breakthroughs in economic theory in support of regulating capital flows.

The Keynes-Mundell Tradition

There is a strong and long-standing literature emphasizing the incompatibility of capital mobility, exchange rate stability, and independent monetary policies.
What was to become known as the “impossible trinity”—that, with fixed exchange rates and open capital markets, there can be little or no autonomy for monetary policy—was a widely held rule of thumb in the 1920s. In economic theory, it was first formulated in Keynes’s *A Tract on Monetary Reform* (1929) and *A Treatise on Money* (1930). “National Policy Autonomy” (chapter 36 of *A Treatise*) states:

> Can we afford to allow a disproportionate degree of mobility to a single element in an economic system which we leave extremely rigid in several other respects? If there was the same mobility internationally in all other respects as there is nationally, it might be a different matter. But to introduce a mobile element, highly sensitive to outside influences, as a connected part of the machine which the other parts of which are much more rigid, may invite breakages. It is, therefore, a serious question whether it is right to adopt an international standard, which will allow an extreme mobility and sensitiveness of foreign lending, while the remaining elements of the economic complex remain exceedingly rigid. (Keynes 1930)

In a 1943 article published in the *Economic Journal*, Keynes noted that “The fundamental reason for thus limiting the objectives of an international currency scheme is the impossibility, or at any rate the undesirability, of imposing stable price-levels from without. The error of the gold-standard lay in submitting national wage-policies to outside dictation” (1943, 187).

Barry Eichengreen (2008) and others have noted that this framework was the guiding political economy principal during the Bretton Woods era. In economics, the Mundell-Fleming model was the first to incorporate the regulation of foreign capital into a general equilibrium framework, and it spawned many followers. Indeed, we could characterize Mundell as being to *A Tract* and *A Treatise* as John Richard Hicks was to the *General Theory* in terms of formalizing Keynes. The Mundell-Fleming theory refers to specific articles by Robert Mundell (1961a, 1961b, 1962, 1963) and Marcus Fleming (1962). The model is a Keynesian model of a small open economy in which world prices, incomes, and interest rates are exogenous in the short run (figure 3.1). Other assumptions include a constant price level, so that price rigidity is a feature as opposed to flexible prices. It is an extension of the investment saving–liquidity preference money supply (IS-LM) framework that introduces the international sector, or balance of payments.

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1. I am grateful to Jan Kregel for pointing this out to me.
These works attempted to uncover the optimal policy mix as well as the optimal exchange rate regime for open economies with mobile capital. One main conclusion of Mundell (1963) is that perfect capital mobility, a fixed exchange rate regime, and independent monetary policy cannot all coexist; countries can maintain at most two of the three. Moreover, the Mundell-Fleming model explicitly verifies that if capital is internationally mobile and the nominal exchange rate is fixed, monetary policy is constrained to only altering the level of international reserves, while fiscal policy can effectively alter output. Fleming (1962) specifically offers these conclusions in his analysis of government policies. The trilemma result of Mundell-Fleming provides a basis for which policy responses to external shocks (e.g., capital inflows and outflows), especially in emerging markets, can be analyzed. Economists such as James Tobin (1978, 1998) sees this trilemma as the rationale for an activist monetary policy in pursuit of full employment. Numerous studies show that capital controls were effective outside the United States during this period as well. Work by Maurice Obstfeld (1993), Richard Marston (1993), and Kouri and Porter (1974) demonstrated how controls were effective in the 1960s in the United Kingdom, Germany, Australia, Italy, and the Netherlands.

Despite the fact that new classical economics came to dominate macroeconomic thinking, work in the Mundell-Fleming tradition still held traction in the profession. Some economists adopted new Keynesian models that borrowed from the new classical models and attempted to use microfoundations to articulate the impossible trilemma, but under sticky wages and prices. Obstfeld and Kenneth Rogoff (1995) continue to follow the tradition of formalizing the trilemma in such a context. A group of economists have formally modeled some of the ideas that could be seen as more in the (new) Keynesian tradition, operating

![Figure 3.1. The Mundell-Fleming model.](image-url)
in a dynamic general equilibrium context with sticky prices and sometimes sticky wages. In addition, a group of empirically based economists have examined the extent to which nations still face a trilemma in the contemporary world. There is an emerging consensus in this new literature that the impossible trinity remains a very real challenge in the twenty-first century and that, in certain circumstances, restricting capital mobility is the optimal route to macroeconomic stability.

There has been a resurgence in this line of thought since the new classical perspective rapidly lost traction in the wake of the global financial crisis. In that tradition, Emmanuel Fahri and Ivan Werning (2013) use a general equilibrium framework with microfoundations and sticky wages and prices that builds on microfounded models of Obstfeld and Rogoff (1995). They find that capital controls are the optimal way to respond to external shocks. Perhaps most interesting is that, in the presence of sticky wages and prices, they find that capital controls may be optimal even with a floating exchange rate.

Another new theory has emerged that models the distortion due to capital controls from a trade policy perspective. In focusing on intertemporal distortions, Arnaud Costinot, Guido Lorenzoni, and Ivan Werning (2011) derive optimal capital controls that depend on business cycle dynamics and the trade balance. Their model yields the optimal policy mix either of taxing inflows and subsidizing outflows or of taxing outflows and subsidizing inflows. Specifically, in an expansionary period when there is positive growth in output, the optimal policy is to tax inflows and subsidize outflows. Such results have important implications for high-growth economies that are catching up with the rest of the world.

More empirically grounded work demonstrates that the trilemma continues to be a core trade-off for nations in a globalized economy (Obstfeld 2001; Aizenman, Chinn, and Ito 2010; Aizenman and Pinto 2011). Aizenman, Chinn, and Ito (2010) develop indexes related to the trilemma and test the extent to which there is linearity in the three poles of the trilemma. They find that the weighted sum of the three indexed trilemma policy variables (monetary policy independence, exchange rate stability, and capital mobility) add up to a constant and therefore validate the notions going back to Keynes that there is a real trade-off among these policy options. The trilemma remains a very real policy trade-off for nations operating in the global economy.

The Developmentalists

Keynes also spawned an activist development economics where it is the role of the state to pursue full employment in the process of structural transformation. Although the work of Michal Kalecki may have played a more significant role, Keynes's influence on this theory was very real. Among the pioneers of
development economics were Paul Rosenstein-Rodan, Nurkse, Raúl Prebisch, Hans Singer, Gunnar Myrdal, Albert O. Hirschman, and Arthur Lewis. Virtually all these scholars see the regulation of capital flows as central for macroeconomic stability and structural transformation. Nurkse also sees regulating capital flows as key to maintaining financial stability.

At this writing, perhaps the best-known developmentalist theory is the Lewis model. Arthur Lewis, whose theory earned him the Nobel Prize, observed that EMDs have surplus labor in the agricultural sector that can be attracted into a “modern” manufacturing sector if higher wages are offered. The manufacturing sector will make a profit if companies offer manufacturing wages above the agricultural wage rate. This will attract surplus agricultural workers into the modern sector and, crucially for our purposes, capitalists will reinvest the profits in the form of more fixed capital into the modern sector. Firms in the modern sector will then demand more labor until the manufacturing sector has grown to the point where it has become industrialized. Central to the reinvestment of profits are capital controls on outflows so firms do not invest profits outside the country rather than in the fledgling modern sector (Lewis 1954).

Prebisch, Singer, Myrdal, and others further justify the move to industrialization. Traditional agricultural exports are likely to meet inelastic demand that will weaken the terms of trade over time. Following this thinking, many countries wishing to industrialize formed development banks that channeled credit into seemingly inefficient manufacturing industries, where they perceived the social returns to be higher than the private returns in the short and medium run. Here too, capital and exchange controls limited the ability of such finance to be deployed overseas (Amsden 2001).

New archival work by economists Esteban Perez and Matias Vernengo (2012) has unearthed how Raúl Prebisch, Argentinean economist, oversaw the implementation of countercyclical capital controls during his tenure at the Central Bank of Argentina; they quote Prebisch as saying, “This [short-term] capital went to further inflate the categories of goods or assets that were already inflated, and did not translate, except in very rare occasions, in a real increase in the production of the country. . . . the measures adopted by the government to make an exception, to allow the inflow of these capitals if it is shown that these are oriented towards the increase in real production . . . ” (quoted in Perez and Vernengo 2012, 11).

Ragnar Nurkse was a pioneer unto himself in many ways. To the extent that he is studied or remembered at all, it is for his balanced growth theory, which is analogous to the big-push theory developed by Rosenstein-Rodan (Nurkse 1961). To these economists, investments need to go into multiple sectors at the same time to boost the productivity growth, and therefore the demand, that can eventually
lead to the full industrialization of the economy. Like the other development-ists, Nurkse sees domestic resource mobilization as the key to financing such investments—and thus sees capital controls as a way to steer profits and credit toward the industrialization process. Nevertheless, Nurkse was among the first to also express concern about destabilizing speculation. In the 1930s and 1940s, Nurkse worked for the League of Nations and was the author of a highly influential tract on international finance and currencies in the run up to the Bretton Woods meetings. According to him, “If there is anything the inter-war experience has clearly demonstrated, it is that paper currency exchanges cannot be left to fluctuate from day to day under the influence of market supply and demand. . . . If currencies are left free to fluctuate, speculation in the widest sense is likely to play havoc with exchange rates—speculation not only in foreign exchanges, but also, as a result, in commodities entering into foreign trade” (Nurkse 1944, 137–38).

These two traditions became secondary as the twentieth century went on. A new macroeconomics arose that saw financial globalization as a cure, not an ill.

**Keynes Had It All Wrong? The Rise and Fall of Capital Market Liberalization**

As discussed in the last chapter, backed by new developments in economic theory, interest groups that sought to deepen global capital markets, new technologies, and the International Monetary Fund (IMF), capital account liberalization came into vogue in the 1980s and 1990s (Ocampo, Spiegel, Stiglitz 2008; Abdelal 2007; Chwieroth 2010a). New economic models of capital account liberalization suggested that liberalizing the capital account could lead to economic growth and macroeconomic stability—and characterized the various Keynesian-derived approaches as distortionary. Many of the world’s nations liberalized their capital accounts in the 1980s and 1990s.

The economics of capital account liberalization is fairly simple. The basic neoclassical model explains that opening capital markets can accelerate growth in EMDs, which are (thought to be) capital scarce and thus have a higher return to capital (Lucas 1990). The model employs two factors, capital and labor, as well as labor-augmenting technological progress. In defining an equation of capital accumulation and the steady state, the dynamics of the model can be derived. For example, capital will flow into a liberalizing developing country whose interest rate is higher than the world interest rate. The cost of capital in the steady state, before liberalization, is determined by the interest rate and the rate of depreciation. After liberalization, however, the cost of capital is determined by the world interest rate. Hence, the impact of liberalization works through the cost of
capital, which falls on the introduction of liberalization due to the capital inflow. In addition, in the short run, the growth rate of capital and per capital output increase during the transition.

Other arguments in favor of liberalization focus on consumption smoothing and make the argument that capital account liberalization brings collateral benefits to the banking system that are difficult to detect. Rather than being necessary for macroeconomic stability and economic growth, the rational expectations view saw speculation and movements in cross-border finance as efficient and rational responses to market fundamentals. The actions of investors and speculators, according to this view, can help markets become self-correcting (Friedman 1953).

These ideas became commonplace across the industrialized world toward the end of the twentieth century. Now however, econometric evidence suggests that, in EMDs especially, capital account liberalization is not robustly associated with economic growth and may be correlated with financial crises (Prasad et al. 2003; Jeanne, Subramanian, and Williamson 2012). In light of this, the merits of capital account liberalization in developing countries came under great scrutiny in the early 2000s and even more so in the wake of the global financial crisis. Indeed, the most recent research has shown that capital market liberalization is associated with growth only in nations that have reached a certain institutional threshold—a threshold that most EMDs have yet to achieve (Kose, Prasad, and Taylor 2009; Jeanne, Subramanian, and Williamson 2012). This is partly because the binding constraint for some EMD growth trajectories is not the need for external investment but the lack of investment demand. This constraint can be accentuated through foreign capital flows because such flows appreciate the real exchange rate, thus reducing the competitiveness of goods and reducing the willingness of the private sector to invest (Rodrik and Subramanian 2009).

Although there is a wide consensus about these findings, some theorists continue to dispute them. For example, in his investigation of international capital mobility, Peter Henry (2007) explains the predictions of theory and then reviews the corresponding empirical studies, outlining their results, methodologies, and, most important, their limitations. Despite the simplifying assumptions and lack of market frictions in the Solow model (a neoclassical model formulated by Robert Solow), Henry shows that the theory itself still maintains predictive power for the short-run effects of capital liberalization as well as the rates of convergence to steady-state growth rates. The reasons that many empirical studies fail to capture the growth benefits of liberalization relate to their methodologies, Henry says. First, cross-sectional studies measure the permanent impact on growth rates rather than the temporary impact. Second, the measure of capital openness is
binary and subject to measurement error; therefore, studies have found no significant impact of binary measures on growth rates. Finally, many of these studies do not separate developed from developing countries in the analysis.

More recent work has addressed these objections but still finds consistent relationships between capital account liberalization and growth in EMDs. Motivated by the vast international capital liberalization of EMDs in the 1990s and their subsequent crises, Joshua Aizenman, Yothin Jinjarak, and Donghyun Park (2011) measure the differential impact of disaggregated capital flows on economic growth before and after the 2008 global financial crisis—paying close attention to and attempting to correct for the concerns raised by Henry. In their study, short-term debt (measured by short-term external debt to gross domestic product, GDP, ratio) has a negative impact on growth. Furthermore, these empirical implications of the impact of external debt correspond to the predictions of numerous theoretical models (e.g., Aizenman 2010).

There is also considerable work demonstrating that capital account liberalization is associated with a higher probability of financial crises. Carmen Reinhart and Rogoff (2010) show that since 1800 capital mobility has been associated with banking crises. In contemporary terms, Aizenman and Brian Pinto note that:

more than any literature survey, the spate of emerging market crises after 1997 is eloquent testimony to the difficulty of avoiding macroeconomic and financial crises with an open capital account and a high degree of financial integration. In addition to these two features, countries which suffered a serious macroeconomic crisis between 1997 and 2001 were apt to exhibit a fixed exchange rate (all; explicit in some cases as part of disinflation programs, e.g. Argentina, Brazil, Russia, Turkey and implicit in the case of Thailand and other East Asian countries); unsustainable government debt dynamics (Argentina, Russia) or big jumps in government debt as a result of private sector bailouts (East Asia, Turkey); and balance sheet problems (East Asia in particular, also Argentina and Turkey, with liabilities, often short-term, denominated in US dollars and assets in local currency). (2011, 7)

Rising capital market liberalization and the recent global financial crisis has motivated many studies to examine the adverse consequences of highly integrated markets. Joseph E. Stiglitz has been a significant skeptic of capital market liberalization and has presented arguments for intervention in capital flows based on empirical and theoretical findings (e.g., Stiglitz 2000; Stiglitz et al. 2006). The main arguments against full capital market capitalization arise from open markets, increased risk diversification, more pro-cyclical capital flows, increased risk of contagion, increased risk of capital flight, and increased financial instability.
Jeanne, Subramanian, and Williamson (2012) conduct a sweeping meta-regression of the entire literature that includes 2,340 regression results, finding little correlation between capital account liberalization and economic growth. They conclude, “the international community should not seek to promote totally free trade in assets—even over the long run—because (as we show in this book) free capital mobility seems to have little benefit in terms of long run growth and because there is a good case to be made for prudential and non-distortive capital controls” (Jeanne, Subramanian, and Williamson 2012, 5; emphasis added).

Let’s now turn to that new case for regulating global capital flows.

From Trilemma to Stability-Supported Growth

Cross-border finance has been a key characteristic of the financial crises of the past twenty-five years, especially in EMDs. Hence, an outpouring of empirical and theoretical attention has been applied to analyzing the role of cross-border finance in emerging market financial crises. One strand of thinking extends the developmentalist tradition by drawing on Hyman Minsky and others. Another strand stems from welfare economics and has become known as the new welfare economics of capital controls. In both these strands, thinking has evolved beyond simply the trilemma perspective. These thinkers see monetary policy and financial stability as virtually impossible when a country has a floating exchange rate and capital mobility. Moreover, in this light regulating capital flows is seen as a corrective set of measures that enhance growth rather than distorting it.

Since the early 1980s, international capital flows to EMDs have been both volatile and destabilizing. Figure 3.2 shows the net private (non–foreign direct investment, non-FDI) capital flows as a percentage of GDP to EMDs from 1980 to 2013. During this period, the world has seen repeated crises in Latin America, East Asia, Russia, and beyond. Note the sharp booms in inflows followed by sharp declines. Recent work characterizes large booms in capital inflows as “surges.” Such surges can be followed by a sudden stop in capital flows. Figure 3.2 shows that cross-border financial flows have been highly volatile since 1980, with large surges in capital flows peaking with financial crises that trigger a sudden stop (the arrows in figure 3.2 point to the capital flight associated with each crisis).

Atish Ghosh and others at the IMF define a surge as a net inflow (as a percentage of GDP) that is in the top thirtieth percentile of observations for both the country and the sample. Ghosh et al. (2012) identify three hundred surges for fifty-six emerging markets in 1980–2009. Whereas that work focuses on inflows, work by Guillermo Calvo (1998) focuses on the sudden stops of capital flows that are followed by rapid outflows of capital—the troughs in figure 3.2 (see also
Research by Manuel Agosin and Franklin Huaita (2012) shows that capital flow surges are exogenously determined and are not a function of the macroeconomic fundamentals of an economy. Moreover, sudden stops are not determined by the fundamentals either; they find that the probability of a sudden stop is correlated with the length of the surge rather than with the fundamentals. Indeed, the probability doubles when a surge lasts for two years and triples when it lasts for three.

Both of the new strands of economic thinking take these characteristics of capital flows as a focus of analysis. Although the theoretical foundations of each of these perspectives differs, there are numerous similarities between them. Minskian developmentalist thinking lacks a unified apparatus analogous to the general equilibrium context of welfare economics and, instead, has capital accumulation as an end goal. But both examine international financial flows through the lens of financial stability. In so doing, both observe that emerging markets can overly attract inflows of capital that can lead to the bloating of exchange rates and asset positions to unsustainable levels. These forces inevitably unwind, triggering instability and often crises. To prevent such excessive risk, both theoretical
perspectives determine a need for regulating cross-border finance at the national and, sometimes, multilateral levels. Both see the regulation of capital flows as paramount for financial stability and economic growth, although each favors a somewhat different policy mix to do so. These differences are summarized in table 3.1.

Minskian developmentalists are concerned with maintaining monetary autonomy and mobilizing domestic resources while also maintaining financial stability. The new welfare economics of prudential capital controls is squarely focused on financial stability.

The New Developmentalism—Building on Nurkse and Minsky

Economists in the developmentalist tradition—often referred to as post-Keynesian, post-structuralist—have evolved analyses that emphasize how uncontrolled capital flows cause financial instability that can threaten development prospects. To mitigate these risks, these economists argue for a permanent system of countercyclical regulations on cross-border finance.

Many of these thinkers point to Nurkse’s work as the first in this tradition to highlight the need for the international monetary system to maintain financial stability for economic growth and the generation of employment. The work of Hyman Minsky has been applied to cross-border finance, as well, to understand the channels whereby cross-border finance can trigger financial instability. Minsky’s (1992) financial fragility hypothesis states that (1) economies have financing regimes that are stable and others that are not and (2) that prosperity itself can change an economy from a stable to an unstable state. These two theorems are derived from the Keynesian idea that modern wealth is often represented not by real assets but by monetary claims on assets (i.e., the “veil of money” of Keynes

### Table 3.1 New economic theories of global capital flows

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<tr>
<th>Economic goal</th>
<th>MINSKIAN DEVELOPMENTALISM</th>
<th>NEW WELFARE ECONOMICS</th>
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<tr>
<td>Theoretical frame</td>
<td>Capital development</td>
<td>Efficiency-equilibrium</td>
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<td></td>
<td>Impossibility trinity</td>
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<td>Mobilizing domestic</td>
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<td>Policy choice</td>
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<td>Timing of policy</td>
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<td>Target of policy</td>
<td>Inflows and outflows</td>
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<td>Policymaker</td>
<td>National policy</td>
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<tr>
<td>Level of cooperation</td>
<td>Regional and multilateral</td>
<td>Regional and multilateral</td>
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*Note: N/A, Not applicable.*
Minsky adds that money assets can experience high degrees of volatility that can disrupt the balance sheet of both the lender and the creditor. According to Minsky’s own synthesis of the theory:

In particular, over a protracted period of good times, capitalist economies tend to move from a financial structure dominated by hedge finance units to a structure in which there is large weight to units engaged in speculative and Ponzi finance. Furthermore, if an economy with a sizeable body of speculative financial units is in an inflationary state, and the authorities attempt to exorcise inflation by monetary constraint, then speculative units will become Ponzi units and the net worth of previously Ponzi units will quickly evaporate. Consequently, units with cash flow shortfalls will be forced to try to make position by selling out position. This is likely to lead to a collapse of asset values.

Christian Weller (2001) and Philip Arestis and Murray Glickman (2002) extend Minsky’s hypothesis more formally to an open and financially liberalized economy. In a financially liberalized open economy without capital controls, an economic boom will significantly attract capital inflows from foreign investors looking for new investment opportunities and enable households, firms, the government, and banks to seek foreign sources of finance. The initial economic euphoria, reflected in rising asset prices, investments, and profits, acts to validate and encourage these foreign borrowings. Capital inflows produce an appreciation of the domestic currency and thus encourage the taking of short-term positions in foreign currency. The euphoria also causes economic units to become more reckless in the risks they undertake and to resort to greater speculative financing.

2. Minsky defines hedge, speculative, and Ponzi units as: “Three distinct income-debt relations for economic units, which are labeled as hedge, speculative, and Ponzi finance, can be identified. Hedge financing units are those which can fulfill all of their contractual payment obligations by their cash flows: the greater the weight of equity financing in the liability structure, the greater the likelihood that the unit is a hedge financing unit. Speculative finance units are units that can meet their payment commitments on ‘income account’ on their liabilities, even as they cannot repay the principle out of income cash flows. Such units need to ‘roll over’ their liabilities: (e.g. issue new debt to meet commitments on maturing debt). Governments with floating debts, corporations with floating issues of commercial paper, and banks are typically hedge units. For Ponzi units, the cash flows from operations are not sufficient to fulfill either the repayment of principle or the interest due on outstanding debts by their cash flows from operations. Such units can sell assets or borrow. Borrowing to pay interest or selling assets to pay interest (and even dividends) on common stock lowers the equity of a unit, even as it increases liabilities and the prior commitment of future incomes” (1992, 7–8).
These authors note, however, that, over time, the initial economic boom and resulting increase in demand also acts to increase costs in the domestic capital goods industries. These rising costs, combined with the surge in speculative financing, act to generate present-value reversals and a decline in asset prices. With an erosion of the profit margin, some speculatively financed units are likely to begin to default, and the chances of more actors following suit increases. Furthermore, the increase in foreign borrowings, particularly short-term liabilities, results in a rising debt-to-reserves ratio. Without capital controls, and given the tendency of short-term capital flows for rapid reversal, both these developments generate a panic among foreign investors, resulting in a rapid flight toward liquidity and a heavy selling of the domestic currency. Capital flight acts to reduce the values of assets, and through possible spillover effects in other sectors, it tends to aggravate the risk of a sharp depreciation in the domestic currency, making a country vulnerable to a financial crisis. This diagnosis of the relationship between cross-border financial flows and financial stability is remarkably similar to the one presented by the new welfare economics of capital controls.

Jan Kregel (2004, 2009) combines insights from Minsky with those of E. Domar (1944), who established that trade surpluses require capital outflows that will generate later interest and profit payments. Thus, capital inflows as a source of development finance can suffice only if the rate of increase of the capital outflows is at least equal to the interest rate on foreign lending. This implies a trade deficit, which can be sustained only if inflows increase at a rate equal to the interest rates paid to industrialized-country creditors. Kregel interprets that condition as what Minsky refers to as a Ponzi investment profile, which accentuates financial fragility with the possibility of a reversal of capital flows and a subsequent crisis. A Ponzi scheme is a pyramid game in which the returns to investors are paid from funds paid in by new investors; it is lucrative only if the rate of inflow of new funds meets the outflow promised to the investors. Kregel notes that:

With respect to the stability of the financial system, it is interesting to note that the Domar conditions for a sustained long-term development strategy based on external financing, on sustained positive net resource transfers are the precise equivalent of the conditions required for a successful Ponzi financing scheme. As long as the rate of increase in inflows from new investors in a pyramid or Ponzi scheme is equal or greater than the rate of interest paid to existing investors in the scheme there is no difficulty in maintaining the scheme. However, no such scheme in history has ever been successful: they are bound to fail, eventually, because of the increasing size of the net debt stock of the operator of the scheme. (2004, 11)
Given the volatile and pro-cyclical nature of free capital flows and their destabilizing effects, economists in the Minskian developmentalist tradition have argued for a permanent system of countercyclical capital account regulations, which would not only regulate capital outflows during financial crises but also control capital inflows during economic booms (e.g., Davidson 1992–1993; Eatwell and Taylor 2002; Ocampo 2002; Ffrench-Davis 2012; Helleiner 1994; Saad-Filho 2007; Palma 2002; Grabel 2006). This could involve regulating the international exposure of domestic banks, regulating the availability of foreign exchange to domestic banks and private-sector residents, and reducing real deposit rates. By helping to avoid overborrowing, such a system provides a means of exercising monetary and domestic credit restraint during economic booms and, thereby, guards against unsustainable exchange rate appreciations and against the occurrence of crises. In the event that a crisis, nevertheless, occurs, regulating capital outflows can help to avoid a sharp currency depreciation and unmanageable increases in debt-service costs. These tendencies were hard felt in the developing world in the late 1990s and early 2000s, as figure 3.2 indicates.

For Ocampo (2003, 2008), the core problem is that capital flows are pro-cyclical and are among the key determinants in EMD business cycles. In addition, Ocampo stresses, pro-cyclical finance is increasingly driven by portfolio decisions made in industrialized nations that are completely de-linked from the demand for capital in the developing world. Roberto Frenkel (2002) adds that the destabilizing effects of unregulated capital inflows (e.g., unsustainable expansions in credit and liquidity, appreciations of the exchange rates, and appreciations of financial and real assets) are exacerbated in EMDs when financial markets are small and not sufficiently diversified. He cites the Latin American experience, where liberalization was introduced into an environment in which the degree of monetization and financial depth was low, banking systems were weak, the menu of financial assets was poor, and credit for the private sector was scarce.

Like economists in the Mundell tradition, the Minskian developmentalist literature also draws attention to the fact that free capital flows severely reduce the degrees of freedom for macroeconomic management and policy autonomy because sustaining private foreign capital inflows requires a strong exchange rate and high interest rates (Palley 2009). A high interest rate acts to discourage domestic investment, while an appreciating exchange rate reduces the competitiveness of the exports of a country. Thus, the ability to stimulate domestic investment (in accordance with national priorities of output and employment) is curtailed, and it becomes difficult for a country to use the exchange rate as a strategic device for gaining entry into the world market for manufactured goods (Nayyar 2002). Moreover, as pointed out by Davidson (2000), in addition to a loss of export-market share, an appreciating exchange rate also threatens domestic firms with a
loss of home-market share because imports become cheaper. By making it more difficult for domestic entrepreneurs to gauge the potential profitability of large investment projects involving significant irreversible sunk costs, exchange rate volatility can have serious adverse effects on domestic investment.

Nayyar (2002) also argues that when short-term inflows, such as portfolio investment, become a major means of financing trade and current account deficits, the resulting appreciation of the real effective exchange rate acts to further widen these deficits. A vicious circle emerges, with these larger deficits requiring even greater portfolio investment inflows. Persistent large deficits may, over time, reduce investor confidence, thus, generating adverse expectations and ultimately resulting in a reversal of inflows and speculative attacks on the domestic currency.

In addition to constraining policies in normal times, free capital mobility also severely constrains policy autonomy during a financial crisis, therefore exacerbating problems of falling output, reduced domestic investment, and unemployment. As Ilene Grabel (2006) argues, a crisis forces a government to resort to contractionary monetary and/or fiscal policies (through higher interest rates and reduced social spending) to reverse a capital flight. This curtails its ability to use expansionary policies (such as government deficits and low interest rates) to stimulate aggregate demand and domestic investment. With respect to the threat of capital flight, Grabel (2006) emphasizes that policies restricting capital account convertibility help to reduce this risk by discouraging foreign investors from buying short-term assets, which are most vulnerable to capital flight, and by restricting their ability to liquidate such investments and send the proceeds out of the country. Furthermore, by reducing the vulnerability to sharp exchange rate fluctuations, capital flight, and financial fragility, capital controls can guard against the risk of contagion due to financial and macroeconomic instability in another economy.

Gerald Epstein and Juliet Schor (1992) develop a macroeconomic model that captures how capital controls allow for macroeconomic management and policy autonomy by controlling the links among the domestic real interest rate, capital flows, and real exchange rate. By providing a safeguard against capital flight, a system of effective capital controls allows a government to pursue an expansionary monetary policy by lowering the domestic real interest rate without significantly affecting the real exchange rate or foreign exchange reserves. By stimulating domestic investment, an expansionary monetary policy can be used to raise domestic output and employment. Similarly, even if an expansionary fiscal policy raises the domestic real interest rate, by restricting capital inflows capital controls will cause the real exchange rate to appreciate less than it would have if the inflows were unrestricted. Less exchange rate appreciation, in turn,
means that export competitiveness is less adversely affected. Finally, by regulating capital outflows, capital controls also insulate an economy from adverse effects on domestic investment and/or export competitiveness due to changes in foreign real interest rates or foreign policies.

Virtually all these authors point to a need for countercyclical capital account regulations (or capital management techniques, or capital controls) that act as “speed bumps” to signal the need to move away from currency and maturities, short-term debt, and smooth exchange rate fluctuation (Ocampo 2003; Epstein, Grabel, and Sundaram 2008). Some economists in this tradition have also argued that such policies should be coordinated regionally by neighboring or similar EMDs to collectively shield them from destabilizing capital flows.

In the policy world, these perspectives come out of pragmatic work derived in the finance ministries and central banks in Latin America and beyond in the 1990s. Ffrench-Davis (2010) was in the Chilean Central Bank when that country devised an unremunerated reserve requirement (URR), which states that a certain percentage of inflows of capital has to be put in a non-interest-bearing account in the central bank. This measure has been widely acclaimed for buffering Chile from many of the crises of the 1990s. Ocampo (Ocampo and Tovar 2003) was finance minister in Colombia during the 1990s and used the URR as well. In general, this view of managing capital flows became championed largely in the UN system, especially in agencies such as the UN Conference on Trade and Development (UNCTAD), UN Department of Economic and Social Affairs (UN DESA), and UN Economic Commission for Latin America and the Caribbean (ECLAC), where Ffrench-Davis and Ocampo worked at one time. In addition, numerous countries have drawn on these insights when putting regulations in place. Indeed, the Brazilian finance and monetary policies were led by economists who refer to their macroeconomic policy as in the Keynesian-structuralist tradition regarding these matters (Barbosa 2011).

The New Welfare Economics of Capital Controls: Building on Arrow and Stiglitz

Path-breaking work in welfare economics has also emerged that shows that financial markets can be made imperfect by the presence of pecuniary externalities. This work consists of a seminal breakthrough in welfare economics, which before this had not proved that pecuniary externalities matter when markets are imperfect. This decades-old problem was solved in the new welfare economics of prudential capital controls and thus establishes a case for Pigouvian taxes to correct for market imperfections due to the financial amplification effects that can be triggered by excessive capital inflows. Extensions of this work establish
the need for EMDs and industrialized countries alike to coordinate their taxes on capital flows to reach optimal levels.

The origins of this work date back to classic work by Kenneth Arrow and Gerard Debreu (1954) that recognizes the presence of pecuniary externalities in an equilibrium economy but notes that such externalities may not be a cause for concern in perfect markets. Indeed, such is one of the seminal insights of the Arrow-Debreu model. Pecuniary externalities are externalities that are transmitted through the price system rather than through external channels. For example, a rush to purchase a certain type of asset may cause a price bubble that keeps others out of the market. Nevertheless, the first theorem of welfare economics, developed here, establishes that, if markets are complete, then such a situation can be Pareto efficient because the winners could compensate the losers.

Work by Bruce Greenwald and Stiglitz (1986) takes the work of Arrow and Debreu to another level by demonstrating that information asymmetries and other factors can make financial markets highly imperfect. This led Stiglitz and many others to surmise that cross-border finance is inherently disruptive and that therefore it is justified to regulate it. According to Avinash Dixit (2003), however, Stiglitz was not able to establish the direction of the impact of imperfect markets in this context.

This was achieved by drawing on models of financial crises and has been called the new welfare economics of capital controls (Jeanne, Subramanian, and Williamson 2012). The main motivation of this literature stems from the recent global financial crisis and the capital flow behavior in emerging markets. In the last decade, EMDs have been subject to substantial capital inflows and a buildup of international reserves. Such high levels of external borrowing raise the probability of sudden stops and capital flight. As was observed during the 2008–2009 financial crisis, deleveraging and fire sales of assets can result. Such results are externalities associated with financial contagion but on the international level.

This breakthrough originated in a landmark paper, “Excessive Dollar Borrowing in Emerging Markets: Balance Sheet Effects and Macroeconomic Externalities,” by Anton Korinek (2007). The starting point for his work was the third-generation models of financial crises (a.k.a balance-sheet crises), which emphasized that modern financial crises in emerging economies involve feedback loops among falling exchange rates, adverse balance-sheet effects (because of dollar debt, which increases in value), and tightening access to credit (e.g., Krugman 1991). In that paper, Korinek demonstrates that the downward loop in these models can be substantially mitigated if borrowers take on local currency debt rather than dollar debt but that individual borrowers don’t recognize that. Each borrower takes the severity of financial crises as given because they take prices (including the exchange rate) as given and the feedback loops during
financial crises are driven by falling exchange rates. A planner recognizes that reducing dollar debt will reduce repayments during bad times, which will reduce the transfer problem and mitigate the declines in the exchange rate and, therefore, the severity of financial crises. The fact that private agents do not internalize this effect in the context of models of balance-sheet crises is a pecuniary externality. Korinek then extended this mechanism to global capital flows and to other kinds of capital flows (Korinek 2011). These interactions are referred to as the financial amplification effect.

The externalities arise because borrowers do not internalize the impact of their behavior on aggregate instability (e.g., systemic risk and the likelihood of fire sales). Likewise, individual investors do not internalize their contribution to the aggregate systemic risk in their investment decisions. Individual participants do not take into account their combined impact on financial fragility. External shocks (or surges) trigger a buildup of foreign debt and an appreciation of the national currency. This is followed by a rise in domestic asset prices and, thus, an increase in the collateral that can be borrowed against. All this can unwind with a shock of a sudden stop. This will lead to capital outflows and thus a depreciation of the exchange rate and a decline in asset prices. Systemic risk becomes heightened by the inability to repay foreign creditors in domestic currencies and the possibility of maturity mismatches in debt profiles given that the value of domestic assets has become depressed.

Working through an entirely different theoretical apparatus, Korinek’s financial amplification effect is very similar to the Minskian developmentalist diagnosis of the relationship between cross-border finance and systemic instability. The hedge finance in a Minsky model corresponds to episodes in the financial amplification model when financial constraints are loose, and the Ponzi finance corresponds to episodes when financial constraints are binding and amplification occurs. The turning point is probably during the period of speculation. Moreover, modern financial macroeconomic models do not have many of the features that have irked post-Keynesian economists. Although everything in their models does have a general equilibrium outcome, they do not start by assuming demand and supply. Indeed, the Korinek model is demand-driven; during a crisis, domestic agents no longer have access to credit, and therefore they are forced to cut back on consumption (or investment), aggregate demand collapses, the exchange rate declines, and the economy enters a downward spiral. And there are supply-driven features as well. A crisis occurs when an exogenous supply shock reduces the amount of credit that foreigners are willing to extend to domestic agents, and they force domestic agents to cut back on consumption. Korinek’s approach deploys a general equilibrium context, but it is not stochastic. It would thus not be considered “new” Keynesian because such models are almost strictly models
with sticky prices and set interest rates to smooth aggregate demand in a dynamic stochastic general equilibrium (DSGE) context. Korinek and colleagues do not deploy DSGE frameworks. Moreover, these financial models do not assume natural rates of employment and growth—output and employment are fixed.

It is important to draw a distinction, as authors in this literature do, between prudential controls, which attempt to maintain financial stability, and structural controls, which are more permanent in nature and that are part of an apparatus (in the trilemma tradition) to manage an exchange rate (see also Aizenman 2010).

Stiglitz (2010) presents a theoretical framework to assess the optimal degree of integration when an economy is prone to a system failure, that is, a crisis that leads to bankruptcies and output destruction. The main trade-off here is the benefits of risk-sharing weighed against the costs of bankruptcy and contagion. Using this framework, Stiglitz shows that using a system of capital controls called circuit breakers can increase welfare and can even allow for a higher degree of integration than using no controls. An interesting contribution of this theory is that imposing the optimal size of a risk-sharing club, as an alternative to using circuit breakers, would limit contagion. The overall message of the paper is that capital controls can reduce financial instability, thereby reducing the risk of contagion, which poses significant adverse effects to output and growth.

Hyun Song Shin, an economist at Princeton, has arrived at similar conclusions via a more practical route. Shin has pioneered much empirical and theoretical work on the mechanisms that spread risk from industrialized to emerging economies—particularly, modeling how investors engage in arbitrage. His work, along with the work of others, shows how the pro-cyclicality of the banking sector is largely due to its use of cross-border funding. He outlines phenomena related to the financial-amplification effect to argue that countries seeking to stem systemic risk through this channel should regulate the specific channel from which risk is being transported. He subsequently has become an advocate of regulating foreign exchange derivatives markets because they were a key channel that transferred the crisis of 2008 to EMDs and led to a search for yield that proved to be destabilizing in the years following the crisis (Plantin and Shin 2011).

Other work by Korinek and two IMF economists shows how prudential capital account regulations need to be coordinated between recipient and, sometimes, source countries under certain circumstances (Ostry, Ghosh, and Korinek 2012). In other words, the new economics of capital controls justifies regulating capital flows at both ends, as Keynes stated during the Bretton Woods era. Korinek and colleagues demonstrate that the costs of capital controls increase with the intensity of the control and at an increasing rate. They go on to show how a more efficient outcome is to spread the costs across countries rather than make one country pay for all the costs.
Econometric Evidence

At the same time as these theoretical breakthroughs, a consensus was emerging on the efficacy of capital account regulations. The majority of studies suggest that the capital account regulations deployed during the period from the Asian financial crisis until the global financial crisis of 2008 met many of their stated goals.

In the most comprehensive review of the literature, Nicolas Magud, Carmen Reinhart, and Kenneth Rogoff (2011) analyze studies of controls on inflows and outflows, as well as multicountry studies. They ask whether the controls were able to (1) reduce the volume of net capital outflows, (2) alter the composition of flows, (3) reduce real exchange rate pressures and (4) make monetary policy more independent. Magud, Reinhart, and Rogoff also address the issue of methodological heterogeneity by evaluating the methodological rigor of each of the studies. Specifically, the authors give a study a weight of 0.1 if they find the rigor to be “low”; these are studies that consist mainly of descriptive analysis of events and/or time series. They give studies with a rigor they rank “intermediate” a weight of 0.5; these are studies that draw conclusions from a more formal evaluation of events but still lack formal hypothesis testing. Finally, they give studies with a rigor they rank “high” a weight of 1; these have highly developed econometric techniques, with well-defined hypothesis testing. They use the weights to create a weighted capital controls effectiveness index, which they compare to an unweighted capital controls effectiveness index. The authors conclude that, “in sum, capital controls on inflows seem to make monetary policy more independent, alter the composition of capital flows, and reduce real exchange rate pressures” (Magud, Reinhart, and Rogoff 2011, 13). There were fewer studies on outflows to include in the evaluation, and these were mostly studies of the 1998 Malaysian outflows restrictions. In Malaysia, Magud, Reinhart, and Rogoff conclude, controls “reduce outflows and may make room for more independent monetary policy” (2011, 13).

Summary and Conclusion

The various strands in economic theory that have evolved have separately arrived at the same conclusion: that the regulation of cross-border finance is a paramount tool for maintaining financial stability in EMDs. Keynes's *A Tract on Monetary Reform* and *A Treatise on Money* set the stage for thinking about the regulation of international finance. Influenced by this work and by fluctuations in world markets at the turn of the twenty-first century, new economic thinking was spurred by the work of Hyman Minsky and Joseph Stiglitz. Meanwhile, a consensus has emerged in the econometric literature that capital account liberalization is not
clearly associated with growth and may be associated with an increased incidence of financial crises—especially in EMDs that have not crossed certain income and institutional thresholds. Moreover, the econometric evidence concludes that regulating cross-border finance can meet many of its stated goals.

Although coming from an entirely different part of the literature and mathematical apparatus, the new welfare economics is remarkably similar to the Minskian developmentalist analysis. Nevertheless, the solution to the problem differs between the two breakthrough literatures. In both traditions, there is justification for countercyclical prudential capital account regulations. In the Minsky tradition, however, there is a concern for the maintenance of macroeconomic stability, the mobilization of domestic resources for economic development, and financial fragility. Thus, the optimum level of capital account regulation and its duration could be larger and longer to catalyze the export component of a development strategy. In contrast, the new welfare economics of capital controls is focused squarely on financial stability and solves for an optimum rate of regulation in an environment of equilibrium exchange rates and for a rate that is focused solely on inflows.

These new ideas are diffusing into policy circles. Many UN-based organizations and center-left parties in EMDs have been advocating an approach very much in the Minskian developmentalist tradition, at least since the crises in the 1990s—including Brazil (see chapter 5). In addition, the role of Hyun Song Shin was key to the development of the South Korean policies from a more pragmatist, new welfare economics perspective (also in chapter 5). In the wake of the 2008 crisis, the IMF has been very much moved by the new welfare economics of controls, as well as the econometric evidence (much of it generated by IMF staff economists) on the efficacy of capital controls. As we will see later in the book, the similarities between these theoretical frameworks helped form an interesting coalition among IMF staff and EMD IMF board members when the IMF was charged with rethinking IMF policy on capital account management in the wake of the global financial crisis.