



Fiscal and monetary institutions and policies: onward and upward?

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Abstract

Purpose – The latest generation of research into macroeconomic policy has turned from more technical aspects of optimal control and expectations formation to consideration of the policymaking institutions themselves. More and more countries have moved towards greater degrees of central bank independence, including many developing economies as well the member countries of the European Central Bank. What still is not generally settled among economists is how to measure the stance of policy and the institutional features of the policymaking process. The purpose of this paper is to assess prevailing monetary and fiscal policies.

Design/methodology/approach – The paper takes the form of a review encompassing many different measurements of policy stance and policymaking processes. The authors begin with monetary policy followed by an analysis of central bank institutions. The next sections turn to fiscal policy and the need to adjust budget balance for the state of the business cycle. There is then a brief concluding section.

Findings – The authors show in this review that fiscal and monetary rules, and economists' understanding of them, have changed substantially over the years. While on one level there is greater consensus, there have been new questions raised in the process that leave plenty of room for further ongoing research in these key policy areas as well as the optimal design of the design of the monetary and fiscal institutions concerned.

Originality/value – The paper provides a review of the existing literature updated and applied with reference to recent events, including the global financial crisis.

Keywords Macroeconomics, Monetary policy, Money supply, Institutions and the macroeconomy, Central Bank policy, Central banking, Credit supply

Paper type Research paper



JEL classification – E02, E0, E, E58, E5

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Je veux que la Banque soit assez dans les mains du gouvernement et n'y soit pas trop.

[I want the bank to be sufficiently in the hands of the government but not too much so.]
(Napoleon Bonaparte)[1].

Introduction

The latest generation of research into macroeconomic policy has turned from more technical aspects of optimal control and expectations formation to consideration of the policymaking institutions themselves. More and more countries have moved towards greater degrees of central bank independence, including many developing economies as well as the member countries of the European Central Bank. What still is not generally settled among economists is how to measure the stance of policy and the institutional features of the policymaking process. Our review encompasses many different measurements of policy stance and policymaking processes. We begin with monetary policy in the following section after which the third section analyses central banking institutions. The fourth and fifth sections turn to fiscal policy and the need to adjust budget balance for the state of the business cycle. There is then a brief concluding section.

Central bank reaction functions: assessing the stance of monetary policy

Central banks are broadly responsible for the conduct of monetary policy. As such economists, as well as political scientists, have long been interested in explaining how these institutions behave in practice. Reuber (1964) was perhaps the first to formally write down a relationship that describes how central banks respond to various developments in the economy, including overall economic growth and inflation; a relationship that came to be termed a “reaction function.” It did not take long until the literature expanded to take into account the political science argument that the monetary authority, insofar as it is under the sway of government, would also be influenced by the electoral cycle (Willett, 1988). Economists and political scientists went on to address the possibility that the partisan leanings of various governments could be another influence on the conduct of monetary policy (Drazen, 2000, and references therein).

Interest in the reaction function approach was reignited under the stagflation experience of the 1970s and 1980s, when poor economic performance was accompanied by growing unhappiness at the powerlessness of fiscal policy to deal with the malaise. As discussed in more detail in the next section, central banks around the world began to be given more statutory independence from government. This autonomy was often supplemented with frameworks designed to make them more accountable. Inflation targets were first introduced in New Zealand in 1989, followed shortly thereafter by Canada, Australia and the UK (Bernanke *et al.*, 1999). Since then the movement has accelerated and inflation targeting is perhaps the most popular framework of monetary policy today, extending beyond the strict, mandated inflation targeting embraced in the European Union (EU) to the type of looser, implicit inflation targeting often attributed to the US Federal Reserve. Meanwhile, as velocity became more variable in the 1980s, monetary authorities around the world increasingly began to rely on interest rates as the principal, if not sole, instrument of monetary policy[2].

Taylor (1993) played a key role in laying the groundwork for revived interest in the reaction function approach. Whereas much of the earlier reaction function literature

had focused on the money supply, Taylor switched the focus to interest rate setting and posited that Federal Reserve policy under Alan Greenspan could be understood in terms of the federal funds rate responding to inflation that exceeded some desired level and to the gap between actual and sustainable output (the “output gap”). This relationship, since called the “Taylor rule,” became almost universally accepted as the shorthand explanation of how interest rates are set. The difficulty is that the output gap is not observed but must be estimated and an extensive literature has emerged that focuses exclusively on the tricky problem of measuring the output gap (Orphanides and van Norden, 2002). US studies typically impose Taylor’s belief that the Fed has a long-range inflation objective of 2 per cent and will react whenever it is above or below that value.

While the Taylor rule has emerged as an apt description of the forces that guide monetary policy, it was originally intended simply to capture the essence of Federal Reserve policymaking under Alan Greenspan so it should not be taken as something that all central banks, or even all US Federal Reserve chairmen, will maintain (Poole, 2006). Meanwhile, Taylor’s additional assumption that, whenever inflation exceeds its desired value of 2 per cent, the Fed increases the nominal interest rate more than in proportion to the rise in inflation has become known as the Taylor (1998) principle. The reaction to the output gap seems consistent with the notion that the Fed cares about both real economic developments and inflationary developments. Despite its Greenspan-specific origins, it did not take long for economists to find the Taylor rule an appealing vehicle for understanding central bank behaviour more generally. This led to a veritable explosion in the reaction function literature (Clarida *et al.*, 1999) while the Taylor rule came to be used both positively to estimate how central banks actually behave and normatively to recommend how they should behave.

Many extensions and variations to the original Taylor rule have been seen amidst a seemingly ever-growing set of applications around the world (see, for example, Siklos and Wohar, 2006; Siklos and Bohl, 2009; and references therein). Whereas Taylor’s original rule has the central bank reacting contemporaneously to inflation and the output gap, this is somewhat inconsistent with the notion that central banks set policy rates today based on their expectations of future inflation and output gap levels. Forecasts of inflation and the output gap, preferably the central bank’s own forecast, can be employed instead (Svensson, 2003). Meanwhile, with central banks widely viewed as reacting cautiously, if only because the future is uncertain and both the reputation and the credibility of the central bank might be adversely affected by an unduly hasty response, interest rate changes are likely to be gradual and spread out over time (Sack and Wieland, 2000). In addition to examining whether the Taylor rule could be representative of the conduct of monetary policy in other countries, many researchers have considered whether other variables such as the exchange rate or asset prices (like housing or equity prices) might also influence interest setting behaviour. Most recently, deviations from the Taylor (2010) rule have been linked to the surge in US housing prices in the lead into the sub-prime crisis that erupted in 2007-2008.

For countries such as the People’s Republic of China, where policy has focused more on money growth rates and interest rates remain less than fully market determined, the less-well-known “McCallum rule” (McCallum, 1999) can be used to yield analogous insights into monetary policymaking (Burdekin and Siklos, 2008; see also Burdekin, 2008, Chapter 4). This McCallum rule, which relates monetary aggregates to the GDP

gap and velocity growth, may also be more applicable to deflationary situations like Japan's where interest rates are already very low. In such cases, the Taylor rule may call for interest rate cuts that are infeasible in practice owing to the zero interest rate lower bound. Such a scenario has, of course, emerged on a much more widespread basis following the 2007-2008 global financial crisis, with the accompanying shift to quantitative easing persisting at least into 2011 in the US case[3]. It will be interesting to see how reaction function estimation takes into account the period of zero interest rate policy by the Federal Reserve and whether this will indeed imply more appeal to the McCallum rule over the more familiar Taylor rule approach.

Measuring monetary institutions and central bank independence

Central bank independence is regarded as one possible solution to the time-inconsistency problem of monetary policy. Rogoff (1985) demonstrated that delegation of monetary policy to a more inflation averse, independent central banker – one who could not be overruled later by the delegator – should theoretically lead to better inflation outcomes. This should also help keep interest rates down insofar as investors no longer demand an extra premium to compensate for the erosion of principal by inflation over the term of the loan. Napoleon Bonaparte himself initially favoured establishing a privately owned Banque de France because he reasoned that increased investor confidence would help keep interest rates and borrowing costs low (Elgie and Thompson, 1998, p. 98). When liquidity problems emerged in 1805-1806, however, Bonaparte swiftly reformed the bank by executive fiat, with the governor and vice-governors henceforth being appointed by the head of state. This was an early reminder, as later seen in Canada during the infamous “Coyne affair” at the beginning of the 1960s (Siklos, 2010), that autonomy can always, in reality, be reversed and that even the most statutorily independent central bank remains potentially vulnerable.

In addition to producing less inflationary outcomes, an independent central bank could also provide for more consistent policy and reduced uncertainty through having the same policymaking body span the administrations of different political parties. Central bank independence can, of course, be combined with other ways of anchoring policy, such as the increasingly popular device of inflation targeting[4]. Whereas the Reserve Bank of New Zealand Act 1989 established an inflation target without statutory central bank independence, the European Central Bank, for example, combines formal independence from government with a clearly defined inflation target. It is surely not coincidental that the decline in world inflation since the 1980s has been accompanied by both more widespread adoption of inflation targets and by higher central bank independence in the industrial and developing world alike[5].

The first attempts at measuring central bank independence were by Bade and Parkin (BP, 1987) and by Banaian, Laney, and Willett (BLW, 1983)[6]. BP use three dimensions of central bank structure to divide central banks into four classes. The most independent central banks enjoyed final authority over monetary policymaking, had no government official on their governing board and had some board appointments that were independent of government. Only the German Bundesbank and the Swiss National Bank met all these standards. BP found both the Federal Reserve and the Bank of Japan to meet two of the three criteria and grouped them in the next, intermediate category of central bank independence. BLW argued that the Federal Reserve is closer to the Swiss and German central banks. Because the Federal

Open Market Committee includes five Fed district presidents that are appointed by private directors, they argue, there are some appointments independent of government. BLW treated independence as binary – only Switzerland, West Germany and the USA had independent central banks, and there was no attempt to assess how much less-than-independent the others were.

Alesina (1989) marginally extended BP's coverage and introduced a fourth criterion to determine whether the monetary authority could resist fiscal pressures to monetize debt. If the central bank is required to absorb the excess supply of Treasury bills issued by the fiscal authority, inflation may result even if the central bank has autonomy otherwise and prefers a lower inflation rate[7]. Later measures added on still more institutional features. The Grilli, Masciandaro, and Tabellini (GMT, 1991) index, for example, is a summation of eight features, each equally weighted. Their approach highlighted disagreement in interpretation of central bank laws and how some criteria were written. In the former category, GMT judged that the Nederlandsche Bank had final authority over monetary policy, while BP did not[8]. In the latter category, GMT insisted that every member of the central bank board had to be appointed outside the government to achieve greater independence, whereas BP argued that only some independent governors or directors were needed.

The most popular of the central bank independence measures is that of Cukierman, Webb, and Neyapti (CWN, 1992). It is additive like GMT, but allows for a much richer set of possible institutional arrangements along a variety of scales, eventually considering 17 different legal attributes. Some of them are measured on two- or three-point scales, others on as high as a seven-point scale. They are then added, sometimes in an unweighted average and other times in a weighted average (termed LVAU and LVAW, respectively). CWN's measures are therefore not cardinal in the manner of the earlier indices. CWN's methodology has been imitated by a number of papers since, including Cukierman *et al.*'s (2002) coding for the transition economies and Jácome and Vázquez's (2008) examination of the Latin American and Caribbean economies[9]. The CWN approach is not without its critics, however, with Banaian and Luksetich (2001) showing that only certain elements on the CWN scale are useful in reducing inflation. Meanwhile, Banaian *et al.* (1998) point out that the arbitrary summation method used in CWN does not stand up to scrutiny using principal components analysis. Indeed, the single factor concerning who has final authority over monetary policy accounts for most of the variation in the 17 measures, implying that the other myriad factors may not contribute much additional explanatory power.

It is widely agreed that no matter how one measures the legal autonomy of a central bank, the practice of central bank independence may differ. CWN offer an additional measure focusing on the turnover of the central bank governor. High degrees of turnover (relative perhaps to some "normal" level) are seen as undue interference in the activities of the central bank. CWN offer evidence that higher rates of turnover are correlated with higher rates of inflation. Walsh (2005) posits, however, that this may be a case of reverse causality – governors who are unable to keep inflation under control will be held responsible and get the sack. This is part of a broader debate concerning whether the overall relationship between institutional independence and inflation rate itself involves such reverse causation. While the effect of national preferences simultaneously producing both low inflation rates and independent central banks remains largely

unquantifiable, Brumm (2011) does find evidence of two-way causality consistent with inflation and central bank independence being jointly determined[10].

Central bank independence, unmeasured 25 years ago and practiced in no more than a handful of industrialized countries, now exists in many more places and in nations much different from Germany or Switzerland. Independent central banks emerged in Mexico and Chile, for example, as well as in many of the successor states of the former Soviet Union. The relationship between central bank independence and inflation consistently seen in earlier studies for the industrialized economies (including BLW, 1983; BP, 1987; GMT, 1991; Cukierman, 1992; Alesina and Summers, 1993) is not so clear in post-2000 data, however (Crowe and Meade, 2007). One explanation for this is that, just as more widespread central bank independence has been accompanied by a global decline in inflation, the greatly reduced variation in inflation rates may make the effects of different institutional structures harder to identify empirically. At the same time, the prior belief that effects of central bank independence on inflation were weaker in developing economies (CWN, 1992) has been supplanted by evidence in favour of such a relationship outside the more industrialized nations (Gutiérrez, 2004; Brumm, 2006; Jácome and Vázquez, 2008).

Given that there is not yet, nor likely ever will be, complete consensus as to the measurement of independence based on legal structures, a recent development has involved efforts to assess independence based on actual inflation performance. Siklos (2008), for example, examines which central bank characteristics were most important for inflation performance for a broad range of countries over the 1990-2004 period. The results point to the importance of considering both *de facto* and *de jure* aspects of independence[11]. Meanwhile, Alpanda and Honig (2010) construct a purely *de facto* ranking of central bank independence based on the degree to which observed monetary policy moves coincide with the electoral cycle. Traditional measures of central bank independence do themselves appear to be linked to the prevalence of political monetary cycles under this approach, with Alpanda and Honig (2009) finding that evidence of such cycles is essentially confined to developing countries that do not possess statutorily independent central banks.

In the face of the expansionary fiscal policies adopted by many countries following the global finance crisis, another question considers whether central bank independence might be threatened by “unpleasant monetarist arithmetic” forcing monetary finance of otherwise unsustainable budget deficits (Sargent and Wallace, 1981). The threat of fiscal dominance is minimized when the outstanding public debt is fully backed by current and future primary budget surpluses without any prospective reliance upon seigniorage revenue. de Resende (2007) finds that the actual degree of fiscal dominance is low for almost all OECD countries but is more of a concern amongst developing economies. Fiscal dominance threatens not only effective central bank independence but also the scope for achieving inflation targets insofar as the central bank loses control over the size of its own balance sheet (Freedman and Ötker-Robe, 2010). Walsh (2011, p. 19) further states: “Without fiscal acceptance of the goals of low and stable inflation, the central bank will ultimately fail, regardless of its supposed degree of operational independence.” In the US case, the degree of collaboration with the government and the extraordinary funding initiatives undertaken by the Federal Reserve since 2008 raise further concerns regarding whether there has been some lasting change in the degree of effective central bank independence. While the ultimate implications remain unclear

at this point, Goodfriend (2011, p. 3) emphasizes that “an independent central bank cannot be relied upon to deliver or decide upon the delivery of fiscal support for the financial system”.

Fiscal policy: flexibility vs discipline

Whenever the government’s budget deficit increases, it must be funded by some combination of money issue and bond issue. So long as a ready market for its debt exists, bond-financed deficits offer a means for the government to boost the economy through fiscal policy alone, however. The first large-scale adaptation of such a policy took place in the 1930s and was famously advocated by Keynes (1936) as a means by which government policy could bring about recovery from the Great Depression by sacrificing the goal of a balanced budget for the good of the economy. Since declines in output imply a similar decline in income taxes and sales taxes, falling tax revenues tend to automatically push the budget into deficit during economic downturns. Adding to this automatic movement into deficit is higher government spending on unemployment and welfare benefits as the numbers unemployed rise in the face of lower economic activity.

Balancing the budget under these conditions would require raising taxes or cutting government expenditure as the economy weakens. Whereas the deficits generated in times of economic weakness should, in theory, be balanced by surpluses that automatically emerge as the economy strengthens, Keynes had advocated augmenting these “automatic stabilizer” effects with discretionary cuts in tax rates and new government spending programs. Such expanded levels of government largesse have proven hard to reverse politically – given that tax cuts tend to be rather more popular than tax hikes while expenditure increases always benefit someone and cutbacks always hurt someone. The near-continuous US budget deficits in the postwar era, therefore, while not actually consistent with Keynes’ economic policy recommendations, emerged as a political legacy when the freedom for discretionary “demand management” was combined with the realities of the electoral process (Buchanan and Wagner, 1977).

Deficits have also been encouraged by the relatively short-time horizons inevitable under a political system that gives most political parties the expectation of only a limited time in power before being succeeded by the opposition. In addition to creating incentives to expand prior to an election (Drazen, 2001), the party in power may well tend to borrow more than they otherwise would so as to constrain the scope for new spending by their successors (Persson and Svensson, 1989). Governmental systems where tax and spending powers are somewhat divided, as in the US case, may add an extra ingredient to the expansionary bias. For example, the burgeoning Reagan deficits that reached 6 per cent of GDP in 1983 occurred as the president pushed for tax cuts while congress resisted government spending cuts, a stratagem that Sargent (1986) argues may have represented a deliberate attempt by the executive branch to essentially force spending cuts on congress by presenting them with huge deficits as the price of inaction.

Imposing rigid fiscal rules that mandate a continuously balanced budget would, as in the 1930s, force the government to undertake contractionary policies when the economy weakens. On the other hand, the postwar experience as a whole suggests a need for constraining deficits that are neither the result of temporary weakness in the economy or other extreme events such as wartime exigencies. This gives a certain appeal to focusing

on the cyclically adjusted budget deficit. Constraining the cyclically adjusted deficit would still allow the automatic stabilizers to function in the face of recession but preclude the discretionary increases in spending programs and tax cutting that have been so hard to reverse in practice. Cyclically adjusted deficit rules, while theoretically more desirable, remain less transparent than absolute constraints, however. Moreover, cyclically adjusted data series have been subject to such substantial revision that it is unclear that they can be used as a reliable basis for real-time decision making (Hughes Hallett *et al.*, 2007). Whereas absolute deficit limits and/or debt limits have been widely imposed, as in Europe and the USA, the enforceability of such well-intended discipline devices was being very much put to the test in the aftermath of the global financial crisis.

As discussed earlier, fiscal discipline, however achieved, has important implications for the feasibility of monetary discipline as well. Sargent and Wallace's (1981) model shows how sustained, long-term deficit growth implies an ever-increasing stock of outstanding government debt that, if never to be paid off through future taxes, must eventually exhaust the demand for such debt and require the central bank to purchase the debt – with severe inflationary consequences. This theoretical possibility hits uncomfortably close to home today. Earlier on, concern with this issue led a number of countries, such as Chile and Mexico, to establish independent central banks only after their budget deficits had been reined in. New monetary regimes focused on inflation targeting were also supplemented by the imposition of fiscal rules calling for the achievement of fiscal stability – with Chile, for example, mandating a 1 per cent structural surplus (Wyplosz, 2005). In New Zealand's case, the budget deficit was shrunk from 7 per cent of GDP in 1984 to 2 per cent of GDP in 1989 when the Federal Reserve Bank of New Zealand Act established the Reserve Bank's new focus on inflation control – and was followed by the Fiscal Responsibility Act 1994 that provided for running budgetary surpluses to pay off the debt built up by loose fiscal policies in the past (Burdekin and Langdana, 1995).

Even prior to the global financial crisis, the difficulties in establishing enforceable fiscal rules were highlighted by the way in which the deficit limits mandated by the EU's Growth and Stability Pact were being exceeded in Germany and elsewhere. It is thus encouraging that there is some evidence suggesting that establishing monetary discipline may itself exert beneficial effects on fiscal discipline. Burdekin and Laney (1988) found that countries with more independent central banks, on average, had lower budget deficits as well as lower inflation rates. Although this evidence was based on a sample that included only three countries classified as having independent central banks (Germany, Switzerland and the USA), it is consistent with the premise that governments that cannot count on monetary accommodation of their budget deficits will be less inclined to run such deficits because of the higher interest rates likely to arise under purely bond financing. Similarly, Tapsoba (2010) finds that another form of monetary discipline, inflation targeting, had favourable effects on fiscal discipline among developing economies (but not industrialized economies) based on a sample of 22 inflation targeters and 36 non-inflation targeters over the 1980-2003 period. In this case, central bank independence was also found to significantly augment the effects on fiscal discipline arising from inflation targeting. There seems to be at least some promise, therefore, that improved monetary frameworks may offer a tractable way on induce better fiscal outcomes as well.

Assessing fiscal institutions: problems and means of improvement

The way policy makers decide the budget can itself lead to certain recurring problems. The first is known as the common pool resource (CPR) problem. Policy makers may consider the full benefits of their spending decisions but only part of the overall tax cost, as in Weingast *et al.*'s (1981) model for the US Congress with members of Congress representing only the fiscal interests of their own district. The second is a principal-agent problem. Voters delegate power to elected officials, and they in turn delegate power to bureaucrats, but with obvious problems when the "principal" wants something different than the "agent." The third problem is moral hazard, which arises mostly in places with multiple levels of government. The way that governments make budgets can alleviate or exacerbate each of the problems.

There are several proposed institutional solutions to the CPR problem. One idea is to have actors vote on the aggregate spending total before voting on individual budgets. This "top-down" practice is meant to force actors to consider explicit tradeoffs that they may not consider when they engage in a "bottom-up" process. A related idea is to set explicit limits, or targets, on what the government can do on the budget. The constraints appear often in constitutions to limit the size of spending, the deficit, and/or debt. For example, 40 of 50 American states have some form of a balanced budget requirement (Poterba and Rueben, 2001; Bohn and Inman, 1996). Switzerland similarly has canton-level "debt brakes" (Feld and Kirchgässner, 2005). Meanwhile, the EU's "Stability and Growth Pact" set out an expectation that no EU country should have a general government deficit above 3 per cent of GDP other than under exceptional circumstances.

As discussed earlier, such hard fiscal rules are considerably more problematic than monetary rules, however, not just because of the danger of being too restrictive and preventing the operation of automatic stabilizers, but also because of enforceability. Monetary rules can be imposed on a separate monetary authority, leaving the government, at least in theory, able to discipline a central bank that fails to measure up to the required standards[12]. Fiscal rules are essentially imposed by governments upon themselves and Wyplosz (2005) argues that the more ambitious, and likely politically impossible, step of appointing an independent Fiscal Policy Committee would be required for meaningful fiscal constraint[13]. Other approaches focus on ways to get the actors to internalize the full tax externality through the decision-making process itself. Hallerberg *et al.* (2009), for example, propose that the players agree *ex ante* to a detailed fiscal contract that sets fiscal targets in all dimensions of the budget at the beginning of the process. Rather than serve as advocates for specific constituencies, ministers then become managers of a budget that has already been decided.

With regard to the principal-agent problem between, and among, populations, elected representatives, and bureaucrats, the best remedy would seem to be the provision of more complete information on what the government is doing. The institutional implication is to adopt practices that increase the transparency of the budget process, with Alt and Lassen (2006) offering some empirical support for countries with more transparent fiscal institutions enjoying lower average debt levels. Moral hazard, whereby a government spends, and borrows, more if it thinks that someone will bail it out is undoubtedly the issue looming largest today, however. In the past, this typically just involved regional governments counting on the national government to assume their debts (as in the Italian case examined by Bordignon (2000)). An institutional

solution to this problem can be engineered through ending any possibility of a bailout either through banning sub-national governments from running deficits at all, as in Sweden, or through preventing local governments from borrowing more than they will spend on investment in a given year, as in the German case. As the situation with Greece demonstrated all too vividly in 2011, such remedies are much harder, if not impossible, to enforce when the bail out is sought by a national government with full political autonomy rather than a local element within a single country.

Conclusions

In this paper, we have limited ourselves to assessing prevailing monetary and fiscal policy settings and the potential benefits arising from such institutions as central bank independence. This, of course, begs the question of just why governments and society choose the institutional features we observe. There is clearly scope for more political economy analysis examining the role of government structures in producing the varying outcomes seen across countries (Hallerberg, 2002; Hallerberg *et al.*, 2009). What we have shown in this review is that fiscal and monetary rules, and economists' understanding of them, have changed substantially over the years. While on one level there is greater consensus, there have been new questions raised in the process that leave plenty of room for further ongoing research in these key policy areas.

Notes

1. Quoted in Elgie and Thompson (1998, p. 96).
2. The evolution of central bank policies is described and assessed in Siklos (2002).
3. Both Blanchard *et al.* (2010) and Svensson (2010) argue that the financial crisis has further highlighted the importance of having fiscal policy work in conjunction with monetary policy – with Svensson (2010) also arguing that inflation expectations generated via a combination of extended low policy rates and quantitative easing can help boost output even in a very low interest rate environment.
4. In a number of cases, such as in Latin America, moves toward central bank independence and inflation targeting essentially supplanted the prior alternative anchor of exchange rate targeting (Cukierman, 2008).
5. See Crowe and Meade (2007) and Cukierman (2008) on this generalized move towards greater independence; while Gutiérrez (2004) assesses the substantial constitutional moves towards greater independence in Latin America and the Caribbean in the late 1980s and 1990s.
6. For an earlier published version of the BP approach, see also Parkin and Bade (1978).
7. It is hard to accept Alesina's claim that Banca d'Italia's 1981 "divorzio" from a pledge to buy bills issued by the Italian Treasury made it more independent than even the Federal Reserve, however. Schaling (1995, p. 79) argues that such *ad hoc* overweighting of the bills monetization criterion means that Alesina's analysis fails to "qualify as 'indices' of central bank independence."
8. Banaian *et al.* (1995) argue that the requirement that the Dutch Government must publicly declare its decision to override monetary policy decisions of the Nederlandsche Bank gave it much more independence than other central banks nearby on the BP rankings.
9. See also Arnone *et al.* (2009) for a broad-based application of both the GMT and CWN approaches to 163 central banks updated through the end of 2003.

10. Meanwhile, Hayo and Hefeker (2010) review the potential role played by such factors as varying national inflation cultures, political interest groups, and divergent legal and political systems.
11. In addition to central bank independence, there has been an expanding literature devoted to the impact of rising central bank transparency, which includes dissemination of information about central bank goals, procedures, policy decisions and implementation issues. While empirical testing has identified beneficial effects of this transparency, there appears to still be room for improvement in the degrees of economic and political transparency so far achieved by the major central banks (see Cruijssen and Eijffinger, 2010, for a survey).
12. Although even this enforcement may be questionable in practice with, for example, Reserve Bank of New Zealand Governor Donald Brash retaining his position despite breaching the upper bound of the agreed inflation target.
13. Empirical analysis of the impact of existing fiscal rules is rather handicapped by the fact that countries adopting harder formal fiscal rules tend to be same countries that already had above-average fiscal discipline – just as countries have often been seen to adopt inflation targeting only when the most serious inflation had already been wrung out of the system.

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