

## The Episodic and Unpredictable Nature of IMF Lending: An Empirical Analysis

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### 1. INTRODUCTION

THE global financial crisis of late 2008 and beyond has had numerous and far-reaching implications for a large range of micro, macro and international economic issues. One of them has involved a reassessment of the world's premier international financial institution, the International Monetary Fund (IMF). Although the Fund had previously claimed that the challenges of globalisation made it indispensable, by the beginning of 2008 some were arguing that it had in fact lost its importance. To them the IMF seemed to be increasingly irrelevant, as illustrated by its apparent inability to exert a discernible impact on global economic imbalances through its multilateral surveillance and consultations. Even its bilateral surveillance of emerging and low-income countries was losing significance, as some of these traditional users of IMF resources emigrated away from it.

The largely benign global economic environment had allowed many of the IMF's former client countries to build up their own holdings of international reserves and thereby to self-insure against future economic crises. By early 2008, the Fund had only a limited portfolio of outstanding loans. Even amongst poor countries there was a shift away from the IMF's provision of direct financial assistance. At the beginning of 2008, the Fund's outstanding credit was only about SDR 9 billion, in comparison to more than SDR 70 billion at the beginning of 2004. Consequently, the Fund's adjustment role was also reduced,

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as it lacked the leverage to compel members to follow its advice on economic policy. On top of this, the reduced demand for IMF loans was causing significant problems for its own income stream. Compounding these operational restrictions were governance problems, with accusations that its management and voting structure was unrepresentative of its membership and hence lacked legitimacy. The IMF was by many accounts an ailing institution.

By the end of 2008, however, the global economic situation had changed dramatically in ways that seemed to offer the Fund a new lease of life. The economic crisis was global and the IMF is a global institution. The crisis was financial and the IMF is a financial institution. The crisis brought with it balance of payments problems and deteriorating overall economic performance, problems that the IMF was initially established and designed to deal with. The crisis required an internationally coordinated response and the IMF provides a forum for policy coordination. Although there are ample grounds to doubt its current capacity to offer the degree of multilateral surveillance and coordination that are needed (Bird and Willett, 2007), it is premature to judge the Fund's efficacy in meeting the challenges created by the global economic crisis that emerged at the end of 2008.

With the sharp rise in IMF lending and the anticipated effects of the global economic crisis on the future demand for IMF credits, the most pressing concern appeared to be the adequacy of the Fund's own resource base. One of the main actions at the April meeting of the G20 in London in 2009 was to endorse a tripling of the Fund's lending capacity by agreeing to additional borrowing under the New Arrangements to Borrow and by making new allocations of SDRs. One of us has elsewhere provided a brief description and assessment of what the G20 meeting achieved and we therefore do not replicate that analysis here (see Bird, 2009a).

The rapid turnaround in global economic conditions and in the IMF's lending activity raises two connected questions that form the focus of this article. First, is it possible to explain and predict aggregate IMF lending? Can we identify the variables that influence it and, furthermore, can we forecast future values of these variables so that we can also predict the future demand for IMF resources? Second, are the mechanisms via which the Fund attempts to ensure that it has adequate resources to meet the demands of its members satisfactory, and, if not, how might they be improved? The latter question has important implications for global economic performance, as the Fund is generally perceived as a global quasi lender of last resort. If it is unable to meet the demand for its resources, illiquid member countries will generally have to place more emphasis on short-run adjustment-intensive balance of payments strategies involving the compression of domestic aggregate demand, with all its attendant economic and political consequences.

The article is organised in the following way. Section 2 provides a brief empirical picture of the overall nature of IMF lending, which is revealed as being episodic. Section 3 attempts to explain the picture painted in Section 2. It offers a conceptual framework within which IMF lending may be analysed, and then provides a few simple bivariate and multivariate tests of the ideas that emerge from this framework. Section 4 builds on this analysis to discuss the policy implications for financing the Fund's activities. It is critical of current modalities and proposes alternative arrangements to deal with the episodic nature of the demand for IMF resources. A concluding section places the analysis and policy proposals in the context of current debates about reforming the Fund and the global financial system. This study complements earlier work of ours (Bird and Rowlands, 2001a, 2002, 2006b, 2009) by analysing the aggregate amount of IMF lending rather than the pattern of lending to individual countries or groups of countries and the probability that individual countries will have programmes with the IMF. However, as will be explained later, the two dimensions of IMF lending are inter-related.

## 2. THE NATURE OF IMF LENDING

There are various measures of the amount of IMF lending; outstanding credit to member countries associated with contemporary programmes, the value of new credit extended or committed in any given year, and the value of net flows in and out of the IMF. With less emphasis on the amount of lending, another measure of IMF lending activity examines the number of programmes in operation, and the number signed in any given year. It can also be useful to distinguish between loans made to better-off emerging and developing economies under standby and Extended Fund Facility (EFF) arrangements financed from the General Resources Account, and those made to low-income countries on a concessionary basis under the Poverty Reduction and Growth Facility (PRGF).<sup>1</sup> There are also other lending mechanisms through specialised programmes, as well as through automatic non-programme drawings from the reserve tranche.

Multiple portraits of Fund lending can be painted by using these various measures. The amount of credit used by, for example, Russia or Turkey or Mexico will dwarf the amount used by, for example, a small sub-Saharan African economy. The overall amount of IMF lending, either in the form of new

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<sup>1</sup> These concessional arrangements for low-income countries became a constant feature of IMF lending after 1987 following the introduction of the Structural Adjustment Facility (SAF) and the immediate predecessor to the PRGF, the Enhanced Structural Adjustment Facility (ESAF). For a brief description and discussion of recent changes to the range of IMF facilities, see Bird (2009b).

loans, loan commitments or outstanding credit, will depend importantly on whether large emerging economies have Fund programmes in place, even though such programmes may be few in number.

Figures 1 and 2 illustrate respectively the number of agreements in effect and the annual use of Fund resources. Over the period 1987–2009, the average number of standby and EFF arrangements in operation, arrangements for which all IMF members are eligible, is significantly less than the number of SAF/ESAF/PRGF arrangements for which only low-income countries are eligible (20 versus 29). For the same period, however, average annual purchases under standby and EFF arrangements are more than 13 times higher than the amount borrowed under the concessional facilities (9.6 billion SDRs as against 0.7 billion SDRs). In addition, the volatilities (measured by the coefficients of variation) in financing levels per year, in the number of new agreements, and in the number of agreements in operation are approximately twice as high for the non-concessional agreements as for concessional ones. The evidence, therefore, clearly depicts non-concessional IMF lending as much more volatile and episodic than concessional lending.

Not surprisingly, therefore, recent episodes of increased lending are generally associated with crises involving larger emerging economies. Lending peaks are apparent prior to the collapse of the Bretton Woods system, after the oil shock in the 1970s, and following the debt crisis of 1982, the Mexican peso

FIGURE 1  
Number of IMF Agreements in Operation (1953–2009)

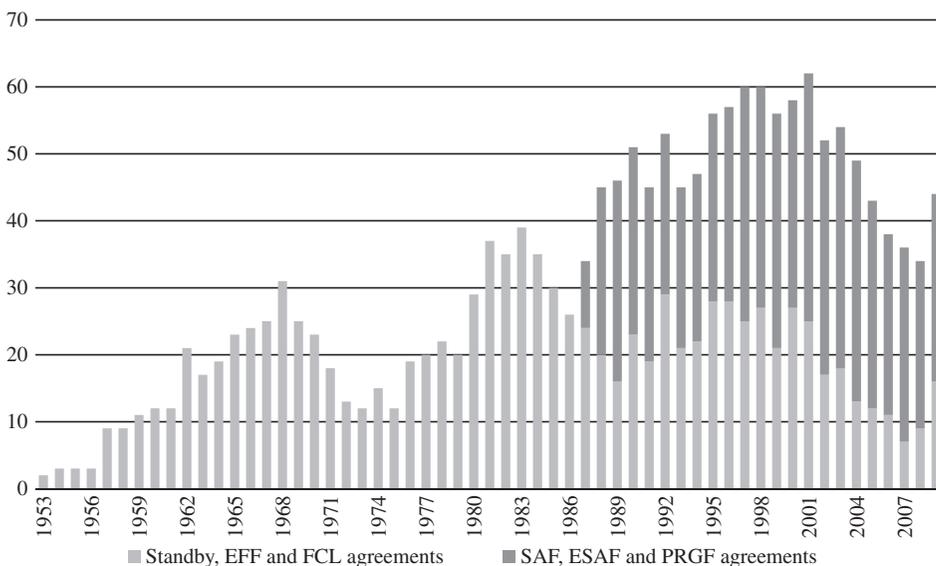
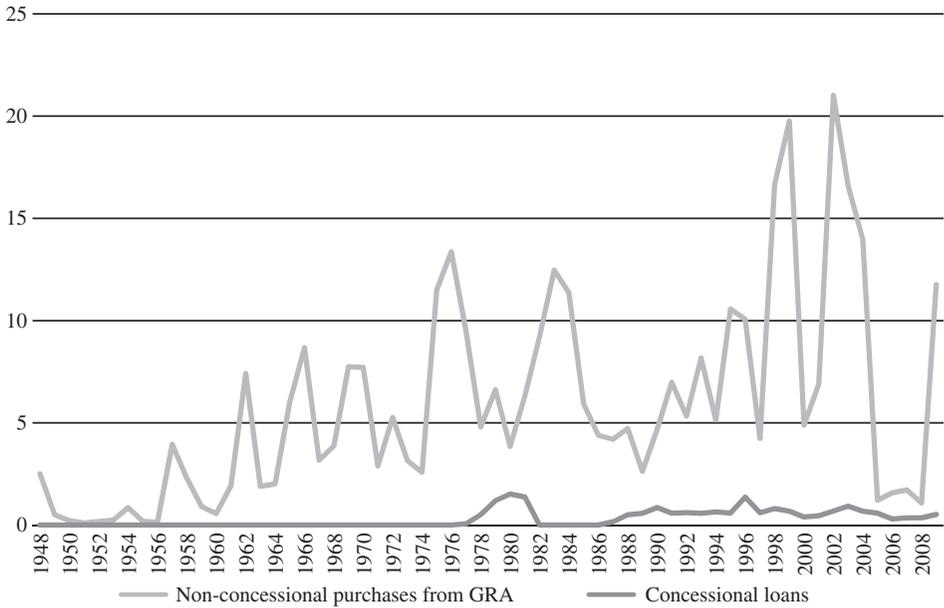


FIGURE 2  
Annual Purchases and Loans from the IMF, 1948–2009  
(Billion constant 1983 US dollars)



crisis of the mid-1990s, the Asian crisis of 1997/98 and the economic turmoil surrounding Argentina and Turkey in 2002/03. The number of arrangements shows a similar pattern but in more muted form.

Focusing on the period since the late 1990s, the amount of new IMF financing has ranged from a peak of about SDR 30 billion in 2002 to a trough of about SDR 1.5 billion in 2008. The number of arrangements in operation was at its maximum in 2001 when there were 62 arrangements in effect, and was at its minimum in 2008 when there were only 34 arrangements in place; the clear majority of these (25) were with low-income countries under the PRGF (see Figure 1). Indeed, 2008 saw the fewest number of new agreements signed since 1957, and the fewest number of concessional agreements. While the number of PRGF programmes in operation ranges from 37 (2001) to 25 (2008), the number of standbys in operation ranges from 17 (2001) to 6 (2007), and, in the case of EFFs, from 13 (1998) to only 1 (2006, 2007 and 2009).

These data illustrate the large swings in IMF lending throughout its history, volatility that has also been identified in earlier research (Bird, 1995). Can these swings in IMF lending be explained other than in terms of whether or not large emerging economies have programmes with the Fund? What are the underlying determinants of overall IMF lending?

## 3. FACTORS INFLUENCING IMF LENDING

*a. A Conceptual Framework*

There are two approaches to trying to explain the aggregate amount of IMF lending. The first takes aggregate lending as the dependent variable and attempts to explain it directly in terms of global determinants. Early attempts to explain aggregate IMF lending adopted this first approach and were largely informal and descriptive (for example, Bird, 1995). Alternatively, explaining participation in IMF programmes can be attempted at the level of individual countries. Bird and Rowlands (2001a), Bird (2007), Ghosh et al. (2007) and Steinwand and Stone (2008) provide recent reviews of this literature, so we do not examine it in detail here. The second approach would then calculate indirectly the aggregate level of IMF lending by summing the drawings made by individual members.

Potential influences on aggregate IMF lending are, in principle, to be found on both the demand side, affecting countries' propensities to turn to the IMF for financial assistance, and on the supply side, affecting the willingness of the IMF to respond positively to requests for help within institutional constraints on the amount of lending. However, the classification of demand- and supply-side factors is complex and varies over time, as changes within the Fund on the supply side may in turn influence or facilitate the demand for IMF resources. For example, the Fund may reform the range, nature and lending limits of the facilities under which member countries may borrow. Thus, Bird (1995) points out how reforms to the Compensatory Financing Facility in the mid-1970s, making access to it easier and more appealing, contributed to the sharp increase in IMF lending soon afterwards, much of which took place under this particular facility. However, as many of these supply-side changes themselves reflect the prevailing economic conditions and have been made in response to the latent demand for IMF resources, and as they are sporadic and difficult to measure systematically, we focus here primarily on demand-side factors.<sup>2</sup>

More generally, the aggregate demand for IMF resources may be influenced by the size and distribution of current account balance of payments deficits, the size and distribution of holdings of international reserves, the access to private

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<sup>2</sup> Supply-side factors are certainly deserving of their own analysis, especially if we wished to determine how anticipated policy changes might affect resource claims on the IMF. The analysis would be complex, however. For example, if policy conditionality became more stringent we might expect a decline in the demand for IMF loans. In truth, the period of the 1980s is associated with both increasingly intrusive conditionality and high lending, in part because the high demand for its resources gave the IMF leverage over its clients. Similarly, an expansion in quotas and relaxation of access limits would be likely to lead to larger loans, but would themselves probably be lagged reflections of high demand.

international capital markets, levels of external debt and the cost of borrowing from the IMF. The cost of borrowing comprises both the rate of charge on IMF credit, and, perhaps more significantly, the perceived cost in terms of the conditionality associated with IMF programmes. This latter cost will depend on the size of the gap between a country's preferred economic policies and those that have to be accepted in order to gain access to IMF finance.

It might be anticipated that the demand for IMF resources will increase as the size of balance of payments deficits in countries with a fairly recent history of IMF programmes increases. For this reason, an increase in the size of the US balance of payments deficit would not by itself be expected to be associated with an increase in aggregate IMF lending, as wealthy economies generally have access to international capital which, experience shows, they prefer to IMF financing. Indeed, given the zero-sum nature of the global balance of payments, an increase in balance of payments deficits in advanced economies might be expected to go together with an increase in balance of payments surpluses in emerging economies, reducing the need for IMF lending.

If borrowing from international capital markets is a preferred alternative to borrowing from the IMF then, more generally, aggregate IMF lending would be expected to depend negatively on the access that emerging or developing countries have to such markets. As the scarcity of international capital may be expected to be reflected positively by global interest rates, it follows that aggregate IMF lending should tend to rise alongside a rise in global interest rates. Similarly, countries with large amounts of external debt may find it more difficult to borrow and may therefore be pushed towards the Fund in circumstances where they would otherwise have built up their indebtedness to private capital markets.

One composite factor may help to explain aspects of balance of payments performance, capital market characteristics and economic sustainability. Global economic growth provides for expanding export markets and improved prospects for domestic growth, as well as being correlated with financial market aggregates. This simple indicator may help to capture changes in the demand for IMF lending.

Countries with balance of payments deficits may also finance them by running down their own international reserves. This implies that aggregate IMF lending will go down as holdings of international reserves in the Fund's potential client countries go up. Furthermore, the demand for IMF resources may be expected to fall when the perceived cost of IMF conditionality rises. A rise in this cost may also help to explain an observed increase in holdings of international reserves.

Some caution needs to be exercised when considering the exact nature of the relationship between IMF lending and the explanatory variables discussed above. As our interest is in forecasting IMF resource use, these variables are

only useful if they are consistently connected with IMF lending as leading variables. If the relationship is contemporaneous then we must be able to forecast them with reasonable confidence.

Finally, in studies of participation in IMF programmes at the level of individual countries, previous near-term programmes are shown to be a significant positive determinant of current programmes. This result would seem to imply that, at the aggregate level, IMF lending in any one period will depend on the recent past. Such a conclusion, however, seems to be somewhat at odds with the episodic nature of IMF lending revealed in the previous section.

In summary, rudimentary theorising would suggest that aggregate IMF lending is a complex phenomenon but will probably depend on a contingent combination of the above demand factors. But is this conjecture confirmed by the empirical evidence and have the underlying relationships changed over time?

#### *b. Existing Empirical Evidence*

Recent research undertaken by the IMF (Ghosh et al., 2007) sets out to model aggregate IMF lending in the form of outstanding credit. Similar to Rowlands (1998), Ghosh et al. use both of the approaches to estimate IMF activity. The first approach involves time series estimation, with the use of IMF resources as the dependent variable, while the second approach uses a two-stage 'programme selection and access' model which provides a 'bottom-up' estimation of aggregate IMF lending. Focusing on drawings under GRA facilities, their aggregate econometric model includes measures of the balance of payments in the form of changes in the current account, international reserves in the form of changes in reserve cover for imports, previous IMF programmes and the relative cost of IMF borrowing relative to the cost of borrowing international capital.

In terms of this aggregate model they distinguish between long-run coefficients and short-run dynamics that may explain deviations from their long-run model. The long-run determinants included in their model are total debt as a percent of output, short-term debt as a percent of reserve assets, IMF quotas as a percent of output, and the difference between the rate of charge on IMF resources and US bond rates. They attempt to capture short-term dynamics by including the change in IMF credit, the change in the terms of trade, the change in the current account as a percent of previous period output and the change in reserves as a percent of previous period imports. Their estimation results over the period 1980–2005 suggest a long-run positive relationship between the aggregate use of IMF resources and countries' external debt, short-term debt and IMF quota (which they claim may be a proxy for openness). Over the short run, the change in the current account and the import coverage of reserves are also significant.

Their bottom-up analysis reaches broadly similar conclusions, with the decision to seek IMF support depending on the existence of previous programmes, oil prices, external debt, international reserve levels, changes in the current account balance of payments, the government balance and the rate of inflation. They also find that access levels depend on total debt in relation to GDP and changes in the current account of the balance of payments. Ghosh et al. claim that their models perform reasonably well in explaining aggregate IMF lending in terms of both 'out-of-sample' forecasting and 'in-sample' estimation, where nearly 70 per cent of the variation in IMF credit outstanding is explained.

While adding to our understanding of the use of Fund resources, the relevance of this study for our purposes comes more when the authors turn to using their econometric models to predict the future. While they acknowledge that the predictive power of their models depends on the accuracy with which it is possible to forecast the determinants, and while allowing for over-optimism in IMF macroeconomic forecasts, they predict with some confidence the future path of IMF lending, claiming that 'the use of IMF resources over the next few years is likely to be considerably lower than in the recent past' (Ghosh et al., 2007, p. 29). They do not anticipate the sharp rise in the use of IMF resources that occurred between early 2008 and 2009.

A fundamental problem is that drawings from emerging economies are affected by the incidence of economic crises. If these crises are difficult to predict accurately then it follows that it will also be difficult to predict accurately the demand for IMF resources. If, beyond this, there are significant elements of interdependence and contagion between emerging economies, the volatility of aggregate IMF lending will be exacerbated.

The remainder of this paper therefore addresses two issues. First, can further empirical analysis offer greater insights into the determination of aggregate IMF lending? Are there basic empirical regularities that can be identified and, if so, have these changed over time? And second, if it remains difficult to explain past claims on IMF resources, let alone to predict future ones, what implications does this uncertainty have for the design of policy regarding the Fund's lending capacity?

### *c. Further Empirical Analysis*<sup>3</sup>

In this section of the paper we undertake three things. First, we examine in more detail the episodic nature of aggregate IMF lending by focusing on variance, cycles and large changes in lending. Second, we calculate bivariate correlations between various measures of IMF lending and some of the variables that

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<sup>3</sup> All data on IMF lending and programmes were collected from the *IMF Annual Reports*. All other data are taken from the World Bank's *World Development Indicators* 2008 CD-ROM.

our conceptual framework and existing empirical evidence suggest could be relevant. Third, we undertake a simple multivariate regression analysis to examine how the nature of IMF lending has changed over time. As pointed out in Section 1, this contrasts with our previous work that examines the pattern of IMF lending and the probability that individual countries will borrow from the Fund (see, for example, Bird and Rowlands, 2001a, 2002, 2006b, 2009).

*(i) IMF lending volatility*

We start with two different measures of volatility; the coefficient of variation, and the absolute difference of total new lending from trend expressed as a ratio of the trend level. The results for the full period between 1948 and 2008 as well as 10-year intervals are shown in Table 1. Both of the measures indicate that after declining steadily from the early years of operation, the variance in IMF new lending has begun to increase again from the relatively stable period between 1979 and 1988. Over the full sample period the coefficient of variation is 1.24, reflecting the highly volatile early period of IMF operations, including the years in which there were no regularised lending facilities. The coefficient of variation for the period 1998–2008 is nearly twice what it was for the period 1987–97. For this more recent period the deviation from trend measure has also risen above the post-1958 average for the first time since the period 1959–68.

Next we examine the peaks and troughs of annual new IMF lending under standby, EFF and PRGF facilities. A peak (trough) is defined as a year in which lending exceeds (is lower than) that of the previous two years and the following two years.<sup>4</sup> Using this definition, peaks occur in 1954, 1957, 1962, 1966, 1970, 1976, 1984, 1999 and 2002, while troughs occur in 1951, 1956, 1960, 1967, 1971, 1974, 1978, 1989, 1997, 2000, 2005 and 2008. On average there are six years between peaks, with a minimum of three years and a maximum of 15. The average number of years between troughs is just over five years, with a minimum of three and a maximum of 11. There is often only one year from a peak to the next trough, though the average is two years and the maximum is five years. The number of years from a trough to the next peak is somewhat higher, with a maximum of six years. A regular cycle is difficult to identify within this pattern. Finally, the profile of peaks and troughs reinforces the results shown in Table 1. The volatility of IMF lending is relatively high in the early period, declining from the late 1970s to early 1990s, and then increasing again after the late 1990s.

As the biggest difficulty for resource management within the Fund is in anticipating large increases in lending, we also examine instances where

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<sup>4</sup> It should be noted that the measure of a trough is independent of the measure of a peak, and hence there can be two peak years without an intervening trough year. Consequently these peaks and troughs do not define true cycles, but rather provide an alternative means of examining variability.

TABLE 1  
Measures of Variation of Total New IMF Lending

<i>Years</i>	<i>Number of Observations</i>	<i>Coefficient of Variation</i>	<i>Average Absolute Deviation from Trend</i>
1948–2008	61	1.24	0.51
1959–2008	50	1.06	0.44
1948–58	11	1.32	0.87
1959–68	10	0.78	0.73
1969–78	10	0.62	0.41
1979–88	10	0.48	0.22
1989–98	10	0.59	0.37
1999–2008	10	0.88	0.47

Notes:

The absolute deviation from trend is computed as the absolute difference between actual new lending and the average of the previous and subsequent years' new lending, expressed as a ratio to the average of the previous and subsequent years' new lending.

year-on-year increases in lending were more than 75 per cent of the previous year's level.<sup>5</sup> These jumps occurred in 1954, 1957, 1961, 1962, 1965, 1969, 1975, 1995, 1998 and 2002. The first six of these significant increases occur in the period building up to, and in the immediate aftermath of, the collapse of the Bretton Woods system, and often involved lending to large industrial countries. There is then a lapse of 20 years before we observe a return to equivalently large jumps, starting in 1995. Once again it is apparent that the volatility of IMF lending appears to be rising back towards the levels last seen during the Bretton Woods period.

It is tempting to surmise that the emerging pattern of increasing volatility is associated with the large expansion in capital markets that has taken place in conjunction with the rapid growth of emerging market economies. By the mid-1990s, there was an increasing number of relatively large economies that were exposed to pronounced capital instability and sudden stops in capital flows that could drive them towards the IMF for financial assistance. If this explanation is accurate then the observed trend towards more volatile lending is not likely to be one that dies away quickly. More countries are expected to join the middle-income emerging market category over time, and even some established wealthier countries have become increasingly vulnerable to financial market turmoil. Indeed, the global economic crisis of late 2008 and early 2009 has shown how quickly nations that were thought to be creditworthy can come under severe economic stress. Borrowing from the Fund by Iceland, Hungary and Latvia may be a harbinger of a new period in the IMF's history during which some wealthier countries return to the group of potential borrowers alongside low-income countries.

<sup>5</sup> In fact all of these cases, with the exception of 1995, represented more than a doubling of the previous year's new lending.

*(ii) Bivariate analysis of IMF lending*

In this section we use simple bivariate analysis to examine the extent to which IMF lending is associated with key economic variables at the aggregate level. These variables are selected to reflect the conceptual framework discussed earlier in this section, and include various measures of the balance of payments, debt, interest rates, economic growth and international reserves.

We start by investigating the association between current account balance of payments deficits and IMF lending (all expressed in SDRs). To do this we examine several measures of the current account balance, including the sum of all deficits, the sum of all deficits representing more than 3 per cent of GDP of a given country, and the sum of all deficits exceeding 5 per cent of GDP. As there will probably be a delay following a balance of payments crisis before a country can reach an agreement with the IMF, we test various lag structures in our estimations. We then repeat this exercise for low-income countries (the 108 poorest countries classified by the World Bank as low income or low-middle income), for middle-income countries (the 42 countries classified by the Bank as high-middle income) and for low- and middle-income countries (LMIC) combined.

From our conceptual discussion we concluded that increasing global imbalances as reflected by larger current account deficits would not necessarily be associated with larger drawings on the IMF but that it might be reasonable to assume that larger deficits in countries that have traditionally used IMF resources would lead to greater IMF lending. Indeed, correlations with the aggregated current account deficits of all countries reveal no compelling relationship with IMF lending. As deficits in large wealthy countries dominate these totals, the lack of a systematic relationship is reasonably consistent with the conceptual framework. The correlations for the middle-income and low-income groups seem the most coherent and consistent when examined as one combined group, and some of the representative results are presented in Table 2.

Three observations may be made based on this table. First, after declining for several years, current account deficits for the low- and middle-income

TABLE 2  
Correlations between New IMF Lending and LMIC Current Account (CA) Balances

<i>Period</i>	<i>CA Deficit Coefficient of Variation</i>	<i>Contemporaneous</i>		<i>Lagged One Year</i>	
		<i>All Deficits</i>	<i>Deficits &gt; 3% GDP</i>	<i>All Deficits</i>	<i>Deficits &gt; 3% GDP</i>
1970–2006	1.42	–0.121	–0.328	–0.301	–0.495
1970–78	1.36	–0.313	–0.510	–0.488	–0.543
1979–88	0.43	–0.127	–0.219	–0.634	–0.725
1989–98	0.35	–0.605	–0.704	–0.382	–0.628
1999–2006	0.54	–0.479	+0.747	–0.515	+0.172

countries appear to be increasing in volatility; forecasting these deficits may prove harder in the future. Second, the generally positive correlation between IMF lending and the different current account surplus measures seems fairly reasonable on *a priori* grounds, even for the contemporaneous correlation. These results suggest that larger deficits are indeed associated with larger IMF lending. In addition, there is no evidence that this correlation is getting consistently weaker over time. Third, and of some interest, the correlation between IMF lending and the sum of larger current account deficits becomes unexpectedly positive in the 1999–2006 period. The positive contemporaneous correlation may reflect a process in which countries are simultaneously borrowing from the IMF and adjusting to reduce their current account deficits. However, the positive lagged correlation is somewhat less easily explained. It may be that countries are less inclined to turn to the Fund early on in the adjustment process, but may be persuaded to draw resources from the IMF when the costs of balance of payments correction without the Fund's assistance become apparent. In short, the relationship between Fund activity and current account deficits appears to be changing.

Finally, as some of the correlation between current account deficits and IMF lending may reflect upward trends in both, we repeated the analysis using first differences. Apart from the period 1979–88, when there is some suggestion that large current account deficits drive countries to the IMF and have a lagged effect on IMF lending, the results for subsequent periods reveal no clear pattern between current account deficits and IMF lending.

Countries may sustain a current account deficit without going to the IMF by borrowing from other official or private sources. To finance substantial deficits, however, a country may have to accumulate debt at an unsustainable rate that ultimately ends in crisis when lenders seek to limit their exposure. Thus it is possible that rapid expansions in LMIC debt may foreshadow crises that require IMF engagement. Accordingly, accumulations of debt should eventually lead to financial difficulties, generating a positive correlation with IMF lending. We expect that the contemporaneous correlation will be weaker or negative. To test this proposition we examine the profile of debt accumulation (both public and publicly guaranteed long-term debt and short-term debt) in this group of countries to see if it is correlated with IMF lending, and whether the relationship, if any, has changed over time.

Our results fail to find a clear and stable relationship between debt and IMF lending. For long-term debt the correlations are mostly positive, although the period 1979–89 exhibits only a small positive contemporaneous correlation and a negative lagged correlation. Generally the correlations strengthened over the 1989–2007 period to levels of around 0.7, with correlations for the contemporaneous relationship generally exceeding slightly those for the lagged one. Of some note is the dramatic decline in the two-year lagged correlation between

IMF lending and long-term debt in the 1999–2007 period to 0.06, down from 0.75 in the previous 10-year period. For short-term debt correlations the results are more striking, as these are all positive, fairly high and rise consistently to values of 0.6, 0.7 and 0.75 for the contemporaneous, one-year lagged and two-year lagged (respectively) debt levels for the years 1989–98. Over this period, debt accumulation did appear to be positively associated with IMF lending. After 1998, these correlations change dramatically and become negative at around  $-0.6$ . Countries may have been opting to accumulate debt rather than borrow from the Fund. The basic point, however, is that the empirical relationship between debt accumulation and IMF lending does not provide a firm basis upon which to predict either contemporary or future claims on the Fund.

If borrowing from international capital markets is a preferred alternative to borrowing from the IMF then it might be expected that aggregate IMF lending will tend to rise in step with global interest rates. While this pattern is apparent in the overall correlation with real interest rates,<sup>6</sup> which is highest (0.11) for the two-year lag on interest rates, the relationship only holds for the 1979–88 period. For these years there is a strong contemporaneous correlation of 0.71, which declines as lags are introduced. For the period 1989–98 the correlations decline further and become negative for the two-year lag. Finally, in the period 1999–2008 there is a weakly negative ( $-0.06$ ) contemporaneous correlation that becomes weakly positive (0.02) and then strongly positive (0.43) for the one- and two-year lagged values, respectively. Once more the absence of a stable pattern calls into question any simple story of IMF lending based on access to capital markets and the cost of borrowing from them.

Of course swings in IMF lending may simply follow the global business cycle. The recession of 1982 was a key factor in the subsequent debt crisis and expansion of IMF activity, just as the crisis in 2008/09 might be expected to generate a similar episode of Fund lending. Business cycles are notoriously difficult to predict as well, but in the absence of unusual shocks they do seem to display some stability in frequency from one cycle to the next. Table 3 examines how well the actual pattern of IMF lending fits that of business cycles.

Most of the correlations are negative, as expected, with one-year lagged correlations generally exceeding in magnitude their contemporaneous counterparts. While the correlation values are quite high when lagged, the relationship is rather unstable, with the direction of the lagged correlation becoming positive in the 1961–68 and 1989–98 periods.

Finally, we examine the relationship between reserve holdings and IMF lending; it is likely to be complicated and also subject to lags. Countries might finance balance of payments deficits by running down their own international

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<sup>6</sup> The real interest rate was calculated as the secondary market LIBOR on six-month US Treasury bills, less the US rate of consumer inflation.

TABLE 3  
Correlations between New IMF Lending and Growth Rates

<i>Period</i>	<i>Average Growth</i>		<i>Coefficient of Variation</i>		<i>Correlation (No Lag)</i>		<i>Correlation (One-year Lag)</i>	
	<i>World</i>	<i>Low and Middle Income</i>	<i>World</i>	<i>Low and Middle Income</i>	<i>World</i>	<i>Low and Middle Income</i>	<i>World</i>	<i>Low and Middle Income</i>
1961–2006	3.66	4.48	0.42	0.37	-0.43	-0.26	-0.56	-0.36
1961–68	5.39	4.69	0.14	0.38	0.03	-0.35	0.23	0.65
1969–78	4.24	5.66	0.42	0.18	-0.17	-0.29	-0.74	-0.53
1979–88	3.06	3.59	0.46	0.39	-0.05	-0.48	-0.72	-0.85
1989–98	2.78	3.36	0.28	0.37	-0.30	0.10	0.08	0.47
1999–2006	3.10	5.29	0.32	0.34	-0.43	-0.52	-0.90	-0.74

reserves rather than by borrowing from the IMF. But such a strategy may not prevent eventual recourse to the Fund. Therefore, low contemporary levels of reserves for low- and middle-income countries should be related to higher levels of IMF lending. Comparisons across time may be complicated by endogeneity, however, as countries may build up their levels of reserves during periods of economic uncertainty and volatility in part to avoid the policy restrictions associated with future IMF borrowing. Given the potentially large swings in capital movements, the pattern may well be that reserves begin to decline sharply in vulnerable countries, but also in aggregate, in the months prior to increased Fund lending.

Our examination of the data suggests that there is no stable relationship between reserves and IMF lending. During the 1969–78 and 1989–98 sub-periods, the full sample correlations are positive for contemporaneous, one-year and two-year lags using total middle- and low-income country international reserves. This group of countries was both accumulating reserves and borrowing from the IMF during these times. For the 1999–2006 period, however, the correlations are all negative and large (roughly  $-0.55$ ) compared to values of approximately 0.7 for the previous period. The negative correlation observed in recent years reflects the simultaneous increase in reserves and the relatively low use of IMF resources. As with current account deficits, our results find no consistent relationship between decreases in aggregate reserves and increases in IMF lending.

For completeness we re-examined the correlations reported above using first differences. No strong patterns emerged; indeed the correlations generally displayed even greater instability across different periods and with different lags. Similarly there was no apparent pattern by which the peaks or troughs of these different potential determinants aligned with those of IMF lending.

In summary, our bivariate analysis suggests that there is no clear, simple and stable relationship between IMF lending and the factors that theory might suggest would exert an influence on it. Consequently, IMF lending will remain difficult to explain, let alone predict.

*(iii) Regression analysis of IMF lending*

While useful in understanding the basic relationships between new IMF lending and key characteristics of the global economy, bivariate correlations may not reveal true relationships in the presence of multiple contributing factors. Therefore we supplemented our analysis by undertaking some simple multi-variate regressions to generate a more comprehensive picture.

Our dependent variable remains new IMF lending in a given year. We first confirmed that this variable did not possess a unit root, using the Phillips–Perron test. We then ran estimations (correcting for first-order autocorrelation using the Prais–Winsten transformed data). As we are primarily interested in forecasting IMF lending, we lagged all the explanatory variables by one year (when two-year lags are used there are no significant coefficient estimates for any of the explanatory variables).

The results, shown in Table 4, suggest that, while the bivariate correlations reported earlier exhibit considerable instability, these mask some apparently stable and significant relationships. In fact, the adjusted *R*-squares for both sample periods are reasonably high for the sample sizes (between 0.66 and

TABLE 4  
Estimations for New IMF Lending, 1971–2007  
(Million SDRs)

<i>Variable (One-year Lag)</i>	<i>Pre-1990 Estimation Results</i>		<i>Post-1989 Sample Results</i>	
	<i>Estimated Coefficient</i>	<i>t-Statistic</i>	<i>Estimated Coefficient</i>	<i>t-Statistic</i>
Constant	7,457***	4.14	–29,531**	–2.66
Global growth	–1,331***	–3.50	–6,296***	–3.43
Real interest rates	962*	2.06	2,521*	2.17
LMIC reserves	0.580	1.47	–0.106	–0.98
LMIC long-term PPG debt	–0.478	–0.77	0.792	1.11
LMIC short-term debt	–4.83	–0.83	0.518***	4.36
LMIC CA deficits >3% of GDP	–0.20	–0.23	0.0103	1.37
Sample size	19		18	
Adjusted <i>R</i> -squared	0.66		0.71	

Notes:

Growth and interest rates are expressed in percentages, while reserves, debts and deficits are in billions of SDRs. \*\*\*, \*\*, \* indicate different from zero at the 1 per cent, 2.5 per cent and 7.5 per cent levels of statistical significance, respectively.

0.71). Over both the early and later periods global economic growth has a significant and lagged association with new IMF lending. For the period 1971–89, a 1 per cent fall in global growth is associated with an SDR 1.3 billion increase in IMF lending, while for the 1990–2007 period the increase in lending is SDR 6.3 billion. Similarly real interest rates are positively (though weakly) associated with IMF lending. For the period 1971–89, a 1 per cent increase in real interest rates is associated with an increase in IMF lending in the following year of SDR 0.96 billion, while for the period 1990–2007 the increase is SDR 2.52 billion. Finally, in the latter period, an increase in short-term debt of SDR 1 billion is associated with an SDR 0.52 billion increase in the following year's level of IMF lending. The regressions provide further evidence that the relationship of IMF lending with other variables (international reserves, long-term debt and current account deficits) is not significant. Our regression results provide some limited support for those reported by Ghosh et al. (2007), particularly in being able to identify a reasonable *ex-post* explanation of aggregate IMF lending.

While there are too few observations to conduct a satisfactory out-of-sample analysis, we do examine the within-sample accuracy of our underlying econometric model. Specifically, we compare the predictions of the equations with actual lending to see if large increases in IMF lending (an increase of over 50 per cent from the previous year) are predicted. While the equation does reasonably well by identifying the big increase in 2002, and does moderately well by predicting the jump in 1990, it does poorly in anticipating the large increases in 1993, 1995 and 1998.

Overall, the conclusion we draw from our empirical investigation is that, while it is possible to isolate a number of factors that seem to exert an influence over aggregate IMF lending, there is substantial evidence that the relationships identified are rather unstable over time. Structural breaks are difficult to anticipate, and new relationships may emerge quickly in an integrated and rapidly changing global financial system. Predicting future IMF lending with any degree of accuracy is extremely difficult and quite possibly too unreliable to be useful.

#### 4. POLICIES TO DEAL WITH THE EPISODIC NATURE OF IMF LENDING

While the principal purpose of this paper is to examine empirically the nature of IMF lending, it would seem appropriate to offer a few observations on the policy implications of our findings. If it is impossible to forecast with reasonable accuracy future claims on the IMF, attention needs to focus on designing a flexible approach to the lending capacity of the Fund in order to meet varying levels of demand for financial assistance. In an earlier article in

this journal (Bird and Rowlands, 2001b), we discussed this issue in detail, so we discuss it only briefly here.

How has the Fund dealt with variations in the demand for its resources in the past? When initially established the Fund was seen as a credit union. Members paid in their subscriptions based on their quotas and had access to IMF resources when needs arose, again based on their quotas. With both the demand for and supply of IMF resources linked to quotas, there appeared to be an assumption that the demand for Fund assistance would not outstrip the ability of the Fund to meet it. However, over time it became evident that large simultaneous claims on the Fund could lead to a shortage of IMF liquidity and the Fund negotiated the General Arrangements to Borrow (GAB) as a way of augmenting it when needed, borrowing from large, wealthy and financially sound member countries.

After the Mexican 'Peso Crisis' in 1994/95, the IMF and its members created the New Arrangements to Borrow to supplement the GAB. Before it came into effect in 1998, however, the East Asian financial crisis had sparked renewed demand for Fund resources. In the aftermath of this new crisis, it became evident that the then current level of quota-based access did not provide the affected emerging economies with adequate amounts of support, given the size of capital outflows they were experiencing. As a result, the Fund invoked its new Supplemental Reserve Facility to allow 'exceptional access' significantly above conventional quota limits. While most Fund arrangements continued to fall within normal access limits, the relatively few that did not in fact often accounted for the clear majority of the IMF's total financial commitments. For example, at the end of 2002, 85 per cent of the Fund's commitments were concentrated in five arrangements involving exceptional access, with Turkey borrowing an amount 15 times more than its quota. By this time, in practice, quotas no longer provided much of a constraint on aggregate IMF lending and could not be relied upon to generate an adequate amount of resources for the Fund.

Increasing quotas as a way of dealing with a shortage of IMF liquidity is a double-edged sword, as it increases the potential demand for IMF resources as well as providing additional resources. Moreover, the increased demand associated with quota increases will be for internationally acceptable currencies while the increased supply will, to a large extent, be in currencies that are not 'usable'. On top of this, quota increases are likely to take a long time to negotiate. Using an automatic formula to increase quotas might overcome the problem of delay but it encounters problems of its own. The precise nature of the formula would need to be addressed in such a way that it proxies the need for IMF resources and, as the empirical findings reported above show, it would be difficult to design such a formula. Moreover, given that quota changes would probably be asymmetrical, having the capacity to increase but not diminish,

there would be a real possibility that for protracted periods the Fund could have substantial unused lending capacity. Finally, quota changes would also probably affect the balance of voting within the Fund and the distribution of institutional management control, introducing contentious political debates into an already difficult economic problem. Quota reform by itself, therefore, seems an inadequate tool for addressing problems at the IMF (see Bird and Rowlands, 2006a, for a further discussion).

Borrowing by the IMF from wealthy and financially secure member countries, as is incorporated in the GAB and NAB, and as endorsed by the G20 in early 2009, also has undesirable characteristics. It may again involve delay. Certainly it carries with it the additional politicisation of IMF lending. Those countries providing the resources may take the opportunity to argue for concessions; there may be a *quid pro quo*. Finally, the 2008/09 crisis highlighted the degree to which the demand for IMF resources by emerging market countries may coincide with (or be caused by) financial and economic problems in wealthy countries. Domestic problems may limit the willingness or ability of some countries to provide the necessary resources.

An alternative is for the IMF to borrow from private international capital markets when it faces short-term problems of illiquidity. While the quota system could be retained – albeit on a reformed basis (see Bird and Rowlands, 2006a) – the Fund could substitute borrowing from private capital markets for borrowing from wealthy and financially sound member countries as a way of augmenting its lending capacity when the need arises.

The advantage of this method of financing the IMF is that it would be quick-acting and would avoid the political aspects of borrowing from member countries. It would be an option that would only be activated in circumstances of IMF illiquidity, so it would not involve the Fund holding excess lending capacity. It would also expose the portfolio of IMF loans to market judgment and this would constrain the possibility that the Fund might be tempted to engage in excessive lending. As the Fund would only be activating the option in circumstances where large emerging economies were turning to it for financial support, and as there is a reasonable presumption that such countries would only be coming to the Fund where they had lost direct access to private capital markets, there is little danger that borrowing by the IMF would crowd out direct lending by capital markets to the affected countries. The Fund could use its holdings of gold as collateral and the evidence on arrears suggests that it is highly unlikely that the Fund would face a serious problem of default on its own loans; the costs of defaulting on IMF debt in terms of future access to international capital would be perceived by borrowing countries as exceeding the short-term benefits.

The idea of the Fund borrowing from private capital markets is not a new one and it has been rejected in the past. The reasons for rejection have been,

first, that it is out of character for the Fund and inconsistent with the credit union idea, and, second, that it would crowd out direct lending to member countries and possibly the World Bank as well. There has also been, one suspects, the feeling amongst important shareholding countries that quota-based resources impose a constraint on IMF lending and that using quotas and borrowing from powerful members keeps the Fund on a 'short leash'. Finally, there is the suggestion that the Fund would become too dependent on private capital markets and would become an agent of the markets, with this exerting an adverse effect on other aspects of the Fund's operations, such as the design of conditionality. While certainly worthy of serious scrutiny these counter-arguments are not compelling. As noted above, the character of the Fund has been, and is, changing and the IMF needs to look to the future and not the past. The important point is to ensure that the Fund has sufficient flexibility in terms of its own resources to perform its global functions properly, including lending to member countries in appropriate circumstances. Also as noted above, the Fund would not be borrowing while emerging economies retained direct access to international capital markets. Once more as noted earlier, quotas have not imposed an effective constraint on IMF lending, and borrowing under the GAB and NAB arrangements carries political implications. The danger of 'unleashing' an expansionist IMF by allowing it uncontrolled access to international capital markets, as some public choice theorists fear, can also be seriously overstated. The markets themselves would impose discipline. And, even if the IMF were to be granted a greater degree of independence such that political constraints via the Executive Board were to be reduced, the Independent Evaluation Office could be used to audit the Fund's borrowing operations. The danger of allowing private markets to exert excessive influence over IMF policy because of their creditor role may also be less than some might assume. The IMF would be an attractive borrower given the low risk of it defaulting, and the relative attraction of lending to the IMF would be particularly strong in circumstances where direct lending to individual countries had become unattractive. Combined with the fact that the behaviour of individual private lenders would be difficult to coordinate, the threat of withholding financial support for the IMF by international capital markets would lack credibility. It therefore seems unlikely that the Fund would merely be swapping one group of 'principals' in the form of those member countries providing additional financial support under the NAB or GAB, for another group in the form of private international capital markets.

In the aftermath of the global financial crisis, many national governments borrowed in order to provide resources to companies to which the banks were not prepared to lend. Moreover, a strong argument has been made that these activities need to be internationally coordinated. There may be a logical consistency between this policy and the idea that the Fund should be prepared to

borrow from international capital markets in order to finance loans to countries to which the markets are no longer prepared to lend directly. In the former case, the rationale is to help avoid prolonged economic recession and to stimulate economic growth. A similar rationale can be applied to the proposal for an expansion in IMF lending financed by direct borrowing from private international capital markets.

A more ambitious solution to meet the Fund's need for resources would be to expand the role of the SDR, allowing SDR creation to be used as a means of financing the Fund's lending operations. This is not a new idea either. However, the chances of it happening depend on the political acceptability of significantly enhancing the functions of SDRs in the international monetary system. For reasons examined in Bird (2010), these chances appear to be rather low and considerably lower than the chances of activating a scheme for borrowing from private international capital markets.

#### 5. CONCLUDING REMARKS

One legacy of the global financial crisis that engulfed the world at the end of 2008 has been to refocus attention on the IMF. In early 2008, the Fund's profile had been fairly low. It had a limited portfolio of outstanding loans and some influential observers were claiming that it was becoming irrelevant to the world economy. But, by the end of the year, the Fund was being seen as a potentially pivotal institution for helping to deal with the global crisis. Some notable affected countries were turning to the Fund for financial assistance and the concern was that the IMF might run out of resources. Attempting to explain the often dramatic swings in IMF lending has been the main purpose of this paper.

Empirical investigation reveals that IMF lending is episodic and unpredictable. Unforeseen crises in important emerging economies can have a dramatic effect on aggregate IMF lending. This implies that a method for financing the Fund's lending operations needs to be found that allows a quick and large response. Flexibility needs to be built into the resource capacity of the IMF. This is not satisfactorily achieved by the current quota system or by the current borrowing arrangements based on the GAB and NAB. Nor would it be achieved by having an automatic system based on a revised quota formula as the underlying determinants of the demand for IMF resources are unclear and unstable. An alternative that is worthy of close inspection is to encourage the Fund to borrow directly from private international capital markets when its own liquidity is threatened. Such reform could be one element of a broader reform of the international monetary system that incorporates occasional allocations of SDRs and enhanced regional monetary arrangements.

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