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Macro-Financial Linkages in IMF Research

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Abstract

This study reviews the research on macro-financial linkages at the IMF since 2005. It found that from 2005 to mid-2007, the amount of IMF research on macro-financial issues was limited and the rather small amount of such research that was potentially relevant was not particularly well integrated with the Fund's operational work. From mid-2007 through 2008, IMF research and operational work began to concentrate more on macro-financial-related issues. Still, even by the end of 2008, the research effort in this area was insufficient relative to its importance to the IMF's operational needs. Moreover, the study found that IMF operational work made little use of Fund research on macro-financial linkages, and the main messages from research in this crucial area remained difficult to discern.

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ABBREVIATIONS

AFR	African Department
APD	Asian and Pacific Department
BCP	Basel Core Principles for Bank Supervision
DSGE	dynamic stochastic general equilibrium
EUR	European Department
FAD	Fiscal Affairs Department
FDMD	First Deputy Managing Director
FSAP	Financial Sector Assessment Program
FSIs	financial soundness indicators
G-20	A grouping composed of major industrial countries and systemically important developing and emerging market countries
GFSR	*Global Financial Stability Report*
HRD	Human Resources Department
ICM	International Capital Markets Department
INS	IMF Institute
LIC	low-income country
MAE	Monetary and Exchange Affairs Department
MCD	Middle East and Central Asia Department
MCM	Monetary and Capital Market Department
MED	Middle Eastern Department
MFD	Monetary and Financial Systems Department
REO	*Regional Economic Outlook*
RES	Research Department
SIP	selected issues paper
WEO	*World Economic Outlook*
WHD	Western Hemisphere Department
WP	working paper

I. Overview and Main Conclusions

1. This paper assesses research conducted at the IMF in the period 2005–08 in the area of macro-financial linkages. The questions examined include: whether the IMF conducted research on how to integrate financial sector considerations into the standard macro analysis; did it cover linkages and feedback in both directions (i.e., from the financial sector to the macroeconomy, and vice versa); was this research adequate and potentially useful for the operational work of the IMF; and was it used in practice.[1]

2. For the purpose of this review, research includes working papers (WPs), journal articles, and books or chapters, as well as research that is included in the Fund's *World Economic Outlook* (*WEO*) and *Global Financial Stability Report* (*GFSR*). The assessment of the usage of research in operational work is limited to the Article IV documents and the selected issues papers (SIPs) produced on a sample of 15 countries.[2] It is important therefore to clarify that FSAPs, which might utilize macro-financial research, were not included in this review.

3. In evaluating the work on macro-financial issues, the focus is on the extent to which IMF research helped highlight vulnerabilities that would help staff understand the spillovers from the macroeconomy to the financial sector (and vice versa), and/or included explicit tools to assist in modeling different risks. This review also examines the extent to which research explored and highlighted the risks associated with securitized finance, the shift over the years in banks' reliance on markets for liquidity, and the dangers of rapid credit growth, or vulnerabilities that might build up after a period of low interest rates. Other examples of the type of studies sought are those that would help Fund staff understand and analyze credit crunches, or models that could help estimate the impact of financial sector variables on credit and on real activity. Given time constraints, the review omitted more international macro-financial issues, such as the transmission of shocks between countries, though this is certainly an area of interest to the IMF and one that has been featured, for example, in *GFSRs*.

4. The review shows that in the period 2005 to at least mid-2007, the amount of IMF research on macro-financial issues was limited.[3] Work had been done from the early 2000s on financial sector indicators and also on stress testing of financial institutions' balance sheets, but much of the latter was essentially micro-prudential, hence neither body of work

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[1] Terms of Reference, June 2010.

[2] Although in the general context of IMF output SIPs are treated as research, for the purposes of this study they are treated as operational documents.

[3] Crowe and others (2010) have published a collection of research by IMF economists produced in the last ten years on macro-financial linkages, some of which are included in this review.

was able to detect systemic vulnerabilities threatening the overall economy. The relatively small amount of macro-financial research that was potentially relevant seems not to have been well integrated with the Fund's operational work. Operational documents reviewed rarely referenced IMF research and, although there were some exceptions, the selected issues papers produced by the Fund over the period tended to concentrate on a wide variety of topics other than medium-term macro-financial linkages that may be sources of vulnerability. Both explicit citations as well as clear influence by or use of concepts, tools, models and/or analytical approaches were employed as evidence of the utilization of research in operations, though only citations enable easy quantification.

5. By the second half of 2007 and even more so by 2008, IMF research and operational work on macro-financial-related issues increased significantly. For example, research (in 2008) on the impact of financial conditions in the United States, proxied by data from the U.S. Federal Reserve Board's survey of bank lending practices, explores the impact of tightening loan standards on GDP. Although it was utilized in operations that were outside the evaluation period, it is worth noting, given the possible lags between the creation and usage of research, that the findings were incorporated in the 2009 Article IV report for the United States. Other good examples of research are available, such as Segovian Basurto and Padilla (2006), Tamirisa and Igan (2008), and Classens, Kose, and Terrones (2008), but none of these were utilized during the evaluation period in country documents reviewed in this background study.

6. In operations, the emphasis on macro-financial work in the documents examined was slight during the overall period under review and in particular during 2005 to mid-2007. Part of the explanation no doubt was the economics profession's lack of attention to financial sector variables in standard macro models until well after the crisis began. However, the lack of attention to macro-financial issues during the first part of the review period seems even more pronounced than in the economics profession at large. As suggested in the internal 2007 "Report of the Taskforce on Integrating Finance and Financial Sector Analysis into Article IV Surveillance," there might be some resistance to the integration of financial variables into macroeconomic analysis in the Fund, due to staff backgrounds and training (consistent with the bias in the broader economics discipline), although it should be noted that since the Taskforce Report was issued the IMF Institute has increased its training in this area.

7. The next section discusses the types of macro-finance research reviewed and the specific outputs covered. Section III contains an examination of this research with some examples if not a paper-by-paper evaluation, while Section IV looks at the extent to which macro-finance research is utilized. The concluding section offers some observations as to how both the supply and demand side of the research production and utilization process might be improved. Fortunately the Fund appears to be in the process of significantly increasing its attention to this area; time will tell if it succeeds in becoming a leader in the area.

II. Definitions and Research Reviewed

8. This review included an examination of the IMF's macro-finance research. In particular, it examines whether research may have generated tools to help link better developments in the financial sector and its effect on the macro economy and vice versa, and the channels through which this might happen. The issues of concern include not only how risks from securitization might affect the economy—in addition to how they might spread throughout the financial system—but also the impact of rapid credit growth on household, corporate, and intermediaries' balance sheets and subsequent knock-on effects. Research on bubbles and credit crunches and, more generally, how these affect economic activity was also sought.

A. Understanding Macro-Financial Linkages

9. "Macro-financial linkages," as that term is used in this review, refers to the interaction between the financial sector and the domestic economy. Although it can also be used to examine linkages from international financial flows to an economy, or from an economy's financial system to the rest of the world, this review focuses more on domestic linkages, because it was the sense of the 2007 "Report of the Taskforce on Integrating Finance and Financial Sector Analysis into Article IV Surveillance" that the Fund's analysis of the interplay between the domestic finance system and the domestic economy was less developed than was deemed to be appropriate in light of the IMF's mission.

10. In post-crisis discussions, it is widely acknowledged that the economics discipline did not do an adequate job of integrating financial and macro variables in the toolkits of macroeconomists. To be sure, even standard texts used in undergraduate money and banking courses[4] emphasize various monetary policy transmission channels, such as balance sheet and bank capital channels. These channels posit that bank loans are a function of the net worth of the bank itself and the borrower; thus changes in asset prices affect both bank and borrower net worth, and therefore the ability and/or desire of banks to make loans. A rise in asset prices would boost the value of bank capital (e.g., by raising equity prices, including that of banks, directly and/or indirectly by reducing nonperforming loans) as well as the value of collateral, and lead to an increase in loans, while a fall in asset prices would do the reverse.

11. However, at the graduate level and in the papers in many top journals in the field, macro-financial linkages have received less attention. It is important to acknowledge that finance and macroeconomics have long proceeded in isolation from one another, in part due to the drive to use mathematical models and the related need to simplify these as much as possible. As Paul Krugman put it, "As I see it, the economics profession went astray because

[4] See those by Mishkin or Cecchetti, which together dominate this field.

economists, as a group, mistook beauty, clad in impressive-looking mathematics, for truth."[5] For years, economists were trained in models without money or a financial sector; and until the late 1990s, no text on development economics even included a chapter on financial systems. Macroeconomics courses in many graduate schools until very recently relied on dynamic stochastic general equilibrium models that contained little in the way of a financial sector, so it was possible for macroeconomists to have virtually no understanding of this sector and macro-financial linkages. Recent economics graduates would be familiar with the Bernanke, Gertler, and Gilchrist (1996) approach—in which financial market conditions can greatly amplify initial shocks (their "financial accelerator")—which for example would predict a more difficult recovery from the bursting of an asset bubble than would otherwise be the case. But those models were out of favor with the efficient-markets thinking that dominated the profession.

12. As noted, macro-financial linkages can include those coming through the international financial system via a variety of channels (interest rates, risk premia, currency or bank runs, etc.) to impact the domestic economy. Usually the domestic financial system is affected as a result. For example, if banks have borrowed in foreign exchange and lent in domestic currency, then a devaluation of the local currency could lead to their insolvency (or at least to a capital constraint on lending); if they passed this risk on to their borrowers (i.e., by lending to them in foreign currency, and hence converting foreign exchange risk into credit risk), a devaluation would hurt borrowers who lacked foreign exchange receivables and would also hurt the banks, to the extent that nonperforming loans rose. These channels have received little attention from macroeconomists, who implicitly or explicitly assumed that risks were being optimally shared. Meanwhile, many finance PhDs have been trained in the use of mathematical finance models because, in the words of a former American bank robber, "that's where the money was." These models, however, favored analyzing risks specific to individual instruments and/or institutions, and not risks to the financial system at large. The belief that risk was being divided and parceled out to those who could best bear it was especially dominant in the profession. Unfortunately, attention was not being paid to the changes in compensation practices, which are now known to have rewarded the volume of activity undertaken (loans originated, the number of securities created, or rated, etc.) without attention to the risks being generated.

B. IMF Research Reviewed

13. Table A1 in the Annex lists the research work reviewed for this study, with the working papers sorted by the year released. The research WPs and the analytical chapters of the *WEO*/*GFSR* were selected as examples of macro-finance research (or outputs that included macro-finance research) in consultation with IEO, beginning with a longer list

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[5] Paul Krugman, "How Did Economists Get It So Wrong?" *New York Times*, September 2, 2009.

provided by IEO as those most relevant to the topic of macro-financial linkages. After examining closely those most related to macro-finance from 2005 to 2008, the list was extended to include a few additional WPs from 2004 for review, in light of the likely lag between research and its inclusion in more operational work. As it turned out, most of these early WPs were not on macro-financial linkages as defined here. An original plan was to review research (if not on this list) that was cited most in operational work, but as noted below, in practice no macro-finance research papers were being regularly cited in operations.

14. It should be clear that this review of research on macro-financial linkages is selective, so there may be relevant papers not included here. However, in searching through the titles of all 1,130 working papers released between 2005 and 2008, I only found, in addition to those listed in Table A1, 15 that looked relevant to domestic macro-financial issues. Still, just the papers listed in Table A1 were part of this review.

15. Only about half of the papers listed in Table A1 seem highly relevant to the crisis (see para 16). As a result, taking the papers from Table A1 and adding the other 15 that appeared from their titles to be possibly relevant to macro-financial issues, means that perhaps only 2–3 percent of research that the Fund released in working paper form during the review period was in the area of macro-finance. This figure appears small in relation to the potential importance of the topic for IMF operations. It might also explain the comments received in IEO interviews: when asked about macro-finance research in the Fund, common responses were that "this was a new area for the Fund," or "wasn't aware of any until recently."

16. Note that for research papers released after the middle of 2008, there would have been relatively little time for such work to be incorporated into operations during the period under review. Staff would have needed time to identify relevant research and acquire any necessary training to implement this work in operations. Still, a review of these later papers was useful in forming an opinion of the relevant work that was in the pipeline, and accordingly they were included in the review.

III. Overview of Fund Macro-Financial Research

17. In this section I comment on the work on macro-financial linkages that seems to be of greatest operational usefulness for member countries. As shown in Table A1, much of the research issued in 2004–06 was not on domestic macro-financial linkages but rather focused on long-run growth (Abiad and others, 2004; Edison and others, 2004), exchange rates and/or capital account opening (Bulir, 2004; Tamirisa, 2004; Mercereau, 2004; Tytel, 2004; Arvai, 2005; LeFort-Varela, 2005; Lane, 2005; and Kose and others, 2006), and fiscal policy (Jaeger, 2004). Some of the other early papers listed are more conceptual in nature—for example, on how to define and safeguard financial stability. One (Jones, 2004) provides an overview of the stress testing process, which would be relevant for readers unfamiliar with the process but would not enable them to engage in this exercise itself; moreover, the paper

asserts but does not show the value added from this process. It might be, for example, that stress tests are useful in getting bankers and/or supervisors who were not doing so to think about risk, but that their predictive value is less certain.

18. One of the early papers on the list (Dell'Ariccia, 2005), on "The Real Effect of Banking Crises," is a very good example of useful research on macro-financial linkages, as it finds evidence on the importance of the lending channel when banks are in distress. Although this research would not have been of direct applicability in operations in the run-up to the crisis, it could have sparked interest in factors that cause financial distress, leading to more focus on the warning signs thereof, etc. An understanding of the importance of the lending channel could also have helped staff appreciate the downside risks from the crisis and the likelihood of a slower recovery the greater the impairment of the balance sheets of the financial, household, and corporate sectors. The paper did not, however, provide a specific tool for operations staff, nor was this its focus. Another relatively early paper that appears relevant is that on "The Quality of Financial Policies and Financial System Stress" (Das and others, 2005).

19. Das and others (2005) and a later IMF paper on the same theme raise a broader issue about how to handle conflicting results from research. The first paper provides an index of the quality of financial policies, drawing on the assessments of compliance with the Basel Core Principles for Bank Supervision (BCP) and the IOSCO Objectives and Principles of Securities Regulation. In looking at the impact of the quality of financial policies, the dependent variable it uses is an index of financial stress that is not widely used by researchers, and the authors also are unable to take account of other institutional features. A later paper by Detragiache and Demirgüç-Kunt (2010) that uses a significantly larger sample of countries, includes institutional variables, and uses z-scores (a commonly accepted measure of risk), confirms instead other research that shows that the Basel Core Principles Assessment scores do not predict bank risk. Moreover, the most recent crisis confirmed the latter findings: distress was concentrated among the better performers on BCP assessments. According to a recent report by the Governor of the Central Bank of Ireland (Central Bank of Ireland, 2010), bank supervision performed poorly in the years leading up to the crisis, yet Ireland had strong results on its BCP assessment (and the crisis was not signaled in the 2006 FSAP Update). So when there are conflicting results on issues that are important for the Fund, IMF Management needs to weigh in with a judgment or demand more work to resolve disputes up to the point at which it feels comfortable making decisions on the basis of existing results. In this case, the Fund may or may not want to try to push for changes in the Core Principles exercise or even reallocate staff if the exercise cannot be made productive.

20. The point of this example is that when there is significant research lessons, from research carried on either within or outside the Fund, operational work that blatantly ignores research findings tells researchers that their work is not valued, making it more difficult to attract and motivate researchers in areas deemed to be important. Also, when Management ignores the operational lessons from research, based on my experience in several

organizations, the response of researchers is to work on their own priority areas, rather than those that should be the priority of the organization. Finally, neglect of research findings by Management tells operational staff that they can safely ignore research.

21. Another example about the handling of research findings concerns the pricing of deposit insurance. Research that was originally issued in 2002, prior to the crisis and prior to the evaluation period, had shown using several different methodologies that in many cases, deposit insurance is underpriced (Laeven, 2008, originally released as World Bank working paper in 2002). IMF operations in the 1990s and 2000s recommended deposit insurance but the underpricing of deposit insurance may have contributed to the worsening of the crisis, reducing market monitoring and leaving governments with a larger bill for covering losses in the banking sector. Regardless of where research originates, researchers should have the responsibility for flagging important results in areas that are critical to the IMF's mission to Management. In this case it would have been natural to investigate whether changes in the financial sector were leading to less appropriate pricing of deposit insurance, for example, whether greater risk taking and higher leverage by banks should have required a higher deposit insurance premium—an example of potential macro-financial research that could have had important policy implications for the IMF but that as far as could be determined in this review did not occur.

22. By 2006, a few more papers with macro-financial implications had been issued. Dell' Ariccia and Marquez (2006), on "Lending Booms and Lending Standards," show how a seeming reduction in information asymmetries leads to a lending boom and a lowering of bank lending standards. This idea was not new, of course, having been discussed in Kindleberger's *Manias, Panics, and Crashes* (1978).[6] But the paper's theoretical approach should have provided ammunition to counter the reigning "efficient markets" thinking, in which bank lending behavior would be assumed to be optimal. Basu (2006) proposes a framework for dynamically projecting forward the banking system's balance sheet, with some consideration of the effect of aggregate macroeconomic variables, though this paper did not include any new tools.

23. Work by Segoviano-Basurto and Padilla (2006) on quantifying portfolio credit risk and macroeconomic shocks is an important paper that comes with an application to the Danish Financial Sector Assessment Program (FSAP). Their methodology permits the probability of default to be modeled as a function of macro and financial variables, and allows for an early recognition of risk as macro conditions change. Again, it was not cited in country work but likely was incorporated into other FSAPs. It would have been interesting to see whether country teams agreed with the range of macro assumptions that were made in this approach, or whether they used it to run scenario analysis.

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[6] And later in Reinhart and Rogoff's 2009 analysis of historical booms and busts, *This Time Is Different*.

24. The early *GFSR* and *WEO* chapters reviewed—both from Fall 2006—also did not contain research tools for operational staff. The *GFSR* chapter on household credit growth in emerging markets took the hardly controversial position that this growth was a positive development from a very low base but that care, presumably by borrowers, lenders, and authorities was needed as leverage ratios increase. The *WEO* chapter on how financial systems affect economic cycles attempted to measure and review the growth of "arm's-length" finance, looking at differences in how households use their homes to borrow, the impact of changes in asset prices on household spending, changing corporate financing patterns, etc. One of the innovations in this chapter is an index of arm's-length financing and its effect on behavior. Certainly the chapter contains a number of messages that could encourage country staff to consider how the economy on which they are working would rate, and how arm's-length financing plays out in practice. But the overall message from the chapter is a bit muted:

> "For example, under a more arm's-length system, households are able to access a larger amount of financing and seem better able to smooth consumption in the face of temporary changes in their income. This may have contributed to the reduction in consumption volatility over the business cycle. In more arm's-length systems, however, households appear to be more vulnerable to swings in asset prices, implying larger effects on demand from major asset price booms and busts. This effect, however, may be countered to some degree by the fact that the amplitude of swings in asset prices may be lower in more arm's length systems."

25. The last sentence, unfortunately, though understandable in view of the boom prior to the crisis, turned out to be incorrect—the swings were much greater directly as a result of securitization, as more information was lost in the originate and distribution process and leverage increased. Also, greater attention might have been devoted to the drivers of the more to "arm's length" financing, namely the ability to avoid capital requirements and also to generate fee income. Attention to the loss of information and the distortion of incentives in favor of growing the volume of activities, without due attention to risk, would have led to a different conclusion in the report and possibly greater attention to risks by operational staff. Concrete recommendations (e.g., implementing an overall leverage requirement that consolidates off-balance-sheet exposures, as has been done in Canada) were not made, and the chapter merely offered the general view that regulation would need to adapt.

26. It is interesting that not more papers were produced in 2007 on macro-financial linkages, particularly as the warning signs of the crisis began emerging in 2006, when real estate markets in several countries peaked. Babihuga (2007) carries on earlier work on financial soundness indicators (FSIs), looking at how those vary with macro variables. This paper says it is the "… first attempt to explore the macroeconomic determinants of FSIs using a large panel dataset." Given that these indicators have been in use since 2002, it is puzzling that it took so long to investigate their links with macro variables. Babihuga's

confirmation that FSIs fluctuate with the business cycle is not surprising, but the paper does not address the issues of which FSIs are most sensitive to the cycle, controlling for the structure of the financial sector, or of which if any might be helpful in predicting macro variables.

27. By 2008, the amount of IMF research in the macro-finance area had clearly increased. Igan and Tamirisa (2008) investigate the extent to which weak banks had led the lending boom in emerging Europe.[7] Interestingly, they do not find that rapid loan expansion weakened banks, or that weak banks were leading the way in their sample. However a critical feature is that their data set is for the period 1994 to 2004. The problem with rapid credit growth and, even more, Ponzi finance, is that the weaknesses do not show up until the boom is over (hence, Warren Buffett's famous saying, "You don't discover who is swimming naked until the tide goes out"). This is not a critique of the authors, but rather illustrates the need to extend most macro-financial research over at least a couple of business cycles before having confidence in the conclusions—and therefore the importance of sustaining macro-finance research even in a period of "Great Moderation." Nor do the authors split their sample to isolate the countries with quite high credit growth (the Baltics), finding that weak banks did indeed lead credit growth there. Thus, it might well be that in countries with more restrained credit growth, some feature of the institutional environment, such as better regulation or better market monitoring, acts as a check on weak banks' growth. This research is certainly worth pushing further.

28. In 2008, several papers by Carabenciov and others were released, using a small quarterly multi-country model with some financial sector linkages. Although a key goal of this research effort is to analyze cross-border financial and macro linkages, the work does begin to flesh out a financial sector. Unfortunately, it does so mainly through the U.S. Federal Reserve Board's Senior Loan Officer Survey of bank lending practices. Lending practices are a potentially important variable but one that still leaves much of the financial sector out of the model. Moreover, as was seen during the crisis, loan officers' views of the economy and, hence, their own behavior, are subject to very rapid revision, and one that cannot be predicted if their opinions are treated as exogenous. Still, this research effort is potentially useful, and it will be interesting to see if its conclusions are picked up by operations staff. As the papers were all issued in 2008, it would have been premature to expect an impact on operational work during the review period.

29. By the end of 2008, an important paper was issued by Claessens, Kose, and Terrones on "What Happens during Recessions, Credit Crunches, and Busts." This paper focuses on the interactions between macro and financial variables, concluding that recessions associated with credit crunches and housing market collapses tend to be significantly deeper and longer

[7] Unfortunately, they did not look at Ireland, where there would have been a very clear example of a weak bank leading the boom and even potentially encouraging other large banks to step up their mortgage lending.

than otherwise. Equity price collapses tend to be followed by shorter recessions. This line of research is fully consistent with the Bernanke view that "banks are special," dating back to his work on the Depression. An implication of this research is that stronger policy responses are called for when the banking system is in distress. Late 2008 also saw the release (actually, an updating and extension) of a database by Laeven and Valencia. These data are important because they permit a detailed investigation of crises.[8]

30. By 2008, the *WEO* and *GFSR* had increased their attention to macro-financial linkages. The April *GFSR* that year on "Market and Funding Illiquidity: When Private Risk Becomes Public," is mostly descriptive of the shift from banks holding their own liquidity to relying on the markets to supply it. This shift dates back to the decline of reserve requirements in the 1970s and 1980s, though it was significantly furthered by more recent innovations. The same chapter also discusses liquidity spirals—the phenomenon that as more intermediaries call on the market for liquidity, the supply of liquidity shrinks, because each institution fears it could be the next one to need it themselves. The authors warn that these spirals could become more prevalent in a world in which many institutions are relying on the market, and they recommend more attention to liquidity management practices in the FSAP. This paper clearly would have helped IMF staff better understand spillovers from the financial sector to the real economy. To be sure, it would have had a greater potential impact had it been issued earlier.

31. The April 2008 *WEO*, in Chapter 3, looks at "The Changing Housing Cycle and the Implications for Monetary Policy." This chapter notes the role of homes as collateral for borrowing and how this increases the financial accelerator, so that in countries where this phenomenon is occurring, housing prices will have a greater impact on the economy. In effect, as the authors note, the transmission mechanism for monetary policy thereby changes: instead of taking effect mostly through the impact on interest rates and thereby on residential investment, monetary policy operates more through housing prices. This change, for example, explains a key difference in economic forecasts today, as forecasters who put more weight on the housing-price channel expect a slower recovery where housing price decreases have wiped out collateral values and thus should be expected to restrain consumer spending. Echoing the paper of then-Federal Reserve Governor Mishkin at the August 2007 Jackson Hole conference, this increased sensitivity of the economy to housing justifies a more aggressive response of monetary policy to a downturn in prices.

32. By Fall 2008, the crisis was in full swing, following the collapse of Bear Stearns the previous March, the takeover of Fannie Mae and Freddie Mac that summer, and then the September failure of Lehman Bros., the takeover of AIG, and the creation of "bailout" programs in a number of countries. Both the *GFSR* and the *WEO* of October 2008 focused on

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[8] In fact, the same two authors (Laeven and Valencia, 2010) have released an improved version of that database and used it to investigate bank resolution and compare interventions with earlier crises.

the impact of financial stress. The former (in Chapter 2, "Stress in Bank Funding Markets and Implications for Monetary Policy") looked at the microstructure of interbank markets, which essentially had shut down that fall, conducted an empirical investigation to see what accounted for the jump in interbank spreads, examined the impact on monetary policy transmission, and made policy recommendations. This chapter clearly speaks to helping staff understand credit crunches as well as the need for many of the innovations in monetary policy on the part of the U.S. Federal Reserve Board and the European Central Bank. A *WEO* chapter ("Financial Stress and Economic Downturns") focuses squarely on macro-financial linkages as covered in the present study, including how downturns that are accompanied by banking distress tend to be more serious than those where stress is centered in nonbank intermediaries (no doubt reflecting the 2008 paper by Claessens and others noted earlier). Picking up on the theme of arm's length versus relationship-based finance, the *WEO* chapter argues that downturns will be more severe in the former systems, and that restoring capital in banking systems is critical to crisis resolutions.

33. There are a number of issues that with hindsight are now recognized as being important subjects on which research within and outside the Fund was lacking, but two topics in particular should have been of clear importance in the run-up to the crisis and were not investigated. First was the issue alluded to earlier of compensation in the financial system and how this was distorting incentives. Second was the fact that more than half of U.S. mortgage securities were being purchased by those outside the United States. Although many or even most purchasers might have been putting their faith in ratings, the fact that these highly-rated securities were paying rates of return above those of other comparably-rated securities should have been a warning sign that they were riskier than their comparators. In addition to reporting on this red flag, there seems to have been no investigation of whether authorities were aware of, concerned about and/or taking action on these developments, whether they understood the extent to which the purchases were driven by distortions in compensation practices in the purchasing institutions, etc.

IV. Utilization in the Fund's Operational Work

34. To assess whether Fund research was reflected in the IMF operational work we examined the content of selected issues papers (which are part of the Article IV consultations) in a group of selected countries/economies: Australia, Croatia, Chile, Estonia, Hong Kong SAR, Hungary, Ireland, Korea, Latvia, Poland, Romania, Spain, Sweden, Switzerland, and the United States. Some of the countries had significant financial imbalances building up over the evaluation period and so were excellent candidates for work on macro-financial issues. It is important to underline as noted earlier that this review omits the FSAP, presumably because the macro-financial linkages were to be the focus of Article IV work, rather than the FSAP itself. Still, this omission might well leave out an important area in which research is used in operations. Moreover, it is useful to clarify that the utilization of research in operations was judged directly by citations and indirectly by the concepts and/or tools employed, though citations themselves are the most objective measure.

35. IMF research was rarely cited in IMF operational work, and those citations tended to be much more of papers produced within the same area department. In Article IV work, research was rarely cited and most such citations were of *GFSR* or *WEO* chapters. This conclusion is based on a review of at least two Article IV reports per country—typically the 2005 or 2006 report and the 2008 or 2009 report (the latter years were added in the hope that some of the macro-financial work would be featured). There is no evidence of any IMF macro-financial research being repeatedly cited—or of being cited in more than one Article IV document. Selected issues papers much more commonly cited research. Of the studies that the SIPs cited, the overwhelming majority are studies done outside the IMF, followed by the work of authors in the same area department as the operational work being examined, followed by research in the Fund's central departments.

36. The topics that were covered by SIPs suggest that, in Fund operations rather as in working papers, the period 2005 to mid-2007 was characterized by little attention to macro-financial linkages. Selected issues papers released during the evaluation period focused on a very wide variety of issues but rarely on macro-financial linkages. Table A2 lists the SIPs issued during the review period for 15 countries mentioned above (para 34). The table shows that 139 SIPs were issued over the 2005–08 period. A perusal of this list shows that of these 139, 20 papers (shown in bold in the table) treated macro-financial linkages, and 13 of the 23 were produced after the middle of 2007. However, to the extent that finance was covered, it tended to be more from the perspectives of finance and growth, pensions (due no doubt to their fiscal impact), and finance and productivity growth, rather than of analyzing macro-financial linkages with implications for vulnerability that might have helped understand and prepare for the recent crisis. And again, papers that treated the financial system in isolation—for example, the 2005 paper on the characteristics of the Swiss financial system, or that from 2006 on the derivatives market in Hong Kong SAR—without treating the links between the financial sector and the broader economy were not counted as evidence of macro-finance linkages.

37. To be sure, there are exceptions to this generalization. For example, the 2006 selected issues paper for Latvia contains a chapter on aspects of rapid credit growth, in which the macro implications are examined, and the 2006 paper for Estonia looks at balance sheet issues, giving some attention to the foreign exchange and maturity mismatches on the private sector's balance sheet. Both studies capture some macro-financial linkages.

38. Still, the foremost explanation for the dearth of references to the macro-finance literature—whether generated from IMF research or done externally—in addition to the relative dearth until recently of this research as noted above, is the topical coverage: operational work as represented in Article IV reports and SIPs had predominantly focused on a variety of other issues. Important as these issues might have been, they did not help, in understanding the macro-financial links that may have helped understand mounting countries' vulnerabilities and eventually the recent crisis.

39. For example, the 2005 selected issues paper on Ireland treats the fiscal situation, unemployment, and savings. And the 2007 paper on the same country—issued in August of that year, as the crisis was breaking in international markets, though it would be a year later until the nature of the Irish crisis became undeniable—treats trade and financial spillovers to Ireland, population aging, and the efficiency gains of private credit growth in Ireland. Yet as the Report of the Central Bank of Ireland (2010) as well as another report by Regling and Watson (2010) make clear, the Irish crisis was fully "home grown," and spillover effects affected the timing and had only some impact on the amplitude of the crisis. Unfortunately, an examination of the clearly excessive (up to 40 percent) pace of growth over the period 1999–2007 of Irish banks' balance sheets, which deserved highlighting, did not receive any attention.

40. The 2006 selected issues paper for the United States focuses on "The Attractiveness of U.S. Financial Markets: The Example of Mortgage Securitization," and concludes with "This paper suggests that U.S. financial markets have been skilful in developing tools that have helped households exploit favorable global financing conditions to boost homeownership and acquire housing wealth." As noted above, at that time there was little IMF research on macro-financial linkages that would have helped avoid this conclusion, or the implication of the Irish study that arm's-length financing (a message from the *WEO*) was desirable, with no clear mention of the risks.

41. From the last two columns of Table A1, which note whether the research item was used in operational work, what stands out is the large number of papers that were not used in the sample (see Section V below) but that could have been of use. A related issue, but one that was outside the scope of this report and in fact more suitable for review by the IMF, is the issue of what accounts for this underutilization—whether for example it relates to staff backgrounds and training, as mentioned in para 6 above.

42. What stands out from the review of the aforementioned operational work? First, limited treatment of macro-financial issues; second, a marked tendency to cite work from within the originating country department; and third, even within the 2008–09 papers examined, little citation of research from functional departments. The lack of macro-financial research or tools that are repeatedly cited is striking.

43. The amount of IMF operational work on macro-financial issues seems to be on the rise. For example, all of the six SIPs in 2008 for the United States were on macro-financial linkages or on financial issues that had direct macro implications even where these were not stressed. However, it is not clear whether once the current crisis is past the focus of operational work will remain in this area or return to a mix of selected issues. In view of the Fund's roles in averting and alleviating crises, and the centrality of macro-financial linkages in these events, some ongoing focus in this area is clearly needed.

V. Concluding Observations and Implications for Research

44. By the end of the 2005–08 evaluation period, the Fund was producing more research on macro-financial linkages, after at least a relative drought of several years. But even this later effort by the end of 2008 seems to have been inadequate relative to the importance of this area to the Fund. On the other hand, utilization in operational work of whatever research was available was low. Thus, attention to both the supply and the demand side of this issue seems essential to rectify this situation.

45. On the supply side, given the IMF's role in averting and alleviating crises, and the importance of macro-financial linkages in the crises of recent decades, a much stronger push for research in this area appears warranted. Indeed a strong case can be made that the Fund should be a leader in this field, comparable to the Bank's role in conducting and supporting research on poverty and its alleviation. Increased priority for macro-finance research means allocating increased research funding and/or staff positions to this area.

46. Fortunately, increased attention to macro-financial research seems to be in progress. Claessens, Kose, and Terrones (2008) lay out selected areas for future research that focuses on the channels through which macro and financial variables interact. The Research Department, which was lightly represented in the list of macro-financial research in Table A1, now seems to have taken on macro-financial linkages as a key research area. The department's current work program includes the following important areas[9]:

- Real estate cycles. Why do real estate cycles arise? What makes them special? What tools can be used in response to imbalances in real estate markets? What are country experiences? What policy lessons follow?

- Regulation and taxation. A compilation of the background analysis done for the G-20 as well as new work on regulation and taxation, including calibration for systemic risks.

- Designing and calibrating macro-prudential measures. What measures, which indicators, and what calibrated parameters could be used for macro-prudential purposes (e.g., if time-varying capital adequacy requirements are used, how are they adjusted to what measurable aspect of business and financial cycles)?

- Impact of regulation (and taxation) on financial intermediation and real economy. Costs and benefits of the (new) regulations, like Basel III. Using analytical/theoretical models, DSGE-type approaches, data analysis, event studies, etc.

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[9] From correspondence with the Research Department.

- Structure of regulation and supervision. What works best for systemic stability? What are the potential conflicts of interests between say monetary policy and financial stability, or between micro-prudential supervision and financial stability? What are implications for regulatory governance (forms of accountability, legal, financial and operational independence, information sharing, integrity)?

- Financial structure and financial stability. What types of financial structures lend themselves to more financial stability while maintaining efficiency? What sources of earnings are more stable/of higher quality? What does the restructuring of the financial services industries mean for the earning potentials of different types of financial institutions?

47. This agenda makes great sense given where the literature is today. In order to achieve an impact, it will be important that this research effort is sustained and supported by senior management, and not just a short-term response to the crisis.

48. On the demand side, as the research effort on macro-financial linkages is ramped up, it also will be important to ensure that its main messages are clarified and disseminated to staff and outsiders. In addition to the finding that for part of the review period the supply of IMF macro-finance research was slim, in view of the low usage of the research that was undertaken, more needs to be done to disseminate key research messages, in particular those that research units and Management want to ensure are incorporated into operations. Yet conversations with a few staff suggest that the Fund's main messages on this crucial topic are not easily identified, and as noted earlier (para 15), a common response in staff interviews was that they were not aware of much if any macro-finance research. Moreover, conversations with a few outside leaders in the macro-finance field in academia revealed that they could not identify key macro-finance research messages that they associated with the IMF.

49. Although the *GFSRs* and *WEOs* can be used for the purpose of disseminating research messages, as they have been in the recent past, it is not always clear that this is their goal. A potentially useful complementary or alternative approach is to issue research reports that assemble the messages and/or tools from different pieces of research. Indeed, announcing a research strategy that focuses on several areas, such as the above list from RES, and aiming at high-profile research reports in the future, in the experience of this author, not only contributes to better dissemination but also helps motivate researchers. A working paper or even a journal article should be an early step in dissemination, not the last.

50. In addition to having a well defined and publicly advertised program of research in macro-finance as well as a clear and enduring commitment by senior Management that this area is a long-term focus for the Fund, Management may well want to look at other ways to improve the usage of research findings, which depends both on its availability and relevance.

Operations staff are pressed for time and asked to look at a variety of areas (hence the need for guidance on key messages), so they may need some help in sorting through priorities and messages. It would be useful to consider ways to ensure that macro-financial research is both relevant to and integrated with Fund operations.

51. Beyond the recommendations of the 2007 Taskforce Report, some regular integration of research staff into Fund missions is worth considering as a way to increase communication about the most relevant research available (whether that is generated inside the IMF or not) and about operational priorities about research. By working more than at present with country teams, research-oriented staff would have the chance to disseminate their research, learn more about the key research needs of country authorities and IMF country teams, and acquire data and even collaborators.[10] Another by-product of greater integration of country teams and researchers would be a reduction in any lag between the creation of research and its utilization in operations. In the World Bank, this integration of researchers on operational teams helps minimize the lag between the origination of research and its usage, and also helps improve research relevance. To be sure, this process itself demands oversight, as the dangers of not thoroughly testing research results are known in many fields. Still, increased communication between more operational and more research-oriented staff is likely to improve operations work as well as the quality and relevance of the research that is undertaken.

52. A more detailed look at the training and recruiting program in the macro-finance area is beyond the scope of this study but clearly of potential relevance. As noted, the IMF Institute has increased course offerings here, a promising development.

53. Regardless of how much the economics discipline moves in the same direction, the potential importance of macro-financial linkages to IMF operational work suggests that the Fund should be a leader in this area. As indicated earlier, management attention to the messages of research—and the insistence through the review process that research findings be consistently upheld in the Fund's work—will be important to ensuring that first-rate relevant research is produced and utilized. With attention to both the supply and demand side of macro-finance research, a future review of work in this area should find a more ample and relevant supply and a greater utilization of the findings in Fund operational work.

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[10] Note that this recommendation is intended to apply to research-oriented staff in any of the central departments. It is my understanding that this recommendation, at least applied to staff in the Research Department, was part of the recommendations of the Mishkin report (Mishkin and others, 1999) and that although some movement has occurred, it has been limited.

ANNEX. RESEARCH AND OPERATIONAL DOCUMENTS REVIEWED

Table A1. List of Research Reviewed

Year	Issuing Department	Title	Author	Used in Operational Work (Y/N/C)[1]	Potential Use In Operational Work (Y/N/C)
2010	INS	Basel Core Principles and Bank Risk: Does Compliance Matter?	Detragiache and Demirgüç-Kunt	N	Y
2009	EUR	From Subprime Loans to Subprime Growth: Evidence from the Euro Area	Cihak and Brooks	N	Y
2008	RES	What Happens During Recessions, Crunches, and Busts?	Claessens, Kose, and Terrones	N	Y
2008	WHD	Credit Matters: Empirical Evidence on U.S. Macro-Financial Linkages	Bayoumi	N	Y
2008	APD	Real and Financial Sector Linkages in China and India	Aziz	N	Y
2008	RES	A Small Quarterly Multi-Country Projection Model with Financial-Real Linkages and Oil Prices	Carabenciov	N	Y
2008	WHD	Real Effects of the Subprime Mortgage Crisis: Is it a Demand or a Finance Shock?	Tong	N	Y
2008	WHD	Real Implications of Financial Linkages Between Canada and the United States	Klyuev	N	N
2008	WHD	A U.S. Financial Conditions Index: Putting Credit Where Credit Is Due	Swiston	Y	Y
2008	RES	A Small Quarterly Projection Model of the US Economy	Carabenciov	N	Y
2008	RES	A Small Quarterly Multi-Country Projection Model	Carabenciov	N	Y
2008	EUR	Are Weak Banks Leading Credit Booms?	Igan and Tamirisa	Y	Y
2007	MCM	Macroeconomic and Financial Soundness Indicators: An Empirical Investigation	Babihuga	N	Y/C
2007	EUR	Do Economists' and Financial Markets' Perspectives on the New Members of the EU Differ?	Luengnaruemitchai	N	N
2007	OED	Global Imbalances and Financial Stability	Xafa	N	N
2006	MFS	How Do Central Banks Write on Financial Stability?	Cihak	N	N

Table A1. List of Research Reviewed (continued)

Year	Issuing Department	Title	Author	Used in Operational Work (Y/N/C)[1/]	Potential Use In Operational Work (Y/N/C)
2006	MFD	A New Risk Indicator and Stress Testing Tool: A Multifactor Nth-to-Default CDS Basket	Avesani	N	Y
2006	MCM	Portfolio Credit Risk and Macroeconomic Shocks: Applications to Stress Testing Under Data-Restricted Environments	Segoviano–Basurto and Padilla	N	Y
2006	INS	International Financial Integration, Sovereignty, and Constraints on Macroeconomic Policies	Kletzer	N	N
2006	RES	Lending Booms and Lending Standards	Dell'Ariccia and Marquez	N	Y
2006	RES	Financial Globalization: A Reappraisal	Kose and others	N	N
2005	MFD	Quality of Financial Policies and Financial System Stress	Das	N	Y[2/]
2005	APD	The Real Effect of Banking Crises	Dell'Ariccia	N	C
2005	INS	Stock Market Liquidity and the Macroeconomy: Evidence from Japan	Choi		Y
2005	RES	Financial Globalization and Exchange Rates	Lane	N	N
2005	OED	Capital Account Liberalization and the Real Exchange Rate in Chile	LeFort-Varela	N	N
2005	EUR	Capital Account Liberalization, Capital Flow Patterns, and Policy Responses in the EU's New Member States	Arvai	N	N
2004	RES	Does Financial Globalization Induce Better Macroeconomic Policies?	Tytell	N	N
2004	MFD	Quantitative Assessment of the Financial Sector: An Integrated Approach	Worrell	N	C
2004	ICM	Toward a Framework for Safeguarding Financial Stability	Houben	N	C
2004	MFD	Stress Testing Financial Systems: What to Do When the Governor Calls	Jones	N	C
2004	APD	The Role of Stock Markets in Current Account Dynamics: A Time Series Approach	Mercereau	N	N
2004	EUR	Boom-Boom Phases in Asset Prices and Fiscal Policy Behavior	Jaeger	N	N

Table A1. List of Research Reviewed (concluded)

Year	Issuing Department	Title	Author	Used in Operational Work (Y/N/C)[1/]	Potential Use In Operational Work (Y/N/C)
2004	PDR	Do Macroeconomic Effects of Capital Controls Vary by Their Type? Evidence from Malaysia	Tamirisa	N	N
2004	PDR	Liberalized Markets Have More Stable Exchange Rates: Short-Run Evidence from Four Transition Countries	Bulir	N	N
2004	RES	International Financial Integration and Economic Growth	Edison, Levine, Ricci, and Slok	N	C
2006	MCM	*GFSR* (Fall) Chapter 2: Household Credit Growth in Emerging Market Countries	www.imf.org/External/Pubs/FT/*GFSR*/2006/02/index.htm	N	N
2006	MCM	*GFSR* (Fall) Chapter 4: How Do Financial Systems Affect Economic Cycles?	www.imf.org/external/pubs/ft/*WEO*/2006/02/	N	C
2008	MCM	*GFSR* (Spring) Chapter 3: Market and Funding Illiquidity: When Private Risk Becomes Public	www.imf.org/External/Pubs/FT/*GFSR*/2008/01/index.htm	Y	C
2008	MCM	*GFSR* (Spring) Chapter 3: The Changing Housing Cycle and the Implications for Monetary Policy	www.imf.org/external/pubs/ft/*WEO*/2008/01/	Y	Y
2008	MCM	*GFSR* (Fall) Chapter 2: Stress in Bank Funding Markets and Implications for Monetary Policy	www.imf.org/external/pubs/ft/*GFSR*/2008/02/index.htm	Y	Y
2008	MCM	*GFSR* (Fall) Chapter 4: Financial Stress and Economic Downturns	www.imf.org/external/pubs/ft/*WEO*/2008/02/	Y	Y

[1] The last two columns of the table note whether the research item was used in the operational work examined (yes/no), and whether the research could potentially have been used for detailed macro-financial work (Y/N) or to give a “big picture” or conceptual (C) overview of macro-financial issues.

[2] Note caveat in text.

Table A2. IMF: Selected Issues Papers Issued, 2005–08
(By economy, with most recent first)

Title	Year	Author	Economy
“What Goes Up Must Come Down? House Prices in the United States”	**2008**	**Klyuev**	**US**
“A U.S. Financial Conditions Index: Putting Credit Where Credit Is Due”	**2008**	**Swiston**	**US**
“Credit Matters: Empirical Evidence on U.S. Macro-Financial Linkages”	**2008**	**Bayoumi and Melander**	**US**
“The Real Effects of the Subprime Mortgage Crisis”	**2008**	**Tong and Wei**	**US**
“House Prices and Regional Cycles in the United States”	**2008**	**Estevão and Barrera**	**US**
“Analyzing the Sources of (In)stability in the U.S. Banking Sector”	**2008**	**Capuano and Segoviano**	**US**
“Summary of Foreign Entanglements: Measuring Size and Source of Spillovers Across Industrial Countries”	2007	Bayoumi and Swiston	US
“Summary of the Ties That Bind: Measuring International Bond Spillovers Using Inflation-Indexed Bond Yields”	2007	Bayoumi and Swiston	US
“Summary of Globalization, Gluts, Innovation, or Irrationality: What Explains the Easy Financing of the U.S. Current Account Deficit?”	2007	Bayoumi, Tulin, and Balakrishnan	US
“New Landscape, New Challenges: Structural Change and Regulation in the U.S. Financial Sector”	2007	Bhatia	US
“Money for Nothing and Checks for Free: Recent Developments in the U.S. Subprime Mortgage Markets”	**2007**	Kiff and Mills	**US**
“Summary of U.S. Revenue Surprises: Are Happy Days Here to Stay?”	2007	Swiston, Mühleisen, and Mathai	US
“Summary of Applying the GFSM 2001 Framework to U.S. Fiscal Data”	2007	Rial and Gorter	US
“The Attractiveness of U.S. Financial Markets: The Example of Mortgage Securitization”	2006	Mühleisen	US
“Recent Trends in Labor Supply and Demand”	2006	Tsounta	US
“Challenges Facing the U.S. Electricity Sector”	2006	Tsounta	US
“Recent Oil Price Developments and the Performance of the U.S. Economy”	2006	Ouliaris	US
“U.S. Banking: Financial Innovation and Systemic Risk”	**2006**	**Bhatia**	**US**
“Structural Change and Competition Among Auto Manufacturers and Airlines”	2006	Swiston	US
“Boom-Bust Cycles in Housing: The Changing Role of the Financial Structure”	**2005**	**Schnure**	**US**
“Explaining the Labor's Share in National Income”	2005	Guscina	US
“Why Has the U.S. Trade Balance Widened So Fast?”	2005	Justiniano	US
“A Global View of the U.S. Investment Position”	2005	Krajnyák	US
“Consequences of Fiscal Consolidation for the U.S. Current Account”	2005	Swiston	US
“Should the Fed Adopt an Explicit Inflation Objective”	2005	Kumhof, Laxton, and Muir	US
“Diagnosing the High Cost of U.S. Medical Care”	2005	Kisinbay, Roger, and Stone	US

Table A2. IMF Selected Issues Papers Issued, 2005–08 (continued)
(By economy, with most recent first)

Title	Year	Author	Economy
“Effects of Social Security and Tax Reform in the United States”	2005	Ivaschenko	US
“Spillovers to Ireland”	2007	Kanda	Ireland
“Policy Challenges of Population Aging in Ireland”	2007	Botman and Iakova	Ireland
“Efficiency Gains of Private Sector credit Growth in Ireland”	2007	Tang	Ireland
“Favorable Fiscal Outturns: Is It Just of the Luck of the Irish?”	2005	Honjo	Ireland
“The Evolution of Unemployment in Ireland: The Role of Labor Market Policies”	2005	Iakova	Ireland
“Who Saves in Ireland? The Micro Evidence”	2005	Badia	Ireland
“Coordinating Fiscal Policy in Switzerland: Issues, International Experience and Prospects”	2006	Debrun	Switzerland
“An Indicative Public Sector Balance Sheet for Switzerland”	2006	Carare	Switzerland
“A Comparison of the Swiss, Dutch, and U.K. Pension Systems, with Emphasis on the Occupational Pension Pillars”	2006	Khamis	Switzerland
“Intertemporal Policy Consistency in Switzerland: Is the Current Social Insurance System Sustainable?”	2005	Gagales	Switzerland
“The Need for Health Care Reform”	2005	Braumann	Switzerland
“The Political Economy of Adjustment and Reform in Switzerland”	2005	Braumann	Switzerland
“Characteristics of the Swiss Financial System in International Comparison”	2005	Polan	Switzerland
“Fiscal Policy and the External Balance in Spain”	2006	Catalan, Lama	Spain
“Spain's Productivity: A Cross-Country Perspective”	2006	Escolano	Spain
“Fiscal Discipline At Lower Levels of Government: The Case of Spain”	2005	Spilimbergo	Spain
“Pension Reform in Spain: Macroeconomic Impact”	2005	Catalán, Hoffmaister and Guajardo	Spain
“The Swedish Fiscal Framework: Towards Gradual Erosion?”	2005	Balassone	Sweden
“The Tax-Benefit System and Labor Supply in Sweden”	2005	Tsounta and Bonato	Sweden
“Commodity Price Booms and Fiscal Policy Options in Australia”	2008	Hunt	Australia
“Australian Banks: Weathering the Global System”	**2008**	**Rozhkov**	**Australia**
“Australia's Large and Sustained Current Account Deficits: Should Consenting Adults be Trusted?”	2006	Mercereau	Australia
“Fiscal Policy and the Terms of Trade Boom”	2006	Rozhkov	Australia
“Australia's Adaptation to a Floating Exchange Rate”	2005	Beaumont, Cui, and Mercereau	Australia
“The Proposed Future Fund: An International Comparison”	2005	Cui	Australia
“Financial Integration in Asia: Estimating the Risk-Sharing Gains for Australia and Other Countries	2005	Mercereau	Australia

Table A2. IMF Selected Issues Papers Issued, 2005–08 (continued)
(By economy, with most recent first)

Title	Year	Author	Economy
“The Residential Property Market in Hong Kong SAR”	2006	Goldsworthy	Hong Kong
“The Implications of An Aging Population for Hong Kong SAR”	2006	Leigh	Hong Kong
“Sustainability of Volatile Fiscal Revenue Items”	2006	Gruenwald	Hong Kong
“Rapid Growth and Derivatives Markets in Hong Kong SAR”	2006	Leung and Gruenwald	Hong Kong
“Rising Prices, Slowing Growth, and the Implications for Monetary Policy”	2008	Lueth	Korea
“Stress Testing Household Debt in Korea”	2008	Karasulu	Korea
“Korea's Banking Sector: Liquidity Risk Management in the Face of Structural Trends and Deregulation”	**2008**	**Khatri**	**Korea**
“Lessons and Policy Recommendations from the Financial Crisis”	2008	Dodd	Korea
“What Determines Investment in Korea?”	2008	Syed	Korea
“Achieving Long-Term Fiscal Sustainability in Korea”	2007	Feyzioglu, Skaarup and Syed	Korea
“Korea's Competitiveness in the Global Marketplace”	2007	Chensavasdijai	Korea
“Internationalization of the Won”	2007	Semblat	Korea
“The Mortgage Market in Korea: Financial Risks and Development Needs”	**2007**	**Frydl**	**Korea**
“Korea's Transition to a Knowledge-Based Economy: Prospects and Challenges Ahead”	2006	Chensavasdijai	Korea
“A Financial Big Bang in Seoul? The Development of the Financial Sector in Korea"	2006	Semblat	Korea
“Restrictions on *Chaebol* Ownership of Korean Banks: Are They Warranted?”	2006	Frydl	Korea
“A Strategy for Restructuring the SME Sector in Korea”	2006	Kang and Kim	Korea
“A Family Divided—Revisited: Income Inequality and Social Polarization in Korea”	2006	Miniane	Korea
“Long-Term Fiscal Challenges”	2006	Feyzioglu	Korea
“Supply Shocks, Inflation, and Expectations”	2008	Batini	Chile
“What is the Optimal Level of International Reserves for Chile?”	2008	Tereanu	Chile
“An Evaluation of the Welfare Implications of Chile's Macroeconomic Framework”	2008	Batini, Levin and Pearlman	Chile
“How Do Changes in Global Liquidity Affect Chile?”	2008	Matsumoto	Chile
“Sovereign Wealth Funds: An International Perspective”	2008	Papaioannou, Walsh and Singh	Chile
“Deepening Chile's Capital Markets Through Global Integration”	2008	Arvai	Chile
“Chile's Structural Fiscal Surplus Rule: A Model-Based Evaluation”	2007	Kumhof, Laxton	Chile
“Risks in the Chilean Banking System: A Contingent Claims Approach”	**2007**	**Gray and Walsh**	**Chile**
“Credit Cyclicality: A Cross-Country Analysis”	**2007**	**Soderling**	**Chile**

Table A2. IMF Selected Issues Papers Issued, 2005–08 (continued)
(By economy, with most recent first)

Title	Year	Author	Economy
“Explaining Chile's Trade Performance”	2007	Monfort	Chile
“Toward Improving the Data and Procedures Used in Current Analysis and Forecasting at the Central Bank of Chile”	2006	Reifschneider	Chile
“Deepening Liquidity in Chilean Fixed-Income Markets”	2006	Holland	Chile
“Public Sector Debt and Market Development”	2006	Holland	Chile
“The Experience of Poverty Reduction in Chile”	2006	Walsh	Chile
“Macroeconomic Effects of EU Transfers in New Member States”	2008	Allard	Poland
“What Can Poland Learn From Other European Union Countries in Terms of Labor Market Reforms?”	2008	Annett	Poland
“Inflation in Poland: How Much Can Globalization Explain?”	2006	Allard	Poland
“Credit, Growth, and Financial Stability”	**2006**	**Tamirisa and Cihak**	**Poland**
“Assessing the Flexibility of the Polish Economy”	2006	Dalgic and Klingen	Poland
“What is Driving Investments in Poland?”	2005	Murgasova	Poland
“The Labor Market in Poland”	2005	Choueiri	Poland
“The Polish Pension Reforms After Six Years”	2005	Szekely	Poland
“The Fiscal Impact of the 1999 Pension Reform”	2005	Szekely	Poland
“Would Poland Benefit from a Fiscal Responsibility Law?”	2005	Szekely	Poland
“Assessing Croatia's External Stability”	2008	Ilyina	Croatia
“Efficiency of Government Social Spending in Croatia”	2008	Jafarov and Gunnarsson	Croatia
“Economic Growth in Croatia: Potential and Constraints”	2007	Moore and Vamvadikis	Croatia
“Economic Effects of Reducing the Size of the Government in Croatia: A Note Based on the IMF's Global Fiscal Model”	2007	Gueorguiev	Croatia
“External Debt and Balance-Sheet Vulnerabilities in Croatia”	**2007**	**Hilaire and Ilyina**	**Croatia**
“Bank Stability and Credit Risk in Croatian Banks”	**2007**	**Mitra**	**Croatia**
“Medium-Term Growth and Productivity in Estonia: A Micro Perspective”	2007	Badia	Estonia
“Population Aging and Fiscal Sustainability in Estonia”	2007	Skaarup	Estonia
“Competitiveness and Sustainability in Estonia”	2006	Lutz	Estonia
“Assessment of Balance Sheet Exposures in Estonia"	2006	Choueiri	Estonia
“International Investment Positions of New EU Member States: Stylized Facts and Influences”	2005	Lutz	Estonia
“Driving Forces of Inflation in the New EU8 Countries”	2005	Stavrev	Estonia

Table A2. IMF Selected Issues Papers Issued, 2005–08 (concluded)
(By economy, with most recent first)

Title	Year	Author	Economy
“Credibility Effects of Numerical Fiscal Rules: An Empirical Investigation”	2008	Debrun and Joshi	Hungary
“Monetary Policy Responses to Real and Portfolio Shocks in Hungary”	2008	Mitra	Hungary
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