

3. What objectives for monetary policy?

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INTRODUCTION

The overflow crowd packed into the House of Representatives' largest hearing room fell into a hush as the chairman of the Federal Reserve Board, Mr F. Milton, made his entrance and took a seat at the witness table, accompanied by the vice chairman, Mr L. Robert, and the Federal Reserve System's chief economist, Mr P. Edward. The US economy had been spiralling downward for ten months. With 26 million people out of work, unemployment had reached 17 per cent of the labour force. Industrial production had declined 23 per cent from the previous peak. Both corporate bankruptcies and home mortgage defaults were running at record rates for the post-World War Two period. Of the nation's 7000 commercial banks in operation a year earlier, 1429 had failed.

The chairman of the House Banking Committee, Mr P. Wright (D, Tex.), called the hearing to order, welcomed the three witnesses, and sombrely invited Mr Milton to present his opening remarks.

'Thank you, Mr Chairman,' Mr Milton began. 'I am pleased to report that during the past year US monetary policy has been outstandingly successful. Overall inflation has again been exactly 1.0 per cent, and prices other than for food and energy have risen by just 0.9 per cent. My colleagues and I are here to accept this committee's congratulations and those of the American people.'

Such a situation is, of course, unthinkable. The purpose of any economic policy is to advance a nation's economic well-being, meaning the prosperity of its citizens and the vitality of the institutions through which they participate in economic activity, both in the present and for the future. Whether working men and women are able to make a living, whether the businesses that they own and at which they work can earn a profit and invest adequately for future growth, and whether the banks and other financial institutions on which both individuals and businesses rely can survive in the face of the risk taking that is central to their reason for existing, are all fundamental aspects of that well-being. Experience shows that rising (or falling) prices can and sometimes do undermine the efficient functioning of economic activity, so that price stability is a key desideratum in just this regard. But price stability is instrumental, valued not for itself but

for how it enhances an economy's capacity to achieve those goals that, even if they are not genuinely primary from the perspective of basic human concerns, are at least instrumental at a higher level. The idea that economic policy should pursue price stability as a means of promoting more fundamental economic well-being, either now or in the future, is not grounds for pursuing price stability at the expense, much less to the exclusion, of that more fundamental economic well-being.

If monetary policy were unable to exert influence over real outcomes in any more direct way, but were able none the less to influence the evolution of prices, then – from the perspective of how to conduct monetary policy, though not more generally – promoting fundamental economic well-being and pursuing price stability would amount to the same objective. But today the debate over whether monetary policy is 'neutral' with respect to real economic outcomes seems largely an episode from the discipline's past, perhaps worth recalling for whatever insights into subsidiary matters it may have provided along the way, but not a serious challenge on the core question that was at issue. Few economists, and certainly few business people, market investors, or even ordinary citizens who concern themselves with economic affairs, believe that actions taken by the central bank have no impact on output, or employment, or asset values. Hence it is not legitimate to duck the question of whether and how monetary policy *should* seek to affect real outcomes by subsuming that question within the larger one of whether monetary policy *can* do so. Both theory and evidence indicate that, in a world such as the one today's advanced industrialized and post-industrial economies occupy, monetary policy can affect output, employment and other quantitative aspects of non-financial economic activity over at least some significant period. The relevant question is in what way it should seek to do so.

Two closely related questions frame the core of this debate. First, merely pointing to generic 'real outcomes' does not constitute a constructive normative position either. Individual citizens are, and have a right to be, concerned with many facets of the economic environment in which they live: their income levels, their employment prospects, their ability to start a business or borrow to purchase a new home, just to name a few. From an aggregate perspective, further aspects of an economy's actual and prospective situation are plausibly of concern to public policy makers: the levels of production and employment in relation to 'full-employment' benchmarks, the economy's international balances, its investment rate, among others. Even when these disparate measures of economic activity are positively correlated (which they are not under all circumstances), the relationships are far from perfect. Hence some view of which real objectives policy makers should be seeking to achieve – along with price stability – is important.

Second, the Tinbergen principle, relating the number of independent objectives any economic policy can achieve to the number of independent instruments it has to deploy, is especially pertinent in any discussion on monetary policy (Tinbergen, 1952, 1966). Technical non-essentials aside, monetary policy consists in setting a single instrument: either the quantity of liabilities the central bank has outstanding or the rate of return eligible market participants pay to hold those liabilities as their assets. (Except for coincidence, policy makers cannot set both the quantity and the rate of return if the market is to clear.) Hence even if there is agreement on which real outcomes monetary policy should properly seek to influence – and even if all real outcomes of interest in this regard are perfectly correlated – there remains the problem that even a single real objective, together with that of stable prices, raises the fundamental tension to which Tinbergen pointed when the policy maker is setting only one true instrument.

The purpose of this chapter is to explore the set of practical issues that central banks in the modern world face as a consequence of the intersection of these two intertwined sets of considerations. The chapter begins by asking which aspects of non-financial and financial economic activity are properly of concern to monetary policy makers. (In effect, the issue here is just why the fictional House Banking Committee hearing portrayed above is such an absurdity.) Next, the chapter turns to the operational issue of what policy objectives the central bank should articulate, either in its internal analysis or in its communication with higher authorities, as well as financial market participants and the general public, as ‘targets’ of monetary policy. Here the key considerations at issue include matters of transparency and of accountability of the central bank as a public policy-making institution. The chapter then digresses to consider a class of representations of how the economy functions in which some (though not all) of the matters under discussion here take on a different – specifically, a simpler – character. The chapter concludes by assembling the various propositions advanced into a set of positive principles for the conduct of monetary policy.

OBJECTIVES FOR MONETARY POLICY BEYOND PRICE STABILITY

It is straightforward that aspects of economic activity like aggregate output and employment are matters of direct concern for public policy. National income mostly varies in pace with national output, and so aggregate output represents the total economic gain accruing to a nation’s citizens. The balance between aggregate employment and a nation’s labour force indicates the availability of work for those citizens able and willing to seek it.

Further, each of these aspects of real economic activity, while of concern in itself, also matters for the evolution of prices. Greater employment in relation to the available supply of labour requires firms to compete harder for workers and therefore to increase wages. If wages increase faster than productivity, per unit costs of production rise and firms must either raise product prices or narrow their profit margins. Greater aggregate output in relation to an economy’s capacities likewise increases production costs, even apart from wage costs, and again requires firms to increase prices or reduce margins. Neither measure is complete even within its own sphere – the total economic gain accruing to all of a nation’s citizens says nothing about how that gain is distributed among them, and neither the increase in employment nor the unemployment rate says anything about whether the jobs being created deliver a satisfactory income and decent working conditions – but both are none the less central to any plausible set of policy objectives describing what an economy is supposed to achieve for those it serves. Further, monetary policy has the demonstrated capacity to influence both.

The composition of economic activity also matters as soon as the purview of policy becomes forward looking. At any point in time, individuals’ economic well-being hinges largely on how much they are consuming. But both individuals and the economy in the aggregate have reason to consume less than all of current production in order to invest in future productive capacity. To the extent that such forward-looking expenditures involve debt financing (or, equivalently, to the extent that required equity returns vary with interest rates), monetary policy has the ability to affect the willingness and ability to undertake productive investment – indeed, judging from historical experience, it has greater ability to affect the pace of investment than of consumption.

It does not necessarily follow, however, that the economy’s investment rate, whether for new factories and equipment and office buildings or for new housing, is a plausible independent objective for monetary policy. Monetary policy actions (say, variations in whatever interest rate the central bank is setting) that affect investment also affect aggregate output and employment. Tinbergen’s principle applies, and, with a single instrument, only by coincidence would the policy action consistent with the optimally desired investment rate be identical to that consistent with the optimally desired levels of aggregate output and employment. Only in conjunction with some other policy instrument, most obviously fiscal policy, is it plausible to entertain distinct policy objectives with respect to both aggregate output and the investment–consumption mix within that aggregate.

The same argument applies to the economy’s international imbalance. There are ample cogent reasons for policy makers to be concerned with the

relationship between a nation's exports and its imports (and, in parallel, between its capital outflows and capital inflows). An excess of imports over exports represents the net transfer of goods and services from a nation's trading partners, and, in parallel, the net transfer of production and employment to those trading partners; even if the nation as a whole is better off on account of the additional absorption of goods and services, the jobs and sales thereby forgone are nevertheless real losses for specific groups of workers and firms. An excess of imports over exports also means that a nation is borrowing from foreign lenders, and transferring claims on its assets to foreign owners, at a greater rate than it is lending to foreign borrowers and accumulating assets abroad. Over time the accumulation of an ever larger overall net debtor position requires the devotion of an increasing share of national income to servicing the resulting obligations. In the meantime, if the required increase in foreign holdings outpaces the increase in foreign demand for assets denominated in the nation's currency, its exchange rate will decline with consequent implications for its domestic asset markets. Here too, however, the monetary policy actions that affect the relationship of imports and exports are the same as the monetary policy actions that affect aggregate output and employment. Only in conjunction with a second policy instrument, again most obviously fiscal policy (as in Robert Mundell and Marcus Fleming's classic model), is it plausible for the central bank to entertain independent objectives with respect to the nation's foreign trade and investment balance.

Monetary policy makers also have both practical and historical reasons for seeking to maintain the vitality of financial institutions and the functioning of financial markets. The US Federal Reserve System was created as a direct response to a series of banking crises (in 1901, 1907 and 1913, and also before that in the nineteenth century) that not only shut down much of the nation's financial system, but spilled over to impair the non-financial economy as well. The visible sign of that motivation was the new central bank's charge to 'provide an elastic currency'. More recently, the 'Asian financial crisis' of the late 1990s (which was not limited to Asian countries) again showed how the impairment of a country's banking system interrupts the credit creation process, destroys asset values, and otherwise impedes the ability of households and firms to carry out their ordinary economic affairs – as, for that matter, happened in the United States and many other countries besides during the depression of the 1930s.

Unlike considerations such as investment rates and export–import balances, however, it is unclear what efficacy monetary policy *per se* has with respect to financial soundness. In this case more-specialized policy instruments like bank capital requirements, or prudential regulation and supervision, or margin requirements on the purchase and holding of specific

assets, are what mostly matter. To be sure, at times when banks or other highly leveraged institutions are holding precarious asset positions, ordinary variation in interest rates can affect the health of their balance sheets or, for some, even their survival. But such considerations mostly lie outside the ordinary purview of monetary policy.

Finally, in recent years both central bankers and students of monetary policy have asked increasingly whether asset prices should be a specific focus of concern for monetary policy. Japan's experience since 1989, the point at which equity and real estate prices in that country peaked sharply, has been a particular spur to ideas along such lines, but developments in the United States – the rapid gains in equity prices during the latter half of the 1990s, and subsequently the rise in home prices since 2000 – have raised this question as well. As former Federal Reserve Chairman Alan Greenspan put one version of the argument, in principle, either sudden increases or sudden declines in asset prices can exert unwanted effects on non-financial economic activity, but in practice sudden increases are rarely seen; hence the concern of the central bank is to avoid sudden declines (Greenspan, 1999). The harder question to which this proposition gives rise is whether monetary policy should simply accept whatever asset price increases occur and then act to prevent sudden declines – this was a familiar interpretation of the Federal Reserve's actions during the late 1990s (what many market participants called the 'Greenspan put') – or, instead, proactively resist what it perceives as unwarranted asset-price increases to begin with. (The second strategy clearly involves the need to identify, as it is occurring, when an increase in asset prices becomes excessive.) Either way, however, it is clear that what matters for purposes of monetary policy is not asset prices *per se*, but the prospect that asset prices may exert an impact on more basic aspects of economic activity, like output or investment, that are properly objects of monetary policy concern.

In sum, despite the potentially wide range of aspects of real economic activity that routinely enter the ongoing public discussion of monetary policy, in the absence of coordination with some independent policy instrument, most importantly fiscal policy, the aggregate levels of output and employment, and of each in relation to the corresponding 'full-employment' benchmark, represent much of what it is plausible to expect monetary policy to seek to achieve among legitimate real economic objectives. Output and employment may be metaphors for a longer list of real economic considerations, but in the context of monetary policy their metaphorical content is less than is often assumed. For purposes of the routine conduct of monetary policy, output and employment – along with stable prices – are the heart of the matter.

MULTIPLE POLICY OBJECTIVES AND MULTIPLE POLICY TARGETS

Even so, the Tinbergen principle immediately implies a problem: two objectives, price stability and output/employment (three if output and employment are sufficiently imperfectly related to constitute independent objectives), but only one instrument. Even apart from the inability to predict future economic developments in a setting in which the influence of policy is subject to time lags, monetary policy cannot be expected to achieve desired paths for both prices and real outcomes. Barring some special coincidence – and this is the subject of discussion in the next section – the best that a policy with only one instrument can achieve is to keep the economy on the path that represents the optimal compromise between the two objectives. Considerations of uncertainty only make matters more difficult.

In recent years many central banks have addressed this tension between multiple objectives and their unitary monetary policy instrument by resorting to 'inflation targeting'. In current usage of the term, the two essential components of an inflation targeting strategy for conducting monetary policy are (i) the clear public statement of what rate of price increase policy makers are seeking to achieve over some medium- to long-run horizon, in practice typically stated in terms of a target range, and (ii) the formulation, in internal central bank discussion as well as statements to the public, of the economic trajectory intended to follow from the chosen monetary policy in terms of the implied path for inflation. In principle, as many advocates of inflation targeting have emphasized (see, for example, an early statement by Mervyn King, 1997), inflation targeting need not imply that the chosen inflation rate is policy makers' sole objective. The Tinbergen principle dictates that, apart from situations of degeneracy and analogous mathematical pathologies, the number of economic variables sufficient to express the economic trajectory sought by any economic policy equals the number of independent instrument variables policy makers are using. Hence with only one instrument – again, either a short-term interest rate or the quantity of central bank liabilities – monetary policy makers can describe their intended economic trajectory with only one variable. The analytical appeal of doing so by means of inflation (or prices), rather than some real variable like output or employment, rests on the presumption that, in the long run, monetary policy actually is neutral with respect to those real outcomes, which ultimately depend only on factors such as endowments, preferences and technologies. Hence by choosing inflation for this purpose, policy makers are focusing on a variable that monetary policy can influence over not just the medium horizon but the long run as well. (Of

course, as the discussion below elaborates, in practice the appeal of choosing inflation for this purpose may be something other than analytical.)¹

This implication of the Tinbergen principle is most explicit in the inflation targeting framework developed by Lars Svensson, in which policy makers frame their decision in terms of how rapidly to bring inflation back to the desired rate after some departure from it (Svensson, 1997). Given policy objectives for both inflation and output/employment, the length of the interval over which policy makers should optimally seek to return inflation to the publicly declared target range depends on the weight that they place on their inflation objective relative to that on their output/employment objective. For a given short-run cost of disinflation in terms of unemployment and forgone output, the greater the weight on real outcomes is, the more slowly policy makers would optimally seek to return inflation to the target range, and vice versa.

Advocates of inflation targeting, both within central banks and among academic researchers, frequently ground the argument in favour of this way of conducting monetary policy in considerations of transparency and accountability: telling the public which single variable to associate with monetary policy, and also the numerical target at which the central bank is aiming for that variable, makes clear what policy makers are trying to achieve. When the aim of policy is well known and the results straightforward to monitor, it is also possible for both higher authorities and the public to hold policy makers accountable for their success or failure. Transparency of the central bank's policy is presumably helpful in that it reduces the uncertainty that financial market participants, as well as households and firms more generally, face in carrying out their respective economic plans, thereby making the economy as a whole more efficient. Further, especially when the objective is low and stable inflation, transparency of that particular objective also helps to anchor the public's inflation expectations, thereby reducing the real economic costs associated with combating any unexpected increase under circumstances (such as are commonly assumed in today's 'New Keynesian' economic framework; see, for example, Clarida et al., 1999) in which price-setting behaviour at any point in time depends not only on the level of real economic activity relative to full-employment benchmarks, but also on expectations of future inflation. Accountability of policy makers for the efficacy of their decisions and actions is plainly part of what constitutes effective democracy.

The argument for the greater transparency of the inflation targeting strategy fails, however – and with it the argument for the greater resulting accountability of monetary policy – when policy makers have objectives for real economic outcomes. According to the Tinbergen principle, describing the intended economic trajectory in terms of inflation alone need not imply

that policy makers have no other objectives, but nor does it preclude such a univariate objective. The essential question is whether monetary policy makers have objectives for output and employment, or not.

If they do, then inflation targeting is more likely to undermine transparency of monetary policy than to promote it. The chief reason is that under inflation targeting, policy makers normally reveal to the public only one of their multiple objectives: that for inflation. If the public knew (and were able to use) the economic model on which policy makers rely in evaluating potential actions, the public could infer what path for output, or employment, or any other variable of interest would be expected to accompany the targeted inflation trajectory. (It could also work out the path for interest rates that the central bank planned to follow.) Few central banks disclose this information, however, including those that follow inflation targeting strategies. To make the matter yet more difficult, when policy is set by consensus among a committee of decision makers – as is the case at the Federal Reserve, the European Central Bank, and many other central banks – those decision makers often do not agree on a single economic model anyway. Nor do inflation targeting central banks quantify for the public (or, normally, even for themselves) the relative importance that they attach to their objectives for inflation and for real economic outcomes.

Indeed, many inflation targeting central banks at least appear to go to some effort *not* to reveal such aspects of their policy making to the public. An increasingly common practice, for example, following the initial lead of the Bank of England, is to issue at regular intervals a detailed monetary policy report, but to call it an 'Inflation Report' – as if inflation were the only aspect of economic activity of concern to monetary policy. Similarly, some inflation targeting central banks, in the public explanation that they provide of the rationale underlying their monetary policy strategy, avoid any reference to the possibility of tension, even in the short run, between their inflation objective and any real outcome.² In light of the favourable effect on short-run inflation–output trade-offs that ensues from keeping expectations of future inflation anchored at a low level (see again the standard New Keynesian representation of price-setting behaviour), the incentive for policy makers to downplay or even conceal their objectives for real economic outcomes is clear. (In parallel, Kenneth Rogoff (1985) famously argued for choosing central bankers known to place less weight on real outcomes, relative to inflation, than the general public.) But doing so hardly contributes to the transparency of their policy.

The same considerations undermine the argument for inflation targeting on the grounds of promoting the accountability of monetary policy. If policy makers have objectives for both inflation and real outcomes, but disclose only their inflation objective, then higher authorities as well as the

general body politic can hold them accountable in an explicit way at most for their success or failure in meeting their inflation objective; for the rest they must rely on inference and guesswork. To be sure, in a situation like that of the fictional House Banking Committee hearing described above, real economic outcomes are so obviously at variance with any reasonable set of objectives that everyone would understand that the central bank had failed to execute its responsibilities. But then no such occurrence has developed, in the United States or any other economically advanced country, since before World War Two. The debate over the accountability of monetary policy revolves around failures that are more difficult to identify and measure.

The other possibility, of course, is that policy makers may not have objectives for real outcomes, but instead may actually direct their policy solely towards the achievement of the stated rate of inflation. The logic of the Tinbergen principle implies that an inflation-targeting central bank is not necessarily concerned with inflation alone, but it certainly does not imply that this cannot be the case. If it is, then an inflation targeting policy is fully transparent, and the standard consequences argued for accountability obtain as well. In this situation, however, monetary policy makers would be abdicating their responsibility for seeking, within the capacities of the instrument at their disposal, to achieve economic conditions in the interests of the public whom they supposedly serve, including individuals, businesses and financial firms. In the extreme, they would indeed fit the fictional caricature offered above.

Indeed, one interpretation of the movement towards inflation targeting among so many of the world's central banks (and, perhaps even more so, among academic researchers who advocate this policy rubric) is that this is precisely the state of policy making that inflation targeting is intended to bring about over time. A plausible consequence of constraining the discussion of monetary policy to be carried out entirely in terms of an optimal inflation trajectory is that, in time, objectives for real outcomes will atrophy, or even disappear from policy makers' purview altogether. This eventuality may ensue not only because the language and analytical framework within which discussion takes place naturally shapes what is discussed, but also because – exactly as the argument for accountability implies – policy makers inevitably take more seriously those aspects of their responsibilities for which they expect to be held accountable. Disclosing only the inflation objective, when in fact policy makers have objectives for inflation as well as real economic outcomes, biases the relative importance that they will attach to these respective objectives by fostering their accountability for inflation and not for real outcomes. In time, the objectives for real outcomes will devolve into a rhetorical fiction.

MIGHT MULTIPLE OBJECTIVES 'COINCIDE'?

As the arguments made above acknowledge, only by coincidence would the monetary policy actions that optimally steer inflation along the path sought by policy makers be identical in all circumstances to the policy actions that optimally achieve the path sought for output and employment. The crucial issue is disturbances that affect the economy's ability to produce goods and services at any given price. Because monetary policy works primarily by influencing the demand for goods and services, it is, at least in principle, able to offset a disturbance that spurs households or firms or even the government to buy either more or less than would be consistent with keeping the aggregate economy on the optimally desired path – for example, a military conflict that increases the government's need for ordnance and personnel, or a shortfall of profits that dampens firms' ability to undertake new investment. By contrast, in the face of shock to aggregate supply – say, an increase in the price paid to import oil or some other essential intermediate good, or a widespread decline in the productivity of industry (due perhaps to the need to protect workers, customers and facilities from potential terrorist attacks) – nothing that monetary policy can do is sufficient to restore the economy to its previous position.

Even so, as Olivier Blanchard and Jordi Gali (2005) have recently emphasized, a currently standard representation of aggregate supply behaviour does imply a coincidence (a 'divine coincidence', as they call it) between the monetary policy that would be optimal with respect to inflation alone and the policy that would be optimal with respect to output and employment alone. To recall, the standard New Keynesian Phillips curve expresses inflation at any point in time as the sum of a term depending on the relationship of current output to the corresponding full-employment benchmark and (typically with a coefficient based on the rate by which price-setting firms discount future profits, and therefore close to unity in the short run) the rate of inflation expected in the future.³ If firms making price-setting decisions expect zero inflation in the future, current inflation therefore depends only on the current level of output compared to full-employment output; and, by definition, at full employment current inflation is zero. This property of the price-setting model immediately implies that – apart from the inflationary implications that follow from expected future inflation – there is no tension between the objective of keeping inflation at zero (or any other designated rate) and the objective of keeping output at full employment.

The real cost of disinflation can be large in this model, but none the less it is strictly a matter of what is needed to bring inflation *expectations* back in line with whatever is the optimally desired inflation rate.⁴ Similarly, the

rate at which an inflation targeting central bank should optimally seek to return inflation to the desired rate in Svensson's model, once some disturbance has resulted in either faster or slower actual inflation, is again merely a matter of what it takes to bring inflation expectations back into line. (This underlying logic makes it easy to see why anchoring expectations of future inflation is so important in any model based on this representation of aggregate supply – and, in parallel, why the recent literature of monetary policy has placed so much emphasis on the 'management of expectations'.⁵)

Repeated empirical findings, however, indicate that in fact inflation exhibits more persistence over time than can plausibly be attributed to the sluggish movement of strictly forward-looking expectations.⁶ Standard models based on costs of price adjustment (Gregory Mankiw, John Taylor, Julio Rotemberg–Michael Woodford, and others), as well as models based on infrequent opportunities for price adjustment (Guillermo Calvo, John Taylor, and others) imply that what should be 'sticky' is prices, not inflation. But the empirical observation is that *inflation* is what exhibits persistence. Explaining this persistence, in the sense of providing a theoretically coherent model that would give rise to it, has therefore emerged as a major focus of research on the inflation process.

One major strand in this line of research focuses on 'real rigidities', meaning not just the familiar impedimenta to perfect flexibility of prices and/or wages, but the attempt by price or wage setters to hold fixed one or another relationship in real terms.⁷ Willem Buiter and Iain Jewitt (1981), for example, posited that wage setters, operating in the context of staggered contracts, attempt to maintain relative relationships between the *real* wages of workers in their firm and in other firms over the life of each contract being established. As Jeff Fuhrer and George Moore (1995) have shown, in contrast to the more conventional contracting models based on nominal rigidities, which in the end relate a two-sided average of the *price level* to the difference between actual and full-employment output, when this concern for relative real wages is a factor in wage-setting behaviour what is related to that real difference is a two-sided average of the *inflation rate*. Hence inflation in effect depends on its own past, and so the model is capable of delivering persistence of inflation consistent with commonly observed patterns.

As Blanchard and Gali (2005) have argued, however, such real wage-setting behaviour – or, for that matter, any comparable form of real rigidity – also severs the 'coincidence' by which, in the presence of a disturbance affecting aggregate supply, maintaining output equal to the welfare relevant full-employment level delivers zero inflation apart from whatever inflation is expected to prevail in the future. In effect, the real wage rigidity renders

the relationship between the output level that represents full employment from the perspective of standard economic welfare considerations and the output level that results in any given desired inflation rate no longer invariant to the usual kinds of aggregate supply shocks. Hence monetary policy faces a trade-off in the short run between an output goal and an inflation goal for reasons that are wholly apart from the usual matter of inflation expectations. Given the persistence that this real rigidity imparts to the inflation process, the 'short run' for this purpose may well be of non-trivial duration; indeed, the available empirical evidence suggests that it may be quite long. (In addition, as in any standard model, to the extent that households and firms expect that policy makers will respond in such a situation by allowing inflation to exceed the desired level, the usual problem of inflation expectations emerges as well.)

The resulting trade-off gives policy makers yet another reason to have objectives with respect to not just inflation but real outcomes as well. It is then no longer true that, if only expectations of future inflation can be 'managed', doing what is optimal from the standpoint of price stability automatically means doing what is optimal from the standpoint of output, or employment, or whatever else may be on policy makers' list of real economic desiderata. Moreover, to the extent that, in an economy with real rigidities, objectives with respect to real outcomes thereby take on a higher level of analytical importance, the standard arguments on grounds of transparency and accountability mean that it is all the more important for the central bank to be open about what those objectives are.

SUMMARY OF CONCLUSIONS

In brief, the prescriptive conclusions of this chapter's inquiry into the appropriate objectives for monetary policy are as follows.

- In a world in which monetary policy not only can affect real economic outcomes like output and employment but, moreover, constitutes for practical purposes the principal available instrument of public policy capable of doing so over medium-run horizons corresponding to typical business fluctuations, policy makers cannot escape responsibility for having objectives with respect to real outcomes. The familiar argument that monetary policy has but one independent instrument and therefore must entertain only one economic objective is fallacious. While the relative weighting that policy makers give to real objectives and to the goal of price stability is of course subject to debate, it is inappropriate for monetary policy to pursue

price stability (or any given designated rate of price increase) to the exclusion of concern for output or employment or other aspects of real economic activity.

- In the absence of effective coordination with fiscal policy, or some other comparable policy instrument, under ordinary circumstances it is implausible for the real objectives of monetary policy to extend beyond aggregate measures like output and employment. Matters of composition like the relative magnitudes of consumption and investment, or the economy's international balance, are in principle valid objects of concern; but only in coordination with fiscal policy can monetary policy seek to achieve such objectives.
- Asset prices can be important sources of information about future trends in inflation or real economic activity, or both, and monetary policy makers should take that information into account in deciding on their actions. But monetary policy should not elevate the level of asset prices, or movements of asset prices, to an independent objective to be pursued on its own account.
- As long as monetary policy makers do have objectives with respect to real economic outcomes, policy should not be organized along the lines of explicitly targeting inflation unless it also, in parallel, explicitly targets output or employment or some other stated real objective. To maintain objectives for both inflation and real outcomes, but publicly announce a desired target range and intended trajectory for inflation only, undermines the transparency of monetary policy. Organizing monetary policy in this way also therefore undermines policy makers' accountability for their actions.
- The possibility of real rigidities in economic behaviour, such as a concern for relative real wages in the wage-setting process – as seem to be implied by the repeatedly observed persistence of inflation – makes the case for having real economic objectives of monetary policy even stronger. When economic behaviour includes real rigidities, the level of output or employment that represents full employment from the standpoint of considerations of economic welfare need not be identical to the level that results in price stability (apart from non-zero inflation expectations) in the presence of disturbances to aggregate supply. Hence there is a trade-off between price stability and real objectives even apart from the need to induce price and wage setters to expect in the future the rate of inflation that monetary policy is seeking to achieve.

NOTES

1. This argument has also been made in Friedman (2004).
2. A good example is the Bank of Canada, which states the rationale for its policy as follows: 'Inflation control is not an end to itself; it is the means by which monetary policy contributes to solid economic performance. Low inflation allows the economy to function more effectively. This contributes to better economic growth over time and works to moderate cyclical fluctuations in output and employment'.
3. Such a formulation emerges from any of a number of underlying representations of the price-setting process, including Calvo's random opportunities for a firm to change prices, Rotemberg and Woodford's quadratic costs of price adjustment, and Taylor's staggered contracts; see Roberts (1995).
4. With the parameter values assumed by Blanchard and Gali (importantly including a real discount rate of 1 per cent – or, equivalently in a growing economy, 1 per cent above the real growth rate), the real cost of each percentage point of disinflation is a *permanent* output loss of 0.05 per cent, with present value equal to 5 per cent of output. For the US economy in 2006, this translates into a present-value real cost of more than 650 billion dollars for each percentage point of disinflation.
5. See, for example, Eggertsson and Woodford (2003).
6. Svensson's model (see again his 1997 paper) implicitly recognized this problem by allowing inflation to depend directly on lagged inflation.
7. An alternative approach is to take explicit account of imperfections in the information on which price or wage setters base their decisions; see, for example, Mankiw and Reis (2002).

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