

สัมมนาวิชาการประจำปี 2550
BOT Symposium 2007

ความท้าทายในการบริหารความเสี่ยงและความผันผวนในบริบทของประเทศตลาดเกิดใหม่
Challenges to Managing Risk and Volatility in the
Emerging Market Context

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ตุลาคม 2550

ข้อคิดเห็นที่ปรากฏในบทความนี้เป็นความเห็นของผู้เขียน ซึ่งไม่จำเป็นต้องสอดคล้องกับความเห็นของธนาคารแห่งประเทศไทย

บทสรุป

การที่ความกินดีอยู่ดีของประชาชนในประเทศกำลังพัฒนา ต้องผันผวนจากความเสี่ยงและความแปรปรวนทางเศรษฐกิจการเงินมากกว่าประเทศที่พัฒนาแล้ว ถือเป็นความเหลื่อมล้ำทางเศรษฐกิจที่สำคัญของทั้งสองกลุ่มประเทศ โดยสาเหตุที่สำคัญนอกจากจะมาจากความผันผวนที่สูงของปัจจัยเสี่ยงต่างๆ ในประเทศกำลังพัฒนาแล้ว ยังเป็นผลมาจากความแตกต่างของกระบวนการส่งผ่านของปัจจัยเสี่ยงเหล่านั้นไปยังภาคต่างๆ ในระบบเศรษฐกิจ ตลอดจนขีดความสามารถของประชาชนในการจัดการกับความเสี่ยงต่างๆ มีจำกัด จึงทำให้เกิดความผันผวนของรายได้และการบริโภคมากกว่าเมื่อเทียบกับกรณีของประเทศที่พัฒนาแล้วอีกด้วย บทความนี้ จึงมุ่งเน้นการนำเสนอภาพกว้างของปัจจัยสำคัญต่างๆ ที่เป็นสาเหตุที่ทำให้ความสามารถในการจัดการและรองรับความเสี่ยงและความผันผวนทางเศรษฐกิจในประเทศกำลังพัฒนา ด้อยกว่าเศรษฐกิจประเทศที่พัฒนาแล้ว ทั้งนี้ พบว่าความผันผวนของการบริโภคในประเทศกำลังพัฒนา ไม่เพียงแต่ก่อให้เกิดต้นทุนทางสังคมที่สูง แต่ต้นทุนดังกล่าวเมื่อเทียบกับเศรษฐกิจประเทศที่พัฒนาแล้วยังอยู่ในระดับที่สูงกว่ามาก ดังนั้น เพื่อเสริมสร้างความต้านทานต่อปัจจัยเสี่ยงที่อาจเกิดขึ้นของเศรษฐกิจประเทศกำลังพัฒนาในระยะยาว ภาครัฐและหน่วยงานที่เกี่ยวข้อง จะต้องดำเนินการเพื่อเตรียมความพร้อมทั้งในด้านเครื่องมือและแนวทางในการที่จะช่วยบรรเทาความเสี่ยงต่างๆ รวมทั้งต้องเร่งพัฒนาโครงสร้างทางเศรษฐกิจให้มีความแข็งแกร่งควบคู่กันไปด้วย

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1. Introduction

A central difference between emerging market and developed countries is the degree to which society's welfare is influenced by risk and volatility. Not only are the underlying nature of shocks more volatile in emerging markets, but the manner with which their economic systems propagate those shocks as well as the deficiencies in agents' ability manage risk contribute towards substantially greater income and consumption volatility relative to developed countries. This paper provides an overview of the key elements that distinguish emerging market countries from developed ones when it comes to the management of risk and volatility. In doing so, it will focus on three key questions: i) why would society be concerned with managing risk and volatility? ii) what makes managing risk and volatility so challenging in emerging market economies? and iii) what are some of the key policy issues in this respect?

From a fundamental economic perspective, risk only matters insofar as it potentially leads to lower welfare. As such, it is important to define clearly at the outset the assumptions made about agents' preferences. The standard assumption in economics is that utility derives from consumption and that agents are risk averse. The latter embodies the central tenant of most theories of choice under uncertainty: that people dislike risk. That is to say, given a choice between a level of consumption for sure and a gamble that yields the same expected level of consumption, the representative agent would prefer the former.¹ With such an assumption on preferences, a typical agent's welfare is determined by the level and volatility of his expected lifetime consumption path. While this step may seem innocuous, it is arguably the most important step in any analysis of risk and evaluation of alternative policy options. Indeed without a clear assumption about preferences, one cannot make any inferences about the relative desirability of different policy choices. In this light, a key gauge of an economy's ability to manage risk is the observed volatility of consumption and it is along this dimension that much of the paper will focus.

The outline of the paper is as follows. Section 2 begins by presenting some key stylized facts that distinguish emerging market countries from developed ones before going on to discuss in detail the main elements that can account for these differences. To obtain a sense of magnitude with respect to the challenge of managing risk and volatility in emerging market countries, Section 3 reports an estimate of the welfare costs of volatility in these countries and compares it to those in developed economies. Section 4 outlines some key considerations for policy and Section 5 concludes.

2. Risk and Volatility in the Emerging Market Context

A stylized fact regarding emerging markets is the significantly higher income and consumption volatility that they experience relative to developed economies. Table 1 summarizes the empirical evidence from two recent studies on this matter. Evidently, output and consumption in emerging markets are substantially more volatile than in developed economies both in terms of levels and growth rates. More strikingly, not only is

¹ Technically, this amounts to assuming a concave utility function. Section 3 provides an explicit example of the typical utility function assumed.

Table 1: Output and Consumption Moments

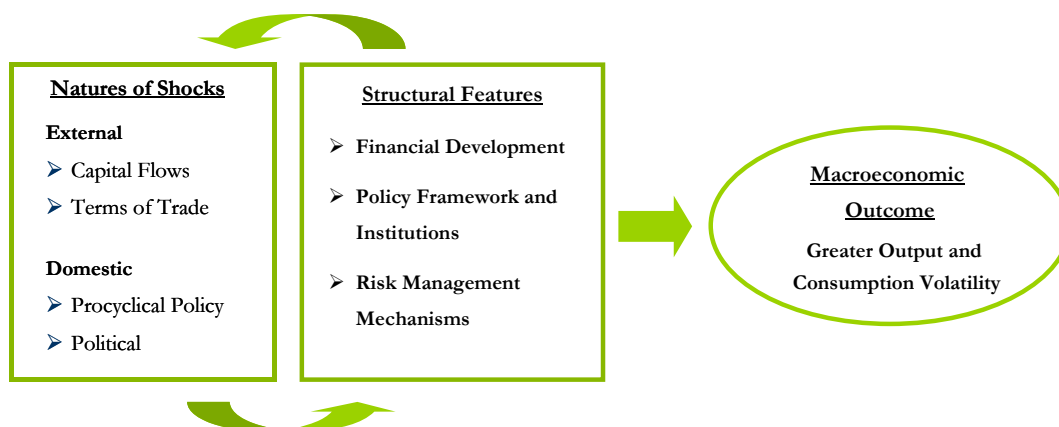
Aguiar and Gopinath (2007): Quarterly data up to 2003Q2		
	Emerging Markets	Developed Markets
$\sigma(Y)$	2.74	1.34
$\sigma(C)$	3.97	1.26
$\sigma(\Delta Y)$	1.87	0.95
$\sigma(C)/\sigma(Y)$	1.45	0.94
Kose, Prasad, and Terrones (2005): Annual data 1961-2000		
	Emerging Markets	Developed Markets
Median ΔY	2.61	2.80
Median ΔC	1.89	2.71
$\sigma(\Delta Y)$	4.07	2.59
$\sigma(\Delta C)$	5.63	3.32
$\sigma(\Delta C)/\sigma(\Delta Y)$	1.38	1.28

Note: Aguiar and Gopinath (2007) sample contains at least 40 quarters of data. Reported figures are average values for the group of 13 emerging and 13 small-open developed economies. Level data are log HP filtered while difference are unfiltered log differences. Kose, Prasad, and Terrones (2005) emerging markets sample consists of 23 more financially integrated developing economies, while developed economies are 21 OECD countries. Data are unfiltered.

consumption more volatile in emerging markets, but it is also more volatile in relation to income. As documented in Aguiar and Gopinath (2007), consumption is around 40 percent more volatile than income at business cycle frequencies for emerging markets, while the ratio is less than one for developed economies. The same is true when comparing relative volatility in growth rates of consumption and income (Table 1). Such heightened volatility in macroeconomic outcomes that emerging market countries experience undoubtedly has adverse implications for welfare. In particular, the fact that consumption is so volatile—in itself as well as in relation to income—suggests the existence of serious limitations in the ability of economic agents in these countries to smooth consumption in response to shocks.

A large part of the explanation for higher macroeconomic volatility rests with key differences in the *nature* of shocks hitting emerging economies as well as the way in which their economic systems *propagate* those shocks. For example, emerging market countries typically have to contend with more volatile capital flows, larger swings in the terms of trade, and are subject to more unstable political landscapes. At the same time, structural features such as rigid policy regimes, under-developed financial markets, and financial sector fragilities often exacerbate the effects of these shocks. Moreover, mechanisms to deal with shocks before and after they occur are less well developed in emerging market countries. These include market-based and informal arrangements for managing risk, whether through insurance or through credit, as well as government infrastructure such as social safety-nets. At the country level, deficiencies in international risk sharing

Figure 1: Determinants of Macroeconomic Outcomes



mechanisms inhibit the effective de-linking of consumption levels from country-specific components of output fluctuations, resulting in higher consumption volatility relative to output.

There are also important feedback effects between the structural characteristics of an economy and the nature of shocks that it experiences. For example, greater financial sector development and better institutions tend to reduce the susceptibility of countries to volatile capital flow shocks. Similarly, stronger policy frameworks can also mitigate against policy-induced volatility. Figure 1 depicts how observed macroeconomic outcomes are the result of this interaction between the nature of shocks and the structural features of the economic system. The rest of this section is devoted to discussing, in turn, these key elements that drive much of the large observed differences in macroeconomic outcomes between emerging market and developed countries.

2.1. The Nature of Shocks

A key difference between emerging markets and developed countries lies in the nature of shocks buffeting these economies. On the external front, differences in the dynamics of capital flows are perhaps one of the most important distinguishing features between these two sets of countries. Kose et al. (2006a), for example, document that emerging markets have experienced debt inflows that are significantly more volatile relative to their economies than developed countries over the period 1985-2004. More importantly, while net capital inflows appear to be procyclical in most countries (that is, external borrowing increases in good times and falls in bad times), it is apparent that the amplitude of the cycle in emerging markets is much larger than in developed countries. As shown in Table 2—which summarizes the finding of an extensive study by Kaminsky et al. (2004) on the nature of shocks in a panel of 104 countries—average net capital inflows as a proportion of GDP is 1.4 percent lower in bad times compared to good times for emerging market countries but only 0.1 percent lower for OECD countries.² Thus it appears that capital flow dynamics exacerbate business cycle dynamics in emerging markets much more than they do in developed economies.

² Good times are defined as years in which output growth rates were above the median growth rate over the sample while bad times correspond to years in which output grew below the median.

Table 2: Amplitude of Macroeconomic Variables in Good and Bad Times

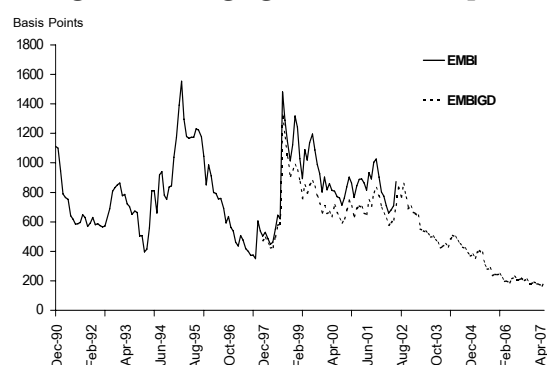
Countries	Good Times (1)	Bad Times (2)	Amplitude (1) – (2)
Net Capital Flows/GDP			
OECD	0.5	0.4	0.1
Middle-High Income	4.4	3.0	1.4
Middle-Low Income	4.2	3.0	1.2
Thailand	6.9	1.4	5.5
International Credit Ratings			
OECD	78.5	78.4	0.1
Middle-High Income	42.2	40.4	1.8
Middle-Low Income	32.9	30.8	2.1
Increase in Government Expenditure			
OECD	3.4	3.1	0.3
Middle-High Income	8.1	0.0	8.1
Middle-Low Income	6.7	2.7	4.0
Thailand	10.5	4.5	6.0

Note: Figures for OECD, Middle-High and -Low Income are from Kaminsky et al. (2004). Thailand's figures are calculated using data from NESDB for government and expenditure (1960 – 2006), and IFS for net capital flows (1975 – 2006).

To a large extent, this is a reflection of the fact that access to international capital markets for emerging markets contains a substantial procyclical element. In particular, the dynamics of international credit ratings are starkly different between emerging market and developed countries. As can be seen in Table 2, while international credit ratings in OECD countries are essentially independent of the state of the domestic economy, these ratings are strongly procyclical for emerging market countries. Since these ratings have an important bearing on emerging market bond spreads, this implies that the cost of borrowing on international markets are procyclical as well. Indeed, it is a well-documented fact that country spreads shocks are important drivers of business cycles in emerging market economies not just through their own dynamics, but also through their role as conduits of external and domestic shocks (see Uribe and Yue (2006) for recent evidence). Figure 2 illustrates how emerging market spreads can fluctuate dramatically.

Underlying the differences in capital flow dynamics above is the inherent instability in emerging market access to foreign capital. While developed economies have continuous access to international capital markets and low-income developing countries are almost shut out at all times, emerging market countries have a more precarious and volatile relationship with international capital markets. During good times, capital flows in but during bad times, emerging markets often find their access to international capital severely curtailed, just when they need it most. The fact that the availability of international capital varies with the business cycle can thus be an important source of volatility in emerging market countries. In addition, more pronounced information asymmetries in emerging

Figure 2: Emerging Markets Bond Spread



Source: JPMorgan Chase & Co. EMBI=Emerging Markets Bond Index; EMBIGD=Emerging Markets Bond Index Global Diversified

market countries may make them more susceptible to contagion effects that drive large swings in capital flows unrelated to changes in fundamentals. Finally, the fact that capital flows are sensitive not just to domestic conditions in the recipient countries but also to macroeconomic and financial conditions in industrial countries make emerging market countries more susceptible to a wide array of global shocks.

Another prominent difference between emerging market and developed countries is the relative importance of terms of trade shocks. Calderon and Fuentes (2006) examined business cycle fluctuations in emerging economies and found that terms of trade shocks are important in driving the business cycle, especially in emerging Asian countries, while they do not appear to matter in explaining economic fluctuations in developed countries. This finding is consistent with the fact that commodity price fluctuations have been found to be an important source of volatility in developing countries. Moreover, co-movement of the trade cycles across emerging markets can induce the amplification of these shocks as well.

On the domestic front, political instability and policy uncertainty are also more pronounced in emerging market countries. This is sometimes a reflection of the highly fragmented political landscape in these countries where a large number of small interest groups compete for policy leverage. The end result can be frequent regime switches and dramatic reversals in monetary, fiscal, and trade policies. Such shocks can manifest themselves in terms of large observed shocks to trend growth that, in turn, lead to greater macroeconomic volatility. Aguiar and Gopinath (2007) provide convincing empirical evidence that shocks to trend growth—rather than transitory fluctuations around a stable trend—are the primary source of fluctuations in emerging markets.

There is pervasive evidence, for example, that fiscal policy in emerging markets often exhibits procyclical tendencies and thus, if anything, acts as an additional source of volatility. Table 2 reports the behavior of real government expenditure growth during good and bad times and confirms that fiscal policy is markedly procyclical in emerging market countries whereas in developed economies, they appear to be acyclical. Possible explanations for this include procyclical access to domestic and external debt markets as well as political economy reasons. Similar observations can also be found in regards to monetary policy though they are not as strong. This implies that when economic activity is contracting in emerging market economies, macroeconomic policies tighten up and possibly exacerbating the contraction. A recent IMF (2005) study, for example, finds that over 70 percent of the volatility of real GDP per capita growth in Latin America is due to country-specific shocks, including those from the volatility of macroeconomic policies.

Finally, the interaction between domestic and external shocks can exacerbate macroeconomic volatility. Kaminsky et al. (2004) document the fact that in developing countries—and particularly for emerging markets—periods of capital inflows are associated with expansionary macroeconomic policies and periods of capital outflows with contractionary macroeconomic policies. In other words, the capital flow cycle and the macroeconomic policy cycle tend to reinforce each other in these countries, exacerbating overall volatility. Moreover, a high degree of political uncertainty can also feed back into country spreads that exacerbate capital flow volatility and ultimately, business cycle fluctuations.

2.2. Structural Characteristics

Differences in the nature of shocks alone are not the entire story. Another key difference between emerging markets countries and their counterparts in the developed world has to do with structural features of the economic system that influences how various shocks are propagated through the economy. The interplay between shocks and domestic conditions has been the subject of a rich literature. Three key areas that deserve particular attention in this regard are: i) the level of financial development; ii) policy framework and institutions; and iii) risk management mechanisms.

2.2.1. Financial Sector Development

One of the most vital foundations of modern economies is the process of channeling resources to their most productive uses. Whether an economy functions smoothly and efficiently or not depends much on the manner in which the financial system performs this task. A strong banking sector with highly disciplined risk management helps to mitigate the risks of financial imbalances while the existence of a deep and liquid financial market that offers a breadth of financial instruments improves the ability of the economy to absorb shocks. More generally, the level of development of an economy's financial sector has a fundamental bearing on social welfare insofar as it determines the ability of agents to smooth out their consumption profile in the face of fluctuations in income. As such, a substantial part of the observed differences in macroeconomic outcomes between emerging market and developed economies can be attributable to the disparate levels of financial sector development in these two groups of countries. Indeed, a number of empirical studies indicate that financial development, especially greater financial access, is associated with lower macroeconomic volatility.³

The importance of financial access for risk management and economic development cannot be understated. Financial access improves households' ability to smooth consumption over time, especially in the face of unexpected shocks, and provides them with a means with which to invest their savings alongside others as part of a diversified pool. More importantly, financial access enables potential entrepreneurial talent to be exploited by facilitating the creation of new firms. In so doing, the overall level of investment—and hence the speed of technology adoption—is increased, contributing to higher per capita income levels. Differences along this dimension of financial development is a key factor behind differences in the ability of households in emerging markets and developed countries to deal with shocks. It is also often understated because most measures of financial development do not take into account the ease with which the general population at large can have access to key financial services. Indeed, a country can have a financial sector which is quite sophisticated and developed in the sense of being liquid, offer a wide range of financial products, and closely linked to foreign markets yet offer only limited financial access for large segments of the population. Such situations are more likely to be found in emerging market countries.

³ Cecchetti et al. (2006) provide empirical evidence for OECD countries that increased access to credit enables households to smooth their consumption, which in turn reduces the volatility of consumption and output growth. See also Larrain (2004) and Raddatz (2003).

Finally, a critical determinant of the resilience of an economy to shocks is how well-balanced its financial sector is. Given the complementary nature of banks and capital markets, an economy which is characterized by both a well-developed banking system and deep capital markets is likely to be able to weather shocks much better than an economy that is predominantly reliant on only one of these systems. Indeed, the 1997 crisis demonstrated just how detrimental the consequences can be when the banking system collapses in an economy with no firmly established alternative form of financing. As put succinctly by Greenspan (1999), "...multiple alternatives to transform an economy's savings into capital investment act as backup facilities should the primary form of intermediation fail." The fact that developed countries generally have more balanced financial structures than emerging market economies can thus contribute towards understanding the differences in observed macroeconomic outcomes.

2.2.2. Policy Framework and Institutions

Another key focus of the literature has been on analyzing the response of macroeconomic policies to shocks and whether they dampen or propagate them. Broda (2001), for example, compares the stabilization properties of different exchange rate regimes in the face of terms-of-trade shocks and finds that flexible exchange rate regimes can insulate emerging market economies from such real disturbances far better than fixed exchange rate regimes. Similarly, Edwards and Yeyati (2003) found that fixed exchange rates tended to increase by a factor of two the effects of terms-of-trade shocks on output in Latin American countries. More generally, the institutional framework of monetary and financial supervision policy also has an important influence on the extent to which various shocks make their way through the economy. Importantly, a weak financial supervision framework increases the risk of financial imbalances building up—especially in situations where substantial capital flows drive up asset prices and generate favorable conditions for credit expansion—that may ultimately lead to severe economic dislocations.

In regards to the monetary policy framework, it is a fact that central banks in emerging markets often have less institutional independence and are less shielded from direct and indirect political pressures in the conduct of policy. These interferences come in the forms of direct reporting of the central bank to the ministry of finance, the authority of the latter in appointing the central bank governor, board members, and/or the monetary policy committee members, through budgetary control, or through forced financing of the fiscal deficits as required by law. Such lack of independence comes at a great cost in terms of lower central bank credibility and a less favorable trade-off between inflation and output. Less obviously, central banks in emerging markets often suffer from a relative lack of transparency in their policy formulation process. This ranges from unclear policy objectives, unspecified policy targets, irregular monetary policy meetings and announcements, as well as the absence of published meeting minutes and voting records of the monetary committee members. Without a clear understanding of the implicit policy response function, weaknesses in monetary policy transparency contribute to policy uncertainty and can exacerbate the impact of shocks on macroeconomic volatility.

The role of institutions has also received greater attention as one of the key distinguishing features between emerging market and developed countries. Acemoglu et al. (2003), for example, present evidence suggesting that the level of institutional

development has an important bearing on macroeconomic volatility.⁴ Fatas and Mihov (2005) present evidence that policy volatility exerts a strong and direct negative impact on growth and conclude that political institutions have a role to play to the extent that they shape policy outcomes.⁵ That is, institutions matter to a large extent because they affect policy and in particular policy volatility. Indeed, they find that institutional characteristics explain roughly 40 percent of the cross-country variation in policy instability. The better the institutions, the more policy becomes predictably linked to the state of the economic cycle and this predictability helps growth. The underlying mechanism presumably has to be linked to the fact that policy instability must either reduce the rate of capital accumulation or the rate of productivity growth.

2.2.3. Risk Management Mechanisms

The final element that helps to rationalize the more adverse implications that risk and volatility have in emerging market countries is differences in the variety and sophistication of risk management mechanisms available. It is important to note that the nature of risk that people face in emerging market countries can be quite different than those in developed countries. Certainly, while the importance of the agricultural sector in total output has declined in many emerging market countries, a significant portion of the population in these countries still rely on agriculture as their main source of income. Such activity entails numerous and significant risks such as weather-related shocks, fluctuations in crop prices, pests, environmental degradation, and pollution. The highly unpredictable nature of agricultural income implies an elevated degree of uncertainty for households that rely heavily on this sector. Rural communities in emerging market countries are also more isolated and often have little access to formal institutions to manage risk. The following discussion of risk management mechanisms is grounded very much from this perspective.

There are essentially two types of risk, idiosyncratic and aggregate. The former is specific to certain individuals or groups of people and can in principle be diversified away while the latter is common to everyone and cannot be diversified away. That said, whether a given risk is idiosyncratic or aggregate depends on the perspective from which it is viewed. For example, the risk of floods may be considered aggregate risk by households living in a given region that is prone to floods but when viewed from a province or country-wide perspective, the risk is actually idiosyncratic since only a segment of the population is affected by floods at any one time and such risks can conceptually be diversified away through risk-sharing mechanisms with people in other regions far away enough not to share the same weather pattern.

In the face of substantial idiosyncratic and aggregate risk, households have two avenues to manage these risks: i) income smoothing (ex-ante risk management) and ii) consumption smoothing (ex-post risk coping). The former involves efforts to affect ex-ante the riskiness of the income process and can be achieved by income portfolio

⁴ In the literature, institutions has been used to signify various characteristics of the socio-economic and political setup of a country including, for example, the number of constraints imposed on the executive of the country in terms of checks and balances with respect to the exercising of legislative power.

⁵ For their measure of policy volatility, they used discretionary government consumption.

adjustments. This can be done, for example, through income diversification by holding a diversified pool of assets, entering into insurance contracts, undertaking a number of activities with low covariance (such as rural households that engage in farming as well as collecting firewood for sale) or through undertaking low risk activities at the cost of low return (also known as income-skewing where, for example, a farmer chooses to plant a low yielding crop that is more resilient to drought and pests). In this way, households take steps to protect themselves from adverse income shocks before they occur.⁶ Consumption smoothing, on the other hand, involve strategies to deal with the consequences of ex-post variability of income. This can be achieved by borrowing and saving, depleting and accumulating non-financial assets, adjusting labor supply, invoking formal and informal insurance arrangements, as well as seeking public transfers. These mechanisms take force after shocks occur and help insulate consumption patterns from income variability.

With complete markets for consumption smoothing, households ought to make income-earning choices that produce the highest expected value, and then use mechanisms after shocks occur (credit and insurance) to achieve consumption smoothing as desired. Thus, when consumption smoothing is perfect, production and consumption decisions are separable—production choices should be made to maximize profits without concern for risk. In the presence of borrowing constraints, the separability between production and consumption no longer holds. Assets are devoted in two dimensions: profitability and contribution to reduce risk. For example, farmers find that crops, plots, labor and even migration diversification can contribute to both generating income and mitigating risk. In this way, income-earning decisions are taken bearing in mind limitations to smooth consumption through various channels. Most of the research suggests that in order to limit risk, more credit-constrained households are likely to switch their methods of production and employment choices to more conservatives ones. Thus household's income portfolios are influenced by the lack of ex-post instruments to smooth consumption. As discussed below, this inseparability has long-term implications for welfare.

The ability to deal with the consequence of shocks depends much on their nature as well as the completeness of markets for credit and risk. In general, small but frequent shocks are more easy to deal with than large and infrequent negative shocks (such as disability and chronic illness). If shocks are transitory, then individuals can protect themselves by saving. But in the case of permanent shocks, so that a fall in income today leads to a fall in expected income in all future years, then individuals will not be able to borrow to offset this negative shock, even when credit markets operate perfectly. After all, no one would be willing to lend to an individual to cover earnings losses that are never expected to be recovered. That said, if there are complete markets for risk, then permanent *idiosyncratic* shocks can still be mitigated through income smoothing methods that involve risk sharing among a given population (such as holding claims on others' output and disability insurance). In the case of permanent *aggregate* shocks however, there is no way to diversify such risk away. Overall then, complete markets allow idiosyncratic

⁶ While income smoothing is used in both developed and developing countries, it is perhaps more apparent in the latter context, and particularly in rural areas, where the riskiness of income must often be determined every year—for example, in season-to-season choices about cropping strategies or the intensity of input use.

shocks and temporary aggregate shocks to be smoothed away. An immediate corollary is that in the absence of complete markets, individual risk is greater than per capita risk since individuals have to contend with both idiosyncratic and aggregate risks.

How well households are able to manage risk depends on their ability to make use of market and informal mechanisms to smooth income and consumption. In developing and emerging market countries, there is substantial evidence that formal credit and insurance markets contribute little to reducing income risk and its consequences for large segments of the population.⁷ Instead, households rely heavily on self-insurance and informal non-market institutions to deal with consumption risk. Informal risk-sharing arrangements typically involve a system of mutual assistance between relatives or community networks. Risk-sharing can be thought of as the cross-sectional counterpart to consumption smoothing overtime. Its attainment effectively entails the pooling of all group resources so that state-contingent transfers within the group can be made in the event of unpredicted shocks. These group-based insurance mechanisms by their nature are suited for dealing with idiosyncratic shocks. In light of the large body of empirical evidence indicating that a substantial part of income risk in rural households is idiosyncratic, it is not surprising to observe that local risk-sharing institutions appear to be quite common in rural communities.⁸ In the urban setting, where risk-sharing with relatives may not be feasible, a lack of access to formal financial institutions often results in a reliance on informal money lenders as a way to smooth out income shocks.

Labor supply adjustments also constitute a key avenue through which households cope with negative income shocks. Increased household labor force participation in developing countries often also involve increased child labor and it is not uncommon to observe that children are taken out of school in response to adverse income shocks.⁹ To the extent that these responses to shocks retard human capital accumulation, income volatility in many emerging market countries have long-lasting effects. Finally, labor migration is another common avenue used to moderate aggregate risks in rural areas. Paulson (2000), for example, showed using household data from Thailand that remittances had a strong insurance component and also found that remitters from provinces with incomes that co-vary significantly with incomes in Bangkok are less likely to move there.

Despite the lack of formal insurance mechanisms, households in rural areas do share risk and smooth consumption. A common test of the degree of risk sharing is to run a regression of individual household consumption on group average consumption and individual income. If risks are fully pooled, then the coefficient on group average consumption should be one and on individual income zero. In other words, movements in

⁷ The lack of formal market institutions for dealing with risk in these settings is often attributed to informational problems such as adverse selection, moral hazard, and limited enforcement. Intra-community informal risk-sharing arrangements have a comparative advantage over formal institutions in dealing with these informational problems through their reliance on local monitoring and sanctions.

⁸ Townsend (1995), for example, found few common regional components in income growth among Thai households and also limited co-movement in incomes within villages in India.

⁹ Jacoby and Skoufias (1997) provide evidence of such behavior in Indian villages. Jensen (2000) documents a fall in school enrollment in response to adverse weather shocks in Cote d'Ivoire.

average group consumption represent aggregate risk, and through risk-sharing mechanisms of various sorts, all other shocks are pooled. The evidence indicates that consumption smoothing is real and significant but consumption smoothing is not complete so that full risk-sharing is always rejected.¹⁰ Fact is that despite a myriad of informal credit and insurance arrangements, vulnerability remains high and is reflected in the high variability of consumption.

One key problem has to do with the constraints faced by households in emerging markets in using one of the most basic tool of risk management, that of self-insurance. Indeed, self-insurance—primarily building up savings in good times to act as a buffer for consumption in bad times—can in principle deal with both idiosyncratic and aggregate shocks as long as a sufficiently large buffer has been built up ex-ante and is one of the most effective ways for dealing with income risk. There are some limitations to such a method in less-developed countries however. For one, households may not have access to safe assets with which to store their wealth. This may be due, among others, to an inability to access formal financial institutions or substantial inflation volatility. The covariance of asset values and income in response to aggregate shocks also makes self-insurance a less effective strategy to manage risk. For example, if assets are kept in the form of livestock, then during a drought the household may not only face a drop in crop income but some of their livestock may die as well. In addition, the terms of trade may also move against them if many households are trying to sell their assets at the same time, depressing the price. Finally for poorer households, lumpiness in assets is another reason why self-insurance may not be a feasible way of coping with risk. As in the previous example, livestock are lumpy assets requiring sizeable accumulated surplus that poorer households are unlikely to be able to generate.

The ability of rural households in emerging market countries to achieve income smoothing is also limited. While there is evidence that many farm households in less-developed countries obtain a substantial part of their income from non-farm activities in addition to dividing their land holdings into many plots growing different crops, in practice relatively little income smoothing is achieved by poorer households and incomes remains highly variable. Perhaps the most important obstacle lies in high entry constraints to profitable non-agricultural activities. Such constraints can take the form of high start-up costs, working capital needs, and skill requirements. Thus while poorer households may diversify into activities with low entry costs such as firewood collection and casual agricultural wage employment, entry into high return non-crop activities such as cattle rearing or shop-keeping is generally restricted to wealthier households with access to capital. At the same time, non-agricultural wage employment is restricted to those with education. Indeed, a common finding across the developing world is that wealthier households have a higher share of non-farm income than poorer ones.

Given limited options to smooth consumption through self-insurance and income diversification, many poor households are more likely to achieve income risk reduction through income skewing. That is, to handle income risk, asset-poor households are forced to engage in low-risk, low-return activities. Thus poor households devote a larger share of

¹⁰ See Baez (2007) for a review of empirical evidence regarding consumption smoothing in developing countries.

land to safer crops than to riskier but high-return varieties and utilize inputs such as fertilizer less optimally.¹¹ The long-term consequences of such actions are lower average incomes and greater inequality since asset-poor households suffer disproportionately.

With well-developed domestic financial markets, economic agents within a country can share risk amongst themselves. However, insuring against country-wide shocks requires openness to financial flows that would allow agents in different countries to pool their risks efficiently. The main mechanism for spreading risk among regions and countries is geographical diversification of income sources achieved via capital markets. If interregional and international capital markets are well integrated, regions and countries can insure against idiosyncratic shocks. At the country level, complete markets should in principle enable households to hold well-diversified portfolios giving them a claim on world output, so that idiosyncratic shocks to local production would have negligible effects on local consumption. Moreover, the ability to borrow and lend on international capital markets should also help to smooth local consumption. Thus the volatility of consumption relative to that of output should go down as the degree of financial integration increases.¹² In addition, domestic consumption growth should move more closely with world output growth than local output growth, and consumption growth rates should exhibit a higher cross-country correlation than income growth rates.

Much attention has been devoted to measuring the degree of international risk-sharing and existing evidence indicates that such risk-sharing is far from complete and appears to be less so in emerging and developing countries. Indeed, the hypothesis of complete consumption risk sharing is typically rejected even in economies with highly sophisticated financial markets such as the United States. In developing countries with poor quality of contracting institutions, obstacles to sharing idiosyncratic consumption risks are bound to be even more severe. Using a variety of empirical techniques, Kose et al. (2007) conclude that there is at best a modest degree of international risk sharing, and certainly nowhere near the levels predicted by theory. Only industrial countries have attained better risk sharing outcomes during the recent period of globalization while emerging market countries—which have witnessed large increases in cross-border capital flows—and developing ones have seen little change in their ability to share risk. One explanation for this difference could be that there is a threshold effect in terms of how financial globalization improves risk sharing with the benefits being realized only once a country is sufficiently integrated into global markets. Industrial countries, which are far more integrated into global financial markets, are clearly able to do better than emerging markets in terms of using international capital flows to improve productivity and share income risk. Thus limitations in the ability of emerging market countries to benefit more fully from international risk sharing is an important contributing factor for the relatively higher consumption to income volatility observed compared to developed economies.

¹¹ See Murdoch (1995) for references to empirical evidence in this regard.

¹² Kose et al. (2006a) surveyed the evidence and concluded that greater international financial integration ultimately brings benefits of enhanced risk-sharing that leads to reduced consumption volatility.

3. Quantifying the Welfare Loss of Consumption Volatility

Given that consumption volatility is significantly more pronounced in emerging market countries, a natural question that arises is how much welfare costs do such heightened volatility entail compared to developed countries where mechanisms for domestic and international risk sharing are more developed. Following the extensive literature on the welfare benefits of stabilization policy, a simple way to gauge the welfare costs of such risk is to calculate how much households would be willing to sacrifice in terms of forgone consumption to completely eliminate consumption variability—that is, to have the same average consumption but with zero variance. This question was first posed in the context of the United States by Lucas (1987) in a seminal paper. While there is a large literature discussing the technical issues concerning the underlying assumption behind this method (see Barlevy (2005) for a review), for present purposes, the following analysis will focus on comparing the *relative* welfare costs associated with consumption volatility between emerging market countries and developed ones. As such, while the absolute magnitudes may not be precisely estimated, the relative comparisons are based upon the same benchmark and underlying assumptions.

More precisely, consider a representative agent with a stochastic consumption stream whose welfare is given by the discounted sum of each period's utility, which depends only on consumption and is characterized by constant relative risk aversion as described by

$$U(C_t) = E_t \left[\sum_{t=0}^{\infty} \beta^t \frac{C_t^{1-\gamma} - 1}{1-\gamma} \right]$$

where γ is the coefficient of relative risk aversion and β is the subjective discount rate. Note that γ determines the degree with which agents dislike volatility in consumption path, with higher values translating into greater dislike. Assume further that consumption can be decomposed into a part that grows systematically over time and a part that fluctuates with prevailing economic conditions. Denote trend consumption at time t by C_t^* and actual consumption by C_t , the consumption process can be described by

$$C_t = (1 + \varepsilon_t) C_t^*$$

where ε_t are independent and identically distributed lognormal shocks with mean zero and variance σ_ε^2 . Thus consumption may fluctuate over time in an independent fashion but will be equal to trend consumption on average. For present purposes, trend consumption will be estimated as the Hodrick-Prescott filter of consumption.

To quantify the cost of volatility, consider an individual facing a lifetime consumption path as characterized by the actual path of consumption that has occurred over the sample and calculate by what fraction of lifetime consumption must the individual be compensated to make him just as happy as in a world where consumption never deviated from trend, that is, where the individual could consume C_t^* each year. Formally, this involves calculating the value of λ for which

$$E_t \left[\sum_{t=0}^{\infty} \beta^t \frac{[(1+\lambda)C_t]^{1-\gamma} - 1}{1-\gamma} \right] = \sum_{t=0}^{\infty} \beta^t \frac{(C_t^*)^{1-\gamma} - 1}{1-\gamma}.$$

As shown in Lucas (1987), the solution to this can be approximated by

$$\lambda \approx \frac{1}{2} \gamma \sigma_{\varepsilon}^2.$$

Thus the welfare cost of consumption increases proportionally with the volatility of consumption around trend and the degree to which individuals are averse to consumption volatility.

Table 3 shows estimates of these welfare costs for an empirically plausible value of γ and stochastic properties of consumption calibrated to actual experiences in each country. In particular, σ_{ε}^2 is parameterized to the variance of the cyclical component of HP-filtered annual log real per-capita private consumption using a smoothing weight of 100. An immediately striking result in Table 3 is the significantly higher costs of consumption volatility in emerging market countries compared to developed countries. On average, the welfare loss associated with consumption volatility in emerging markets amounts to 0.63 percent of average annual real per capita consumption, roughly 4.6 times higher than comparable estimates for developed countries.¹³ Examining the results for

Table 3: Welfare Costs of Consumption Volatility

Emerging Markets			Developed Markets	
	Cost of Volatility (percent)	Relative to Developed Markets Average		Cost of Volatility (percent)
Argentina	1.83	13.20	Australia	0.04
Brazil	0.72	5.18	Austria	0.06
Ecuador	0.20	1.44	Belgium	0.07
Israel	0.34	2.44	Canada	0.12
Korea	0.32	2.28	Denmark	0.18
Malaysia	1.03	7.40	Finland	0.27
Mexico	0.39	2.81	Netherlands	0.15
Peru	0.95	6.84	New Zealand	0.17
Philippines	0.24	1.70	Norway	0.14
Slovak Republic	1.86	13.39	Portugal	0.40
South Africa	0.18	1.28	Spain	0.22
Thailand	0.57	4.08	Sweden	0.19
Turkey	0.84	6.08	Switzerland	0.05
Mean	0.63	4.57	United States	0.08
			Mean	0.14

Note: Costs of volatility shown are for $\gamma = 5$ and are expressed in percent of average annual lifetime consumption. Relative costs are the cost in each emerging market relative to the group average of developed countries. Data are from United Nations database with the exception of the Philippines where the source is IFS. The sample spans 1970-2006 for all countries except Slovak Republic which starts from 1990.

each country reveals significant heterogeneity but it is evident that with very few exceptions, the welfare costs of consumption volatility is significantly higher for emerging market countries. The fact that the welfare costs are much lower in developed countries is a direct reflection of the fact that aggregate consumption does not vary much over the business cycle in these countries.

The magnitudes of these estimates are likely to be understated for a number of reasons. Firstly, consumption shocks are assumed to be identical and independently distributed under this method when in reality they exhibit persistence. As discussed extensively in Reis (2005), allowing for persistence in the shocks increases the costs of consumption volatility significantly. In the extreme case where shocks are permanent, the welfare costs are much larger since permanent shocks are essentially changes in trend consumption growth and individuals particularly dislike fluctuations in trend consumption. As discussed in the previous section, emerging market countries appear to experience a much higher incidence of shocks to trend growth, implying that the true welfare costs of volatility in these countries are much higher than suggested by the estimates reported here.

Another important point to keep in mind is that the use of aggregate data may give an incomplete picture of the welfare costs associated with volatility since it tends to understate volatility at the individual level. Suppose, for example, that there was a small fraction of the population whose consumption was highly volatile, while consumption for everyone else was constant. Then average consumption across the entire population would not appear very volatile, but for the unlucky few whose consumption is volatile, fluctuations will be quite costly. This would not be an issue if credit markets were complete since with unlimited access to credit, individuals will be able to limit the volatility of their consumption close to that of aggregate consumption so long as idiosyncratic shocks are not too persistent. Since households face borrowing constraints in reality, heterogeneity matters and business cycles will be more costly for households with fewer assets and more limited access to credit. In essence, a key assumption embedded in the above estimates is that all idiosyncratic shocks can be perfectly insured so that the welfare costs can be approximated through a representative agent framework with only aggregate risk. Given that risk-sharing mechanisms are likely to be less developed in emerging market countries, individual risk—the sum of idiosyncratic and aggregate risk—should be substantially larger than per capita risk and the true welfare costs of consumption fluctuations in these countries are likely to be higher both in absolute terms as well as relative to developed countries.¹⁴

Beyond the direct cost of consumption volatility, it is possible that macroeconomic fluctuations impose an even larger indirect cost through their effect on the level and growth rate of economic activity—contrary to the assumption underlying the estimates above that volatility does not affect the trend. As such, living in a volatile world not only forces households to contend with unpredictable consumption, but also to consume less than they would otherwise. Indeed, there is a large empirical literature

¹³ Pallage and Robe (2003) utilized this method, among others, to study the welfare costs of economic fluctuations in African countries and found the median welfare cost of aggregate consumption fluctuations in these countries to be at least 10 times that of the United States.

¹⁴ De Santis (2006) provides a detailed discussion of these issues.

following Ramey and Ramey (1995) that document the fact that greater output volatility is associated with lower average output growth rates. Allowing for the possibility of volatility to affect trend growth rates would alter the estimates of welfare costs tremendously since the effects of changes in lifetime path of consumption are an order of magnitude larger than changes in the variability of consumption around a given path.¹⁵ Interestingly, Kose et al. (2006b) in a deeper exploration of the link between growth and volatility found that while the relationship is negative for developing countries, it is significantly positive among industrial countries. Moreover, among developing countries, the relationship appears to be positive for more financially integrated countries and negative for less financially integrated ones. This suggests that the true welfare cost of volatility is likely to be magnified in less developed countries because they are less financially integrated than developed ones.

Finally, it should be noted that the welfare cost of macroeconomic volatility described above are based on *observed* consumption volatility and as such, ignores the efforts already expended by households to attain the observed path of consumption. Thus, the fact that consumption volatility in emerging market countries are higher than those in developed countries may reflect either i) the inability of households/governments to smooth consumption further than already observed; and/or ii) the unwillingness of households/governments to expend additional resources in smoothing consumption further.

All in all, taking into account the issues raised above implies that the true welfare cost of consumption volatility in emerging market countries relative to developed countries is likely to be much larger than the already substantial estimate reported above. While policy initiatives in developing and emerging market countries has focused heavily on growth, the results reported in this section suggest that policies aimed directly at reducing consumption volatility may bring about substantial welfare gains. That said, the mere fact that consumption fluctuations appear to be costly need not imply that attempting to neutralize them through stabilization policies would be highly desirable; that depends on what shocks were responsible for this volatility and whether they could have been effectively offset, questions economists have yet to fully resolve and a topic of discussion in the next section.

4. The Role of Policy

In light of the unique agglomeration of factors in emerging markets outlined above, the challenge of managing risk and volatility in emerging markets has two key facets: i) addressing immediate short run concerns emanating from various shocks; and ii) implementing structural reforms to ensure that macroeconomic stability becomes *embedded* in the underlying economic structure over the medium term and that households are able to more effectively shield their consumption from income shocks. The former concerns the challenge of maintaining economic stability through appropriate policy

¹⁵ As in the discussion of income-skewing in Section 2, incomplete markets for risk sharing may imply that emerging market countries make conservative production decisions in the face of large uncertainty and as a result, contend with lower average levels of income and consumption. In this sense, the welfare costs of volatility will be understated.

settings and actions to offset the various shocks hitting the economy at any given point in time, as well as making sure that policy itself is not the cause of volatility. The latter focuses on strengthening the institutional framework for policy, developing risk management mechanisms, as well as fostering financial sector development that improves the ability of the system to absorb shocks by itself in a way that minimizes the impact on the real economy without the need for policy intervention. In what follows, some specific issues concerning these two facets of managing risk and volatility in the emerging market context are discussed.

4.1. Macroeconomic Stabilization Challenges

The first important point to note with respect to macroeconomic stabilization policies is that they are capable only of dealing with aggregate shocks. Even so, the results of the previous section indicate that the potential welfare gains along this dimension alone can be quite large for emerging market countries. Given that the degree of international risk sharing is especially low for these countries, aggregate country shocks cannot be diversified away and may justify a role for macro stabilization policy. Moreover, considering the possibility that substantial resources may be spent by society in order to limit fluctuations in income and consumption to attain the levels actually observed, the potential benefits to stabilization policy could be substantial. From this perspective, aggregate, uninsurable, uncertainty causes distortions in the allocation of resources as households and firms use up resources to protect themselves from the effects of volatility. Stabilization policy then provides insurance services as a public good which potentially improves aggregate welfare by reducing the private cost of self insurance.

In the face of aggregate shocks, macroeconomic policy can help to reduce economic volatility in two ways. Firstly, adjustments to monetary and fiscal policies in response to shocks may be able to mitigate their impact on the wider economy. For example, in the face of a negative terms of trade shock, the fiscal-monetary policy mix could become more accommodative to cushion the economy from the resultant reduction in income. Secondly, the underlying framework for policy can help to cushion the impact of shocks *automatically* without requiring actual adjustment in the policy stance. For example, a credible inflation targeting framework can help to anchor the public's long-term inflation expectations in the face of temporary oil price shocks leading to more stable long-term interest rates. Similarly, an enhanced role of fiscal automatic stabilizers helps to smooth out the impact of fluctuations in economic activity on incomes in a mechanistic fashion.¹⁶

More generally, macroeconomic stability can help agents to better cope with income risk and smooth consumption. For example, many emerging markets in the past suffered from high and volatile inflation creating severe difficulties for households to assure a positive real rate of return on their savings and greatly reducing the usefulness of precautionary savings in times of distress. A key dimension in this regard is making sure that policies do not introduce distortions into the economy that may build up over time and eventually result in abrupt economic dislocation. As alluded to in Section 2, for example, a flexible exchange rate regime can contribute towards macroeconomic stability

¹⁶ Issues related to the institutional framework of policy are discussed further in the next section.

by automatically cushioning against shocks such as abrupt changes in the terms of trade. Exchange rate flexibility also reduces the likelihood of potential financial imbalances building up.

While it is clear that a role for stabilization policies to reduce risk exists, it is important to recognize that there are also important limitations. One key limitation of using discretionary fiscal and monetary policy to combat business cycles concerns the long and variable lags involved not only in changing the policy stance (in the case of fiscal policy) but also in the response of the economy to a given change in policy stance. Expectations of future policy also matter in determining how effective a given discretionary change in policy today will be. For example, if a tax cut is viewed as being temporary, it may not have a large impact on current private spending since households expect to have to pay more taxes in the future. In the extreme, an expansionary fiscal policy may actually be contractionary if the government is already running a large deficit and further spending increases are deemed to jeopardize solvency and put into question fiscal discipline, resulting in higher long-term interest rates. Discretionary fiscal policy is thus generally viewed as too unwieldy for dealing with business cycle fluctuations. As a result, much of the cushioning role of fiscal policy falls on automatic stabilizers, which are less likely to be effective in emerging market countries that lack the extensive social insurance and income tax systems that characterize industrial nations.

Too active a pursuit of stabilization policies can even be counterproductive and actually exacerbate macroeconomic volatility with adverse impact on growth. Besides the direct effect on overall activity, frequent changes in the fiscal and monetary policy stance signal a lack of consistency and predictability in policy and are likely to weigh heavily on private investment and productivity. The fact that volatility of policy is perhaps an even stronger determinant of a country's long-term growth performance than policy levels has been argued forcefully by Fatas and Mihov (2005). In an empirical study using a cross-section of 91 countries, they find strong evidence that countries where governments use aggressively discretionary fiscal policy for reasons not related to the state of the cycle experience a slower rate of economic growth. Thus from a welfare perspective, the risks associated with excessive macroeconomic policy volatility may be more detrimental than those associated the average stance of these policies.¹⁷

Moreover, despite the large costs associated with economic volatility highlighted in the previous section, it is not clear that large welfare gains are to be had from more aggressive stabilization policies since many of the shocks that have been responsible for fluctuations in the past could not have been easily offset. Just because business cycles are costly does not automatically imply that stabilization is desirable; instead, that depends on what causes business cycle fluctuations, what tools are available to policymakers, and whether these tools can effectively offset the underlying shocks. Lucas (2003), for example, argued that shocks in the United States during the postwar period have predominantly been real shocks and as such, could not have been effectively offset by

¹⁷ An obvious example is that fact that long-term monetary neutrality holds in levels but not in its second moment. That is, the level of inflation *per se* does not affect the natural rate of unemployment but an increase in the variance of inflation can have detrimental impact on real variables and raise the natural rate of unemployment.

stabilization policies which are suited to dealing with nominal shocks. Determining whether policymakers should have acted more aggressively requires a better understanding of what forces are ultimately responsible for business cycle fluctuations, a subject of ongoing research that has yet to yield conclusive verdict. The focus, then, should be on taking steps to mitigate, where possible, sources of shocks—such as political instability and abrupt policy regime changes—and improve the resilience of the economy to shocks. At the very least, instability associated with policy changes should be avoided.

4.2. Strengthening Economic Resilience and Risk Sharing Mechanisms

The evidence presented in Section 2 indicates that a priority with respect to stabilization policies in emerging market countries is to ensure that macroeconomic policies, particularly fiscal policy, act to stabilize rather than exacerbate shocks. While some of the problem can be alleviated by a more judicious utilization of various policy instruments, the underlying problem runs deeper and concerns structural features of the policy framework and institutions. In addition, the potential for welfare gains are arguably greater from bringing about improvements in risk management mechanisms than from better utilization of stabilization policies—not least because the latter can only be used to offset aggregate shocks whereas the existence and efficient functioning of various markets for managing risk can help agents cope with both idiosyncratic and aggregate shocks. With well-developed markets for self-insurance, for example, individuals can reduce consumption risk in the face of transitory shocks through borrowing and lending. This makes any macroeconomic policy that would further reduce aggregate risk almost unnecessary. On the other hand, while saving cannot insure against permanent shocks, it is also doubtful what stabilization policies can do in response to such shocks anyway. This section outlines some key issues from this more structural perspective.

4.2.1. Policy Framework and Institutions

The evidence reviewed so far suggests that governments in emerging market economies face a major challenge in ensuring that macroeconomic policy is not exacerbating cyclical fluctuations, let alone acting as a stabilization instrument. From a structural perspective, reducing policy-induced volatility ultimately rests on embedding policy decisions in a formal institutional framework that helps to mitigate uncertainty about medium-term economic prospects. In terms of fiscal policy, the creation of a formal medium-term framework for the conduct of fiscal policy should help to insulate it from the pressures that generate procyclicality. Institutional restrictions on fiscal policy are likely to be useful in political systems that are characterized by high fragmentation, polarization and frequent electoral turnover—as is the case in many emerging market countries—since these factors are important contributors to procyclical fiscal behavior. The success that Chile has had in adopting fiscal rules designed to encourage public savings in good times is a good example. In a similar spirit, the establishment of a credible monetary policy framework and enshrined central bank independence provide the necessary preconditions for alleviating the impact of shocks on the economy. For example, by anchoring the public's long run inflation expectations to the target level, a credible inflation-targeting framework helps to mitigate the impact of temporary supply shocks on inflation and allows the central bank more leeway to adjust its policy instrument to smooth cyclical shocks without inducing countervailing shifts in long-term interest rates.

With regards to financial sector supervision, emerging markets also generally trail behind developed economies in terms of the strength of their regulatory frameworks. Risk management capacity of financial institutions in emerging market countries face capacity constraints related to the non-availability of critical data, less supportive legal infrastructure, less adequate accounting standards, as well as severe constraints on the available pool of local talent. These shortcomings inevitably have adverse consequences on the overall financial stability of the system. With less effective supervision and limited capacity to manage risk, the ability of the economic system to absorb shocks is then compromised. In the face of large capital inflows intermediated through the banking sector, for example, a substantial portion of the funds may be misallocated and end up as non-performing assets. The resultant weakened state of commercial banks' balance sheets then contributes towards more pronounced economic fluctuations. As such, strong emphasis must be maintained with respect to the building up of necessary institutions for effective financial sector supervision.

4.2.2. Financial Integration and Financial Sector Development

As stated in Section 2, the presence of a well-functioning and deep capital market to complement a strong banking sector is crucial not only for the attainment of a more efficient allocation of resources, but also for greater resilience in the growth process when either one or the other is experiencing problems. A pertinent issue in this regard is the conditions that are necessary to encourage capital market development and bring about better financial services. Laporta et al. (1997, 1998) argue that the legal system plays a crucial role in this respect. Creating a strong legal system that supports the rights of outside investors (both equity and debt investors) and then efficiently enforcing those laws is crucial for the provision of growth-enhancing financial services. Intuitively, this is a simple idea, since a promise to deliver one unit of financial service tomorrow is worthless if delivery cannot be enforced. Put simply, investors provide capital to firms only if they have the ability to get their money back. For equity holders, this means that they must be able to vote out managers who do not perform and/or sell their holdings easily in a liquid market. For creditors, this means having the authority to repossess collateral. If these conditions are not met, then capital markets will in general be less developed and less attractive for both lenders and borrowers. This will result in a dominance of bank-based financing.

In terms of access to formal financial institutions, one of the most significant obstacles in many emerging market countries, particularly in rural areas, has been the use of loan collateral for reducing credit risks. This does not work efficiently when many intended clients do not have acceptable collateral, and expensive and time-consuming legal procedures prevent effective realization of legal claims on collateral. In some instances, enhancing the availability of collateral through a reform of laws governing land ownership would alleviate constraints on many who have the right to use land but no legal document that can be used as collateral. This would not help those with good projects but no access to collateral, however. Collateral substitutes are needed in this situation. The most effective way would be to shift the focus away from collateral-based lending to project-based assessment. This would enable projects with the highest marginal product to be financed, irrespective of whether the borrower has access to collateral or not. Moving in this direction requires large improvements in information collection and processing as well

as better-designed contracts. In this respect, financial institutions need supportive public policies to develop accounting and disclosure systems and to improve the legal infrastructure.

One area where large potential benefits for reducing volatility in emerging markets lie is in regards to greater international financial integration and the broader opportunities to diversify risks that it entails. Indeed, to the extent that emerging market economies are intrinsically subject to higher volatility on account of their being less diversified than industrial economies in terms of their production structures, the potential benefits are certainly larger in this context. In general, the scope for benefiting from international risk sharing tends to be large when a country's consumption growth is volatile, positively correlated with domestic output growth, and not highly correlated with world consumption. Recent empirical studies suggest that these features tend to characterize most emerging market countries. Kose et al. (2004) show that the potential welfare gains from better international risk sharing for developing and emerging market economies can be very large. On average, these benefits would have the same effect as about a 6 percent permanent increase in the level of per capita consumption.

While the potential benefits of greater financial integration is relatively clear and well supported by theory, the evidence of such benefits for emerging market and developing countries has been weak.¹⁸ Recent studies, however, have increasingly suggested that a critical determinant of whether a country benefits from financial integration is the level of financial sector development. A prominent example is the study by Kose et al. (2003) which found that only countries that possess sufficiently good institutions and have surpassed a certain stage of financial market development show clear gains to increased financial integration. This is likely a reflection of the fact that financial sector development not only enables better diversification of idiosyncratic risks, but also helps the economy to cope with aggregate risk when combined with international financial integration. Indeed, the benefits of financial sector development are apparent even without explicit consideration of financial integration. Calderon and Fuentes (2006), for example, document that emerging market countries that are more financially developed in terms of better access to the domestic financial system, experience business cycles that display a lower number of contractions and smaller costs of recessions. Similarly, a recent study by the IMF (2007) found that more developed domestic financial markets seem to be associated with reduced volatility of capital flows in the emerging market context.

Thus a critical factor in ensuring that emerging market economies reap the highest benefit from financial globalization is the proper consideration of the interaction between financial integration and domestic financial sector development. While the latter should be pursued as a top priority, the key is to find the right sequencing and pace of financial integration that enables the economy to enjoy the benefits of greater risk sharing without undue disruptions. This is consistent with the conclusion of a comprehensive review of the empirical literature on the effects of financial globalization on developing countries by Kose et al. (2006a) where it is forcefully argued that much of the benefits of financial globalization come through their indirect catalytic role in promoting development of the domestic financial sector, enhancing discipline of macroeconomic policies, spurring

¹⁸ See Kose et al. (2003) and (2006a).

efficiency gains among domestic firms, and facilitating better governance. Being mindful of the interaction between greater financial integration and financial sector development appears to be an important factor in improving emerging market economies' resilience to shocks.

4.2.3. Risk Management Mechanisms

Given the limits of stabilization policies, the effectiveness with which households can cope with any residual income volatility depends on the myriad of risk-coping mechanisms that they have access to. In cases where the market does not provide adequate means to cope with risk, there may be a role for policy intervention. A case in point is the limited ability of many households to self-insure through saving. Greater policy attention could be devoted to improving the ability of households to save as well as the efficiency with which saving is done through policy initiatives aimed at providing more attractive, accessible, and diversified savings instruments. In light of the fact that opportunities for precautionary savings are limited and that informal group-based insurance arrangements are only able to deal with idiosyncratic shocks, public safety nets that provide transfer may have a useful role to play in dealing with aggregate shocks. By reducing overall risk, this would diminish the need for precautionary savings.

That said, since informal arrangements rely heavily on self-enforcing mechanisms that may be affected by the availability of public safety nets, care must be taken to minimize the degree with which public transfers crowd out private and informal insurance arrangements. Since greater opportunities for precautionary savings or a public safety net may actually reduce welfare if they displace informal insurance arrangements in a way that leaves some agents with less protection than initially, evaluations of policy interventions must consciously take into account their impact on incentives to maintain informal insurance arrangements. In particular, policy interventions that improve an individual's position outside a private group-based informal risk-sharing arrangement creates incentives to renege on prior commitments. Targeted interventions that focus on only a certain subset of communities could be especially counterproductive.

Indeed, Townsend (1995) document evidence from Thailand suggesting that some villages which are more integrated into the regional cash economy actually display a relative lack of internal credit and insurance arrangements and as a result, suffer from greater variability in consumption than more isolated villages. He also found surprising evidence that areas within greater Bangkok actually exhibit less risk-sharing than other regions in the country, perhaps because the urban setting exacerbates information problems resulting in a relative lack of informal risk-sharing arrangements. While it is difficult to make generalizations, the negative effects of interventions are likely to be smaller when aggregate shocks dominate and if groups or whole communities are targeted instead of individuals. Given that policies affect household opportunities to cope with risk, understanding how households cope with risk is relevant for the design of effective safety nets and other risk-reducing policies. Moreover, policymakers must distinguish between the symptoms of an underlying problem and the root cause itself. For example, the observation of high variability in school enrollment in a given area might lead to a perceived need to subsidize education in that area. However, school enrollment may be variable because parents in that community lack the means to insure against income shocks and react instead by varying their children's school enrollment. This illustrates the

need for an understanding of the fundamental economic environment, which markets are missing and why in order to achieve efficient policy design.

4.2.4. Risk Management Policy: The Long and Short of It

A recurrent theme that has been underlying much of the discussion in this paper is the intricacy of maintaining the delicate balance of short run stabilization efforts and long run structural reforms that results in the most effective management of risk and volatility. In particular, a heavy focus on maintaining immediate financial and economic stability can often hinder efforts to deliver these very same goals in the long run. Consider the classic situation where an emerging market becomes the recipient of a large influx of foreign capital into the domestic capital market. Given the inherent volatility that such flows may impart on the domestic economy, policymakers may utilize capital controls to mitigate the risk of an asset price bubble or undertake sustained intervention to protect the economy from a rapid appreciation of the exchange rate. To the extent that such responses help to shield the economy from shocks, they contribute towards economic stability. Nonetheless, there are important side-effects, such as reduced liquidity in financial markets and/or financial market distortions that may ultimately impinge upon the ability of the economy to weather shocks in the long run. Ensuring that the outcome of such trade-offs turn out favorable to the attainment of economic and financial stability in the long term is perhaps the toughest challenge for emerging markets in the present context.

More generally, attempts to reduce volatility in the short term may induce important distortions into the economy that inhibits the development of market-based mechanisms that are critical to the effective management of risk and volatility over the long term. A fixed exchange rate regime, for example, may shield agents from fluctuations in exchange rates and thus effectively removes the need and market impetus to develop market instruments to cope with exchange rate risk. Over the medium term, such subsidization of risk by the government may introduce complacency in risk assessment practices and result in vulnerable balance sheet exposures that ultimately implode when the government becomes unwilling or unable to sustain the fixed exchange rate. The central message is that beyond policy-induced shocks, there is not much emerging markets can do to reduce volatility of the shocks directly. Eliminating the underlying sources of some of the shocks, such as fixing the exchange rate, is likely to be associated with loss opportunities that may end up being counterproductive. The main focus should be on finding ways of improving the ability of the economy to deal with shocks so that the long-run benefits can be had without undue costs in the short-term.

5. Conclusion

This paper has argued that the unique combination of shocks and structural features of the economic system in emerging markets give rise to a macroeconomic backdrop that is characterized by significantly higher output and consumption volatility than in developed economies. The period leading up to and immediately following the 1997 crisis is a prime example of this interaction. Rapid movements in capital flows into and out of emerging markets interacted with financial system underdevelopment, deficient bank supervision, and balance sheet weaknesses, resulting in a boom-bust cycle. In contrast, the experience of developed economies is more generally characterized by one where large shocks typically result in substantial asset price volatility and substantial

financial losses that are *not* accompanied by significant disruption to either short run or long run economic growth. Such contrasting response to shocks results in substantial differences in the welfare costs of volatility, especially in light of large deficiencies in risk management options available in emerging market countries where many markets for risk do not exist and, of those that do, many work imperfectly.

Going forward, emerging market governments should focus on taking steps to mitigate, where possible, sources of shocks and improve the resilience of the economy to shocks. While there may be potential in some emerging market countries to better utilize stabilization policies—or at the very least, making sure that policy changes do not act as a source of instability, the emphasis should be on implementing structural reforms that ensure that macroeconomic stability becomes *embedded* in the underlying economic structure over the medium term and that households are able to more effectively shield their consumption from income shocks. Greater financial development, improved financial access, stronger policy frameworks and institutions, and more effective public safety-nets are important elements in this regard.

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