

Comments on “Inflation targeting in transition economies; Experience and prospects”, by Jiri Jonas and Frederic Mishkin

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The paper by Jonas and Mishkin does a very good job of describing the history, the implementation, and the effects of inflation targeting in Central Europe. The description is rich and informative, showing the inconsistencies and the adjustments in monetary policy over time, the conflicts between monetary and fiscal policy, and the difficulty of achieving inflation targets. The basic conclusion, which is presented with much honesty, is also convincing: Inflation targeting has not done miracles. But it has led to a decline in inflation, at an output cost which does not appear excessively high.

The paper however does less good a job of discussing the many issues facing inflation targeters in those countries. It sometimes gives the impression that what remains to be worked out are details of implementation, whether for example to have a point or a band for the inflation target, or how to choose the time horizon for inflation targeting. I agree that these are decisions that policy makers must make. But I also believe that there are plenty of hard conceptual issues which have not been solved, and these also need to be tackled, and tackled urgently. This will be the theme of my comments.

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Let me start with one remark however. Many of the criticisms I raise below apply to much of the research on inflation targeting. In this sense, singling out Jonas and Mishkin is unfair. At the same time, many of the unresolved issues are more obvious in countries that are going through large structural changes, such as Central and Eastern European countries. For that reason, it would have been reasonable to expect Jonas and Mishkin to try to tackle some of them. This largely remains to be done.

1 A theoretical detour

At the center of inflation targeting is a proposition which I like to call a “divine coincidence”: Namely, that, under some reasonable conditions, stabilizing inflation is equivalent to stabilizing output around its natural level.

To be more specific, let me work out a Fischer type simple example which will serve my needs. Suppose that price and wage setting are given by:

$$p = w + \alpha y + e_p$$

$$w = E p + \beta y + e_w$$

where p , w , and y are the log of the price level, the nominal wage, and the level of real output, respectively.

The price is an increasing function of the wage, of the level of output, and of a disturbance e_p , which may reflect changes in the relative prices of other inputs, in the markup, or in technology.

The wage is an increasing function of the expected price level, of the level of output (equivalently a decreasing function of the level of unemployment), and of a disturbance e_w , which may reflect shifts in bargaining power, changes in unemployment benefits, and so on.

Suppose that expectations of inflation by wage setters are adaptive and

given by:

$$Ep = p(-1) + \pi(-1)$$

where π is the rate of inflation.

Define the natural level of output as the level of output that would prevail if there were no nominal rigidities—so if w depended on p rather than Ep . Call it y^* . Then, y^* is given by:

$$y^* = -\frac{1}{\alpha + \beta}(e_p + e_w)$$

Combining all four equations gives the following relation between inflation and output:

$$\pi = \pi(-1) + (\alpha + \beta)(y - y^*)$$

The change in inflation depends on the output gap, the deviation of output from the natural level.

The important point here is the lack of a disturbance term in the relation. In contrast to older specifications with “cost shocks” tacked on to the relation, the relation between inflation and the output gap holds exactly. The reason why: Cost shocks are present, but their effect works through the natural level of output, and so through the output gap. Put another way, the output gap is a sufficient statistic for the effect of real activity on inflation.

The model I used to make the point is special in many ways. And so one may wonder how general this proposition is. The lesson from much of the recent research is that it is quite general (see for example Woodford [2003] for an exhaustive treatment and discussion). It holds in models with staggered price setting and rational expectations: In those models, inflation depends not on past inflation as here, but on expected inflation, and on the output gap. But, as in the relation above, the relation holds without a

disturbance term.

This absence of a disturbance term has a direct and striking implication. Stabilizing inflation, that is achieving $\pi = \pi(-1) = \bar{\pi}$ (if it can be achieved) also stabilizes the output gap, i.e. leads to a level of output equal to the natural rate $y_t = y_t^*$. This is what I referred to as the divine coincidence earlier.

This result is, I believe, one of the main reasons for the wide support for inflation targeting by macro economists. Those who care about inflation volatility like the stated goal of the policy. Those who care about output stabilization see inflation targeting as a commitment by the central bank to stabilize output around its natural level, to get the economy out of recessions, and to slow the economy down in booms.

The result however comes with three important caveats (and, here, I am preparing the way for the return to Central Europe in the next section):

- “Natural” does not mean first best, but the level of output which would be achieved if we removed nominal rigidities but left all other distortions in the economy.

It follows that, even if it could, the central bank may not want to achieve a level of output equal to the natural level of output every period. Obviously, on average, it has to achieve a level of output equal to the average natural level of output; if it tried to achieve a consistently higher level, then we would be in Barro Gordon mode, inflation would increase, and the policy maker would fail. But it can aim to set output lower than the natural level in some periods, and higher than the natural level of output in others.

Suppose for example that the sector most affected by imperfections is also the least cyclical. Then, there will be less distortions in booms, more distortions in troughs. It may then make sense to try to achieve

a relatively more contractionary policy in booms, a more expansionary one in troughs.

Or suppose that the shocks that affect output also affect the distance of the natural rate of output from the first best. To be more concrete, suppose that increases in the price of oil are associated with increases in distortions, so a decline in the natural level of output relative to the first best. Then, it may make sense to allow actual output to decline less than the natural level of output, thus to allow inflation to increase for some time. (Whether increases in the price of oil are in fact associated with higher or lower distortions is however far from clear; if as a first approximation, the answer is that distortions are unaffected, then the answer is likely to be: Try to achieve a level of output close to the natural level; in other words, keep inflation constant, even after an increase in the price of oil.)

A bit of algebra may help here. Assume, in the model developed above, that the relation of the natural level of output to the first best level is given by:

$$y^* = y^f - a + \eta$$

where y^f is the first best level, a is a constant, and η is a disturbance term, with mean 0, reflecting the effect of changes in distortions on the natural rate relative to the first best.

Replacing in the inflation output gap relation gives:

$$\pi = \pi(-1) + (\alpha + \beta)(y - y^f + a) - (\alpha + \beta)\eta$$

In this case, it is a reasonable guess that optimal monetary policy will be to stabilize the distance of output from first best, i.e. $y - y^f + a$. Therefore, to the extent that the economy is affected by changes in distortions, to the extent that η varies, it will indeed face a trade off

between stabilizing inflation and achieving its desired output target.

The important issue is then what lies behind η , and how much it varies. Note that η has only a vague relation to what is usually thought as “cost push shocks” such as the price of oil. To return to the earlier discussion, a change in the price of oil which does not affect other distortions has no effect on η .

- The assumptions under which the relation between inflation and the output gap hold exactly may not be satisfied. In that case, there will be a disturbance term in the relation between inflation and the output gap.

For example, we know from that, if there are both nominal wage and price rigidities, then there is no single rate of inflation, be it price or wage inflation, which will do the job (see for example Erceg et al. [2000]). There may be a weighted average of price and wage inflation which is such that the relation between inflation so defined and the output gap holds exactly. But if the relation is written as a relation between price inflation and the output gap, there will be a disturbance term. And so, in that case, there will be no way to stabilize both inflation and output.

- Achieving the natural level of output may not maximize welfare if it comes at the cost of large distortions in the composition of output. This is likely to be the case if shocks and monetary policy affect different parts of the economy differently.

A parable will make the point. Suppose the west coast and the east coast of the United States are separate economies, both with nominal rigidities. Suppose an adverse shock affects demand and output on the west coast. Suppose monetary policy only affects demand and output on the east coast. Clearly it would be unwise in this case to try to

achieve the natural level of output for the United States as a whole. It would come at the cost of large distortions in the composition of output between the East and the West. In this case, monetary policy should clearly be aimed at what it can actually affect, namely east coast output. Or in terms of inflation targeting, monetary policy should aim at stabilizing east coast inflation, not US inflation (which, in this case, should be allowed to decline, because nothing can and should be done to offset the decrease in inflation on the west coast).

Replace east and west coast by investment and consumption, or by bank-dependent and non bank-dependent firms, and so on. The lesson extends straightforwardly. There is nothing which says that stabilizing aggregate output is best if the effects of monetary policy cannot exactly offset the effects of shocks on the composition of output, or put another way, when the cross sectional effects of the interest rate and the shock are very different.

2 Back to transition economies

Most of us are aware of the issues I just discussed. Anybody who tries to derive optimal rules for monetary policy finds himself confronting them. And, in the most thorough modern treatment of optimal monetary policy to date, Michael Woodford's book, these issues are discussed at length.

But, when it comes to the policy debate, these issues are largely ignored. Some researchers or policy advocates implicitly invoke the divine coincidence, and argue that decreasing inflation volatility will lead to output gap stabilization. Others tack a disturbance term to the relation between inflation and the output gap, creating a trade off between inflation stabilization and output stabilization. But the nature of the disturbance, and its relation to the shocks affecting the economy, is left unspecified. (Rather misleadingly, this disturbance is often called a "cost push" shock. As I have

argued, it may have little to do with what we usually think of as “cost push” shocks, for example a bad harvest, or an increase in the price of oil).

Ignoring them however becomes harder—and almost surely more wrong—when confronted with economies going through major structural changes, such as transition countries:

- These economies started the transition with large distortions, and thus a natural level of output very far from the first best level of output. Some of these distortions are gone, some are going, and some are still there. Transition economies still have very much of a dual structure: An old state or ex-state sector, composed of large firms, with serious financing and governance problems and often a doubtful future; a new private sector, which is much more competitive, and is, in large part, the source of growth, and also the source of fluctuations.

To the extent however that many of the shocks hitting these economies are the result of policies aiming at removing some of these distortions (for example the liberalization of some prices, or the reduction of agricultural subsidies), this suggests that the distance of the natural rate from the first best is probably changing over time. In other words, many shocks affect both actual output and the natural level of output, but may not affect very much the first best level of output. In that environment, it is clearly not best to stabilize the output gap, and by implication not necessarily best to stabilize inflation. (If this sounds too abstract, think of the very practical question addressed in the paper: How should inflation targeting react to increases in prices due to the liberalization of public sector prices? Should it focus on an index of inflation that excludes them, should it allow inflation to increase for some time? To answer these questions convincingly, there is no other way than to take the theoretical detour.)

- The inflation process is intrinsically more complex than in richer, more

stable, economies. Price liberalization, changes in the evolving structure of labor relations and bargaining, are likely to be the source of some of the price and wage movements. Given that these economies are still young market economies, price and wage setting, and by implication, nominal rigidities are probably changing through time. Should central banks ignore all these complications and just target inflation, or instead take some of these developments into account?

- Given the the segmentation of financial markets, the fragility of many financial intermediaries, the effects of monetary policy are likely to have more assymetric effects on the economy than in richer, more stable, economies. Sectors which rely more on bank credit will obviously be affected by monetary policy more than the others. Should the central bank ignore these issues in setting its inflation target?

These are hard questions, and central banks had no choice than to proceed without knowing all the answers; but we, as researchers, should not avoid them. To make the discussion more concrete, let me take one example which strikes me as very relevant in the context of transition economies.

3 Which inflation rate to target?

The paper discusses at some length the issue of what inflation rate the central bank should target. It argues that the trade off is between transparency (for which, the simpler the index, the better) and controllability (for which the more controllable, the more target is likely to be achieved, the higher the credibility of the central bank is likely to be.). These are indeed relevant factors, but I think there are other and more important issues at stake.

To see this, let me extend the model of price and wage setting I introduced earlier. Assume that the price level and the nominal wage follow:

$$p = (1 - a)w + a Ew + \alpha y + e_p$$

$$w = (1 - b)p + b Ep + \beta y + e_w$$

As before, p , w , and y stand for the log of the price level, the log of the wage, and the log of real output respectively. There are now potentially both nominal price and wage rigidities. The price level depends on both the actual and the expected nominal wage, the level of activity, and a disturbance term e_p . The wage depends on both the actual and the expected price level, the level of activity and a disturbance term e_w .

If a is equal to zero, there are no nominal price rigidities; if b is equal to zero, there are no nominal wage rigidities. If both are different from zero, both rigidities are present.

Let me assume adaptive expectations. Again, the reason is to make the algebra more revealing, but nothing important depends on it.

$$E w = w(-1) + \pi_w(-1)$$

$$E p = p(-1) + \pi_p(-1)$$

Price setters expect wage inflation to be the same as last period. Wage setters expect price inflation to be the same as last period.

Define the natural level of output as that level of output that would prevail if there were no nominal rigidities:

$$y^* = -\frac{1}{a+b}(e_p + e_w)$$

Then, we can combine these relations to get:

$$[a\pi_w + b\pi_p] = [a\pi_w(-1) + b\pi_p(-1)] + (\alpha + \beta)(y - y^*)$$

This has four implications.

- If all the nominal rigidities are in wage setting (if $a = 0$), and the central bank wants to stabilize the output gap, it should target price inflation. If instead all the nominal rigidities are in price setting (if $b = 0$), then it should target wage inflation.

If, as is likely, there are nominal rigidities in both price and wage setting, then the central bank should target a combination of price and wage inflation, with weights $a/(a + b)$ on wage inflation, and $b/(a + b)$ on price inflation. Targeting either just price inflation, or just wage inflation, may lead to a very inefficient policy.

The message is simple: Which inflation rate to target depends very much on the structural characteristics of the economy. Transparency, controllability are relevant; they may not be as important as the considerations we just discussed.

Lest you thought the issue was of limited empirical relevance, the table below should disabuse you. It gives the evolution of wage and price inflation in the Czech Republic and Hungary for the years 1997–2002. In 1998, price inflation in the Czech Republic was 10.6%, wage inflation was 5%. In 2000, price inflation was 1.1%, wage inflation 7.2%. In Poland, wage inflation in 1999 was 1.8%, price inflation 8.4%. In such environments, which inflation rate is targeted is likely to make a large difference to real outcomes.

Table. Wage and Price inflation in the Czech Republic and Poland

	97	98	99	00	01	02
Czech Republic						
wage inflation	7.9	5.0	5.0	7.2	8.1	6.7
price inflation	8.0	10.6	3.0	1.1	5.3	2.6
Hungary						
wage inflation	19.5	12.3	1.8	21.6	14.8	13.7
price inflation	18.5	12.6	8.4	9.7	9.0	8.4

Source: OECD Economic Outlook. Compensation per employee, and GDP deflator.

- The second point follows from the first. The right policy, namely here the right combination of inflation rates to target, requires quite a bit of knowledge about the structural characteristics of the economy.

In the context of the model, it requires knowledge of the degree of nominal rigidity in prices, and in wages, as well as the way price and wage setters form expectations. In general, it is clear that the design of inflation targeting requires much more work on the nature of the inflation process. This process may be quite different in transition countries.

- If the central bank wants to achieve a level of output close to the natural level, then the equation above contains a strong message. Once the right weighted average of inflation has been chosen, there is no reason to make exceptions for agricultural prices, the adjustment of public sector prices, and so on. Maintaining stable inflation will lead output to move, but this movement will reflect movements in the natural rate.

As the paper shows, this policy implication is at variance with practice in most of the Central European countries (and many other countries

as well). Many countries exclude a number of prices from the inflation index they target. It is also at variance with our beliefs (at least my beliefs): Can it really be that stabilizing inflation in the face of a major increase in the price of oil, or a major depreciation, is really the best policy from the point of view of output and welfare? This leads to the fourth and final point.

- Maybe the reason we do not feel comfortable with this last conclusion is that we do not believe that the fluctuations in the natural rate itself are optimal. If this is the case, then there is really no reason for the central bank to want to achieve a level of output close to the natural rate all the time. Maybe it should try to achieve a path of output smoother than the underlying path of the natural rate.

And, indeed, many of the shocks that have affected Central European economies have come from changes in distortions, the kinds of shock which, we saw earlier, may justify intentional deviations from the natural level of output and thus deviations from the inflation target.

Does this provide a justification for excluding some prices from the index targeted by the central bank? Simple exclusion may be too rough: The logic of our argument is that changes in agricultural prices due to bad weather should be treated differently from changes in agricultural prices due to the removal of subsidies, not that agricultural prices should be simply excluded.

I realize that, even in this example, the answers I have sketched do not lend themselves to easy policy implementation. But the issues cannot be avoided, and we should aim to understand them well enough to be able to translate them into practical advice to central banks. We are not there yet.

References

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