1. Introduction and overview

Maurice Obstfeld, Dongchul Cho and Andrew Mason

In 2008 the global economy witnessed the most severe crash since World War II. The prolonged subprime mortgage crisis in the United States finally erupted in a global panic, triggered by the Lehman Brothers bankruptcy filing in September. A sharp collapse in international trade followed, leaving no countries immune to the sequence of economic shocks. Suddenly the era of Great Moderation was transformed into the era of Great Recession, eliciting unprecedented macroeconomic policy responses in emerging and advanced economies alike. In most advanced countries, huge budget deficits emerged as policy interest rates fell to near-zero levels.

Although the global economy began to recover in the second half of 2009, the crisis raised many questions: How different was this crisis from the previous ones? What flaws in financial markets contributed to the crisis? How important was financial globalization in exacerbating the immediate international spillovers of the crisis? How important were global imbalance and global overheating in explaining the global meltdown? Were all countries similar before the crisis in terms of major macro indicators? Did different precrisis fundamentals generate different postcrisis performances? How severe were the shocks to emerging countries such as Korea? This volume attempts to answer some of these questions, which are clearly of great importance for the future of the global economy.

Part I of the volume consists of two chapters comparing the recent crisis with earlier ones. Part II contains four chapters on international aspects of the crisis: two about financial markets and two focused on international trade. The four chapters in Part III examine macroeconomic policy responses as well as the roles of precrisis fundamentals.

PART I HISTORICAL PERSPECTIVES

In Chapter 2, "The global financial crisis: is it unprecedented?" by Michael D. Bordo and John S. Landon-Lane, the authors build upon

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recent literature in distinguishing among three different types of financial crises—banking crises, currency crises and sovereign debt crises—and they investigate the negative output effects of crises from 1880 to 2009.

The authors base their study of output effects on the long spans of data assembled by Angus Maddison. In analysing crisis effects since the late nineteenth century, Bordo and Landon-Lane use data from 23 countries, most of them in Western Europe, but also including Canada, Japan, the United States, Argentina, Brazil and Uruguay. When computing a measure of severity for each successive recession, the authors find that banking crises are the most damaging, because the recessions associated with them are larger and seem to inflict stronger international spillovers than do the other types of crisis. They then focus attention on individual banking crises and identify five global events: 1890–91, 1907–08, 1913–14, 1931–32 and 2007–08. The authors conclude that the recessions associated with the 2007–08 financial crisis were indeed unprecedented, in that output losses were at the *low* end in comparison with previous major banking crises.

The authors also draw policy lessons from the historical record. First, the recent crisis underscores the historical lesson that countries with sound financial systems, an effective lender of last resort and efficient financial supervision fare better in global financial crises. Second, financial innovations may increase global systemic risk, making a case for enhanced financial supervision and regulation. Finally, the fact that the recent crisis was actually one of the least costly since the late nineteenth century suggests that policymakers have learned lessons from the past global financial crises: after the Lehman collapse they followed aggressively expansionary monetary and fiscal policies, which was certainly not the case before World War II.

In Chapter 3, "Responses of the Korean economy to the global economic crisis: another currency crisis?" Dongchul Cho focuses on the behavior of Korea's financial and export markets and macroeconomic policy responses during the 2008–09 global economic crisis. His comparisons show how the Asian economic crisis of 1997–98 was similar in some ways and different in others. The stress is on fundamental changes to the Korean economy after 1997, and the ways in which those changes cushioned Korea's financial sector and exporters in 2008, allowing a rapid economic rebound in 2009. According to Cho, there was an implosion of domestic markets in the 1997–98 crisis (when contracting domestic demand caused a sharp fall in GDP, whereas export demand was still expanding). In contrast, foreign markets collapsed in the more recent crisis (when a sharp fall in external demand was the trigger, but domestic demand fell only slightly, and both rebounded quickly).

The author analyses other main differences between the two crises. As it turned out, the second crisis saw a much more rapid recovery to precrisis

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levels, with only a moderate and brief drop in employment. Also, the second crisis was a stand-alone currency crisis, and was not accompanied by a banking crisis. In contrast to the monetary tightening of 1997 (which aggravated the concurrent banking crisis), the Korean authorities followed a policy of monetary easing in 2008 and allowed the exchange rate to float (which in turn bolstered the expansionary monetary policy stance, as well as playing an automatic stabilizing role, without wasting foreign reserves).

Moreover, the 2008 trade shock to Korea (a 40 percent drop in export demand during the last quarter of the year) was short-lived. Exports began to recover in the first quarter of 2009 and reached precrisis level a little more than a year later, at a time when most other countries still had not recovered. One reason for the quick recovery is the large share of China in Korea's export market (24 percent, plus about 6 percent for Hong Kong); and China recovered rapidly. Moreover, Korea's market shares in China and in other regions were increasing at this time, which the author attributes to the sharp depreciation of the Korean won. Rough calculations based on regression analyses show that a depreciation of 20 percent during the crisis should result in at least a 5 to 6 percent increase in Korean exports. Thus, depreciation likely accounts for two-thirds of the differential in 2009 between the growth of Korea's exports and the growth of global trade.

However, the author emphasizes most strongly changes in the fundamentals of the Korean economy after the 1997–98 crisis and the resulting stabilizing effects during the next crisis. He argues that financial buffers in place in 2008 were critical in preventing a repetition of the 1997–98 banking crisis. Ample foreign reserves dampened the impact of sudden capital outflow in 2008 (an outflow far more massive than a decade earlier). Major companies were in a far stronger position, thanks to effective government pressure after 1997 to restructure and to lower debt–equity ratios. Korea's banks were also stronger in 2008. Finally, household debt in Korea was not a source of significant trouble, because house prices had increased far less in Korea than in Europe and the United States. He cautions, however, that prolonged expansionary policies will erode the soundness of fundamentals and therefore must be readjusted to normal settings in a timely way.

PART II INTERNATIONAL PERSPECTIVES

The first two chapters in Part II discuss financial market aspects of the international spillovers due to the crisis. Joshua Aizenman and Michael

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Hutchison, in "The international financial markets and transmission of the crisis: determinants of exchange market pressure and absorption by international reserves", focus on the adverse affects of the crisis on the external positions of countries throughout the world, especially the emerging market economies. The authors analyse exchange market pressure (EMP), measured as the sum of the percentage change in the nominal exchange rate (against the US dollar) and the percentage loss of reserves during the height of the financial crisis, from August 2008 to February 2009. Korea, for example, experienced a 51.55 percent nominal depreciation of the won and an 18.70 percent loss of reserves, resulting in a total exchange market pressure (EMP) of 70.25 percent.

The vast majority of countries experienced intense EMP: 63 countries (82 percent of the sample) experienced positive EMP, whereas the values were negative for only 14 countries in the sample. Most of the countries with positive EMP experienced depreciation of their currencies against the US dollar (66 countries), although several currencies remained stable (5 countries). All countries were affected, moreover, regardless of whether they had tight restrictions on capital flows.

Rather than attempting to identify the root causes of the shock, the authors focus on two questions: (1) how the transmission of the global shock was affected by the extent of international balance sheet exposure, financial development and financial openness of the countries examined and (2) the trade-off between exchange rate depreciation and loss of international reserves in absorbing the shock, and how the choice of a point on the trade-off was determined. The results of this study highlight the importance of the ratio of total external liabilities to GDP in accounting for exchange market pressures, and of the ratio of short term external debt to international reserves in accounting for the higher relative importance of currency depreciation in accommodating the adjustment to a given degree of exchange market pressure. The findings also corroborate the notion that the 2008–09 crisis was the first global crisis in the era of modern financial globalization, affecting practically all countries (even though the exposure to exchange market pressures varied widely).

Overall, EMP was absorbed mainly by currency depreciation, and only to a lesser extent by losses of international reserves. Aizenman and Hutchison examine the trade-off between the two, with particular reference to the responses of emerging market economies. They argue that the responses of the emerging market economies were motivated more by the fear of losing reserves and less by the fear of floating. Even though these economies had built up large international reserves prior to the financial crisis, they still relied primarily on exchange depreciation rather than reserve loss to absorb most of the EMP. Aizenman and Hutchison suggest

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that this was possibly a deliberate choice, motivated by a desire to enhance competitiveness in the face of exceptionally weak external demand.

Averages by region show that the greatest effects were felt in Eastern Europe and Central Asia (50 percent EMP). This is not surprising, given that the subprime crisis emanating from the United States was directly linked to financial institutions in Western Europe, which in turn were tightly linked through banking ties with the more fragile economies of Eastern Europe. By contrast, Africa and the Middle East fared best as a region (with the lowest EMP at only 21 percent), followed closely by Latin America (23 percent EMP) and East Asia (nearly 26 percent EMP). When arranged in three tiers by income group, the middle-income countries fared best (28 percent EMP) and the low-income countries fared worst (33.7 percent EMP).

The data also confirm the key importance of balance sheet effects in explaining vulnerabilities and adjustments. Countries with a higher ratio of total foreign liabilities to GDP were more vulnerable to the financial crisis. Countries with large balance sheet exposure (high external portfolio liabilities exceeding international reserves) responded by allowing greater exchange rate depreciation and comparatively less reserve loss.

The second chapter of Part II, by Hangyong Lee and Min-Kyu Song, asks "How did Korean financial markets get infected by the global financial crisis?" In this chapter, the authors are particularly interested in studying how financial instability in advanced countries generated such an immediate and powerful spillover effect on the Korean economy during the global financial crisis. To address this question, the authors look at heavy short-term borrowing by Korean banks and the rapid increase of Korea's external debt prior to the start of the global crisis in 2007. The resulting high level of short-term external debt increased Korea's vulnerability to the shock. Lee and Song also investigate the subsequent large-scale capital outflows from Korea.

Quarterly data for Korea's balance of payments during 2008–09 reveal a massive net capital account deficit (US$42.6 billion) in the fourth quarter of 2008, and Korean deposit-taking institutions repaid to foreigners US$48.4 billion in short-term borrowing in the same quarter. The authors discuss comparable data for previous quarters and for 2009, when the economy began to recover and financial markets regained stability. Data on total external debt likewise show a peak in the fourth quarter of 2008, although the ratio of short-term debt to foreign exchange reserves peaks in the previous quarter. An index constructed at the Bank of Korea (the systemic funding risk indicator), however, shows that very high risk prevailed even before the start of the intense phase of the crisis (the Lehman Brothers bankruptcy in mid-September 2008).

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Korea's total external debt (US$379 billion at the end of 2008) was not as large as claimed in the international press, but the reports heightened concerns about another currency crisis. The Korean government pointed out that, after deducting nonobligatory debt and debt to domestic branches of foreign banks, the Korean banks and corporations owed only US$77.5 billion, which was only about one-third of the country's foreign exchange reserves.

The authors explain the various ways in which external debt is contracted. Dividing total external debt between Korean banks and branches of foreign banks in Korea, the authors find that the share attributed to the foreign banks rose continuously from 2005 (45.1 percent) to 2009 (63.0 percent), whereas the share of the Korean banks dropped below 50 percent in 2006 and continued to decline thereafter.

The Korean government's response has been to reduce Korea's vulnerability to future shocks by introducing measures to curb excessive short-term external borrowing in normal times and sudden outflows during periods of financial instability. To decrease risk exposure in the banking system, the government is considering measures to regulate the total volume of foreign-exchange swaps by imposing a limit on the forward position, in relation to the respective bank's capital, although such a measure could seriously hamper the financing necessary for trade.

A subsection of the chapter by Lee and Song is devoted to reasons for the rapid increase in external debt between 2006 and the fourth quarter of 2008.They focus on hedging foreign exchange risks, arbitrage opportunities, domestic bond investments, lending to firms that import machinery and equipment, and the management of interest rate risks by Korean banks in a way that provided foreign bank branches with another investment vehicle.

While the first two chapters of Part II discuss financial aspects of the crisis, the remaining two analyse real aspects, international trade in particular. Menzie D. Chinn, in "Imbalances, overheating, and the prospects for global recovery", begins by asking four questions: (1) How important were global imbalances and global overheating in explaining the global crisis? (2) How did trade exposure propagate the negative shock? (3) How important was the maintenance of domestic demand in Asia (particularly in China) in protecting the global economy from an even greater downturn? (4) Are global imbalances and global overheating in need of further correction, or have they been sufficiently adjusted? The chapter is accordingly organized into sections that examine the causes of the global imbalances and their relationship to the financial crisis, the importance of trade linkages and, finally, the prospects for current account balances and overheating.

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The review of recent attempts to explain the rise of global imbalances (defined as large current account balances) includes trends in saving and investment balances, the intertemporal approach, mercantilist behavior, the global saving glut and distortions in financial markets. The author presents regression analysis that tests and throws doubt on the saving glut hypothesis.

Further regression analysis examines the importance of institutions, with particular reference to the relationship between current account balances and government budget balances. Chinn cites his joint research findings with Hiro Ito as evidence against the argument that emerging market countries (especially those in East Asia) will experience lower rates of saving once they achieve higher levels of financial development and better developed legal infrastructures. He argues that more open financial markets do not appear to have any impact on current account balances for this group of countries.

Chinn also cites joint research with Jeffry Frieden and their argument that excess saving outside the United States combined with domestic financial distortions were central to the development and extent of the global crisis. Their interpretation is consistent with the view that a resumption of expanding imbalances, without removing the distortions in credit markets, will cause another crisis, albeit perhaps in some other form. He notes that much of the US government's financial regulation package has yet to be implemented and, even when it is implemented, the financial reforms are unlikely to do more than moderate the distortions. He thus concludes that policymakers should seek to mitigate large current account balances (in either direction), as a second best policy.

The author examines the deep drop in trade flows during the 2008–09 global recession, pointing out that a large component of the decline was due to the drop in exports of manufactured durable goods. It is very difficult, however, to judge the impact of trade financing, because the purported decrease in access to trade financing occurred at the same time as the general credit freeze in the global financial system. He also examines data on the drop in aggregate demand—the traditional view of how foreign demand shocks are propagated—with particular reference to China's trade. He suggests that it is useful to distinguish different channels through which the recession spread, because the spread in the industrialized economies took place earlier than in emerging markets.

Chinn presents a simple framework to analyse overheating in combination with a trade imbalance, as a starting point for discussing the prospects for rebalancing versus overheating in the global economy. He then proceeds to examine the major advanced economies (with emphasis on the United States), along with BRICs (Brazil, Russia, India and China, with emphasis

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on China). He concludes that there is little chance of overheating in the short term in the advanced countries (where there is greater risk of deflation), whereas the possibility of overheating is more pronounced in the emerging markets. He adds that, under current policies, rebalancing of current accounts is not proceeding and that additional measures could reinforce an adjustment to sustainable current account balances with sustainable growth.

The last chapter of Part II, by Hangyu Lee, is "The great trade collapse and contraction of exports in Korea during the global crisis". The author begins by defining what economists have called "the great trade collapse" during the 2008–09 global crisis: world trade shrank far more than world GDP, an outcome that cannot be reconciled easily with standard macroeconomic theories. The recent literature on this subject offers various candidate explanations for the trade collapse, including compositional effects (due to the high share of durables in trade), internationalized supply chains and the trade credit hypotheses. These are discussed in the chapter with a focus on Korea. Other explanations (such as inventory adjustment and protectionism) are also mentioned.

Lee argues that the compositional effect is the most relevant for explaining the collapse of Korea's exports during the crisis. According to this hypothesis, the fact that demand for durable goods is more volatile than for nondurable goods, together with the fact that durable goods account for a larger share of world trade than of world GDP, implies that world trade can be more volatile than world GDP. In the case of Korea, Lee demonstrates that durable goods exports account for about 75 percent of the contraction of the country's total exports during the crisis. By extension, he argues that any country in which durable goods account for a relatively larger share of exports is likely to experience a relatively more severe contraction of exports during a global downturn. The reduction in exports during the crisis was moderated for Korea, in contrast to other countries with similar shares of durable goods in their exports, by the large depreciation of the Korean won during 2008.

There is also a clear regional effect. The rapid recovery of emerging economies helped Korea. Export data by region show that Korea's exports to emerging Asian economies (China and ASEAN) recovered faster, more strongly and earlier than those to the advanced economies (reflecting the severe recession that continued almost to the end of 2009 in the European Union, Japan and the United States).

The author cautions against arguments for a policy response that would merely attempt to change the structure of exports (for example, by promoting the cyclically less sensitive service sector). He argues that such a policy could create serious economic distortions and thereby cause significant resource misallocations.

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PART III POLICY PERSPECTIVES

The first chapter in Part III, one of the two discussing policy aspects of the crisis, is "Macroeconomic and financial policies before and after the crisis" by Barry Eichengreen. In this chapter, Eichengreen offers a set of provisional lessons concerning the roles of monetary, fiscal and regulatory policies in relation to the crisis.

First and foremost, Eichengreen argues that lax financial-sector supervision and regulation (in the advanced countries in particular) were at the center of the crisis (although the crisis had multiple causes) and that it was appropriate for postcrisis efforts by the G20 governments to focus on regulatory reform. He describes the actual accomplishments by 2010 as disappointing and falling short of measures that might otherwise have been taken by that time to strengthen prudential supervision and regulation in the wake of the most serious global financial crisis in 80 years.

Second, as a result of the crises of the 1990s, emerging markets had already learned the importance of running budget surpluses and keeping fiscal capacity in reserve. During 2007–08, by contrast, too many advanced countries entered the crisis with large budget deficits and elevated debts, and their unprecedented fiscal response created unprecedented problems of debt sustainability. Eichengreen recommends that the United States and other advanced countries take the earlier lesson to heart.

Third, Eichengreen draws attention to the importance of early and concerted intervention to resolve banking-sector problems. No aggressive fiscal stimulus will jump-start private spending in the absence of bank lending, he argues, and no banks will be lending if they need to rely on the market to recapitalize themselves. Public recapitalization is expensive and unpopular, and politicians shun it. But failing to recapitalize early will probably have serious consequences in the long run. Bad debts would ideally be recognized and written down promptly, although political and institutional factors may make this difficult.

Fourth, the author points out the lack of adequate mechanisms for international policy coordination. Countries with unused fiscal capacity could have done more to support global demand, but they failed to respond when urged to do so. Countries that entered the crisis with heavy debt loads should have been more cautious about debt sustainability and the risks of permanent damage to their economic and financial systems. Eichengreen argues that monetary easing was underutilized compared to fiscal easing, and in particular faults the European Central Bank for its reluctance to react aggressively.

Finally, the author points to the importance of longer-term historical factors. In the United States, the pendulum swung first one way and then

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the other: from free-market fundamentalism up to the Great Depression, to the strong oversight that ensued, then to the easing and elimination of restrictions in the final decades of the last century and now back to stronger regulation. During the latest crisis, the aggressive quantitative easing by the US Federal Reserve reflected memories of the 1930s and the Federal Reserve's poor performance in response. By contrast, the reluctance of the European Central Bank to pursue a comparable policy reflected memories of European hyperinflation in the 1920s and fear of a repetition.

The author also comments on global imbalances. Some researchers have emphasized the role of global imbalances in the crisis, but he does not. Instead, he questions whether policymakers should give priority to prevent the recurrence of these imbalances as a means of preventing renewed financial instability.

Eichengreen analyses macroeconomic policies of the G20 nations during three years (2008–10). He provides a series of graphs to compare the sizes of stimulus packages in individual G20 countries in relation to their rates of growth slowdown (where the expected tendency is found), as well as to shares of government revenue in GDP and sizes of government debts (where a weak or no relationship is found). Data on monetary policy confirm that the central banks of countries suffering the most pronounced slowdowns were the most inclined to cut interest rates, although they were not always rewarded with lower long-term real interest rates. Other data suggest that exchange rate adjustment played a positive role in global adjustment. He evaluates some of the results of fiscal stimulus by various countries (at least those apparent in mid-2010) and points out, admittedly with hindsight, weaknesses and possibly superior policy responses.

The second chapter of Part III, by Hyeon-Wook Kim, is "Macroeconomic policies of Korea to cope with the crisis". It discusses the macroeconomic policy aspect, but focuses on the case of Korea. This chapter examines macroeconomic trends, government policies, asset prices and financial markets prior to the 2008 crisis, evaluates government policies implemented during the crisis and makes related policy recommendations for the postcrisis period.

The author characterizes precrisis Korean fiscal policy as expansionary during 2003–04, close to neutral during 2005–06 and closer to contractionary in 2007. The government limited its intervention in foreign exchange during this period, which allowed won depreciation and thereby helped to buffer the external shocks of 2008. He also examines asset prices and points out that, despite the rapid expansion of household credit and sharp rise in house prices, Korea differed from the United States and European countries, because the Korean households' bubble ("credit card bubbles")

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burst in 2003 and was followed by economic contraction at that time. The episode was long past by 2008.

To examine the housing and stock markets more closely, Kim uses a weighted average of the house and stock price indexes to create an index of asset prices covering 1991 to 2010. The index shows that overall asset prices were usually driven by house prices during the 1990s, but that after the 1997–98 crisis, the effects of stock prices were more important (reflecting the great expansion of the stock market). The analysis shows, however, that the upward trend of asset prices starting in 2005 cannot be attributed fully to inappropriate monetary policy (although he notes that the economic situation could have been better if monetary policy had been contractionary enough to alleviate the upward pressure of asset prices).

Kim then turns to the government policy responses in 2008. The fiscal stimulus package was larger (in proportion to the size of the economy) in Korea than in any other OECD country. The author discusses the contribution of this package to Korea's GDP growth from late 2008 to 2010 and concludes that the fiscal stimulus played a successful pump-priming role during the crisis. He credits further government efforts (to implement expansionary monetary and fiscal policies) with moderating the serious contraction at the beginning of 2009 and with promoting the country's fast economic recovery. A major factor in the recovery was increasing demand from Korea's trading partners. He also examines the Bank of Korea's low-interest-rate policy, facilitated by exchange rate flexibility, which led to consumer price index inflation peaking in mid-2008 but subsequently stabilizing at about 2 to 3 percent.

The author then discusses numerous concerns about the postcrisis period and makes recommendations for an appropriate exit strategy for Korea, including more restraint of government spending, the prompt phasing out of temporary fiscal incentive measures, the expansion of the government's revenue base and structural changes in the framework of fiscal policy. In addition, in order not to allow inflationary pressure to build for too long, the central bank should begin an upward adjustment of interest rates as soon as possible.

The third chapter of Part III, by Marcos Chamon, Atish Ghosh and Jun-Il Kim, is "Are all emerging market crises alike?" It is one of two chapters in the volume on the relationship between precrisis fundamentals and crises. The authors of this chapter propose a general framework for a more unified approach to crises in emerging market economies (EMEs), based on the confluence of an underlying vulnerability and a specific crisis trigger. The vulnerability is typically a balance sheet mismatch (maturity, currency, liquidity) that may persist for many years until a crisis is triggered by a particular event. Such vulnerabilities can therefore be readily

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identified, provided appropriate data are available. By contrast, the event that triggers the crisis may take many different forms (economic or political, domestic or external) and is likely to be highly unpredictable. The EMEs that suffered the worst performance (that is, experienced their own domestic crises in 2008–09) were indeed those that had underlying vulnerabilities. By contrast, even EMEs that were hit hard by global financial crisis (through trade or financial links with advanced economies) came through relatively unscathed if they did not have these vulnerabilities.

The authors tabulate major EME crises by country, listing underlying vulnerabilities and plausible triggering events. They find great similarity of the underlying vulnerabilities but dissimilarity of the triggers. The underlying vulnerabilities are nearly always maturity or currency mismatches on public or private sector balance sheets. By contrast, the triggers vary widely and include political uncertainty, external shocks and perceptions about policy inconsistencies or insufficient political will.

They point out that balance sheet analysis is data intensive. They therefore propose a simpler approach of creating indicators of vulnerability that are broadly related to currency and maturity mismatches. They then define a crisis as a capital account crisis involving sudden stops in capital flows. Using this definition, they construct a table of individual crises in a 50-country sample from 1994 to 2006. They consider five potential explanatory variables for each of three sectors (external, public and financial) and present summary information on the statistical significance of the explanatory variables from their regressions.

Chamon, Ghosh and Kim use this framework to quantify vulnerabilities. By 2008, the EMEs in the sample were somewhat less vulnerable to crisis than in the past, with an average crisis probability of 4.6 percent in 2008 (compared with 5.2 percent through 2007). The time series of average EME crisis probability is plotted by region from 1995 to 2010, revealing long downward trends in Asia and Latin America during the years leading up to the 2008 crisis, in contrast to a rising trend and peak in Eastern Europe.

Contrary to the general perception that improvement of the public finances in Latin America and improvement of external indicators in East Asia were responsible for lower vulnerabilities in those regions, the authors' decomposition of factors explaining the falling vulnerability scores points mainly to improved external indicators in both regions. In Europe, it was mainly deterioration of the external indicators that resulted in higher estimated vulnerability.

Further regression analysis, examining the change in real GDP growth in 2008–09 as a function of estimated vulnerability, reveals that the expected correlation is statistically and economically significant. That is,

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each percentage point increase in predicted crisis probability in the index for 2008 would have lowered growth by 1.82 percentage points in 2008–09. Even controlling for other factors, which are ignored in the regression, the index continues to be highly significant.

The authors also look closely at capital flows and find that the extent of capital outflow was largely unrelated to precrisis vulnerability (although a few outlying countries stand out as exceptions). They also argue that the "indiscriminate" pattern of outflows is plausible and tends to support anecdotal evidence that the large capital outflows from Korea and Brazil, for example, occurred not because investors were worried about vulnerabilities, but because the larger and more liquid markets in these countries allowed investors to withdraw funds from them more easily than from other countries. Even taking this factor into consideration, the authors conclude that precrisis vulnerability is the most important determinant of how EMEs fared, once the crisis had been triggered.

The authors caution that crisis prediction in itself is a fool's errand, because it is most likely impossible to predict specific triggers to crises. They recommend that policy efforts instead be directed at reducing or eliminating the underlying vulnerabilities, which is the approach of current efforts for crisis prevention, such as the early warning exercise of the International Monetary Fund and Financial Stability Board.

The last chapter of the volume, "Structural fundamentals of Korean corporations: this time was different", by Kyung-Mook Lim, discusses the effects of precrisis fundamentals in Korea's corporate sector. The author of this chapter provides basic indicators to compare the performance of the Korean economy as it weathered the two crises in 1997–98 and 2008–09. During 1997–98 fixed investment declined more than 20 percent, accompanied by massive lay-offs. It took two years for investment to regain the precrisis level, at which time employment had not yet fully recovered. In the 2008–09 crisis, by contrast, fixed investment declined only modestly, and unemployment even less, and both recovered in less than a year.

To explain the rapid recovery of the Korean economy from the second crisis, the author outlines numerous factors that have been discussed in the literature, notably, effective fiscal and monetary policies and the recovery of external demand due to the rapid recovery of developing countries such as China. He then turns to the Korean corporate sector and argues that fundamental changes, made as a result of the first crisis, enabled the economy to absorb the external shock effectively, to weather the 2008–09 crisis in a different way, and to rebound quickly.

In particular, Lim focuses on the restructuring of Korea's big corporations (both financial and non-financial): the improved corporate governance and the market-monitoring mechanism that emerged from

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the post-1997 reforms, the decline in the high debt–equity ratio and the improved liquidity of corporations. His detailed analysis first concentrates on the longer-term change in the debt–equity ratio. Previous analysis used data from the 1990s and immediate post-1997 period to argue that the big corporations were successful in reducing their ratios under pressure from the government. Building on that work, the author uses data up to 2009 to analyse the detailed process of reducing the ratio and its effects on investment and employment. Lim also notes that market pressure (especially by foreign investors) was stronger in the second crisis than in the first, as the post-1997 capital market liberalization raised foreign ownership of listed companies to 37 percent by 2006 (compared with 13 percent in 1996).

The author uses a database originally constructed by the Korea Listed Companies Association and refined by WISEfn Corporation, which covers a sample of about 8800 companies. For comparisons of key factors such as the debt–equity ratio and liquidity, the author contrasts the entire sample with (1) the large corporate groups (*chaebols*) and (2) the remaining listed companies. The findings highlight the post-1997 successes of the Korean government in focusing on the *chaebols*.

By examining the capital structure of companies from 1990 to 2008, Lim demonstrates how the listed companies managed to reach the government's goal: a debt–equity ratio of about 200 percent (down from the precrisis level of about 400 percent for *chaebols*). This was achieved in part through aggressive efforts to reduce total debt up to 2002, along with success in issuing seasoned equity. But success was also due to a change in accounting: switching asset valuation from the historic-cost basis to the fair-market-value basis. From 2004 total debt began to rise again, but companies were able to keep the lowered debt–equity ratio relatively stable, mainly due to the rapid increase in retained earnings (continuing even through the end of the dataset in 2009), which is a reflection of improved company profitability. The author makes the point that "too big to fail" is no longer a valid argument in Korea, primarily because the debt–equity ratio of the *chaebols* (which had been much higher than that of other companies in 1997) converged to a similar level with the ratios of the other listed companies after 2002. The near-disappearance of this difference is confirmed by the regression results from a 1990–2009 dataset.

In the immediate post-2008 crisis period, neither debt–equity ratios nor debt levels changed significantly, despite the global crisis, which implies that Korean listed companies had no urgent need to reduce their debt burdens at this time, in contrast to the post-1997 period. The author suggests that the well-controlled response of the corporate sector to the 2008–09 crisis was the main factor in preventing the huge external shock of 2008–09 from being propagated to other domestic sectors, and thus

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that the effects of the global crisis were different this time because of the improved financial soundness of the major Korean companies.

The author also points out that the growth rate of investment in Korea was sluggish in the post-1997-crisis period, but still very high (at around 30 percent of GDP) in comparison with other OECD countries (where the average was closer to 20 percent). Although some other authors claim that the current rate is lower than the optimal level, Lim questions whether a further increase in the investment level in Korea is either possible or desirable. He also points out that the post-2003 rate has been much higher for listed Korean companies than for nonlisted ones, which implies that the sluggishness of growth is due mainly to nonlisted (mainly small and medium-size) companies (SMEs). Thus, a major remaining task for the government (albeit a politically difficult one, since the SMEs employ most of the labor force) is to expand the corporate restructuring process to include the SMEs.

CONCLUSION

We began this volume by posing many challenging questions regarding the global crisis. To those, we found some tentative answers. For example, Michael D. Bordo and John S. Landon-Lane conclude that the recessions associated with the 2007–08 financial crisis were indeed unprecedented in that output losses were at the *low* end in comparison with previous major banking crises, probably thanks to the unprecedentedly bold macroeconomic policies. As for the causes of the crisis, Barry Eichengreen argues that lax supervision and regulation (in the advanced countries in particular) were at the center of the story, although there surely were multiple causes. Marcos Chamon, Atish Ghosh and Jun-Il Kim find that different balance sheet vulnerabilities well explain different postcrisis performances across countries. This finding about the relationship between precrisis fundamentals and postcrisis performances is reconfirmed by Dongchul Cho and Kyung-Mook Lim from the comparisons of the Korean economy between the 1997–98 Asian crisis and the 2008–09 global crisis.

Of course, the results of this volume cannot deliver the final answers to all the questions addressed. At the same time, many important issues remain to be explored. For example, what sorts of unconventional monetary policies were developed and deployed during the crisis, and how effective were they? Should the crisis lead to a reassessment of fiscal policy effectiveness? What are the implications of the crisis for international liquidity and the design of the international monetary system? What are the implications of Asia's rise in the global economic landscape, particularly the rise of China,

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which took over the position of *buyer of last resort* from the United States over the course of the recovery? How should one understand the effect of crises on policymaking processes, apparently leading the ideology of the free market to wane and arguments for regulation to wax in prominence? In this regard, the contribution of this volume should be found in taking a step forward and inviting subsequent research in these areas.

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