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Commentary

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I would like to thank the Federal Reserve Bank of St. Louis for arranging an interesting conference on the important topic of price stability and economic growth. Michael Bruno and William Easterly have made a valuable contribution to this topic in their article and in their 1995 paper, which reports a more complete set of empirical results.

The primary goal of Bruno and Easterly's work is to document the relationship between inflation and growth for the periods before, during, and after inflation crises—bouts of inflation exceeding 40 percent per year. The authors find that growth before crises is essentially normal relative to various relevant cohorts. Growth during crises is subpar, and growth afterward is well above par—enough above par to compensate for the growth lost during the crisis. The authors declare this pattern to be inconsistent with the conventional wisdom that “growth and inflation are positively related in the short run and negatively related in the long run.”

I am not sure that the *conventional wisdom* cited by the authors is either conventional or wisdom as applied to inflation crises. I do agree, however, with their characterization that there are few *agreed-on stylized facts regarding the relationship between inflation and growth during brief bursts of high inflation*. Bruno and Easterly have taken an admirable shot at shaping a conventional wisdom on this topic. My comments focus on two questions: What do we learn about the association between inflation crises and growth? and What do we learn about the consequences of high inflation? Put briefly, the answer to the first question is “several useful things,” and the answer to the second is “nothing at all.”

WHAT DO WE LEARN ABOUT THE ASSOCIATION BETWEEN INFLATION CRISES AND GROWTH?

From an empirical article I want, at the very minimum, to learn something I did not previously know about the data and to have some confidence that the basic picture presented would not change if looked at through a different lens. By these criteria, Bruno and Easterly do a very nice job. Several features of their approach stand out. First, the authors exploit the time-series properties of the data, rather than follow many previous studies that just considered cross-sectional variation. Exploiting the time-series properties is an exceedingly good idea when dealing with inflation crises. These crises are inherently dynamic phenomena, involving relatively brief periods of very high inflation followed by abruptly lower inflation. Second, the authors do not pool countries that have vastly different experiences. It would be impossible to write down a plausible model that produces an approximately linear relationship between inflation and growth across rates of inflation between, say, -2 percent and 100 percent per year. Since theory provides little guidance on the form of the relationship, the approach of focusing on inflation-crisis countries and considering average growth before, during, and after crises is a useful way to discern if there are stylized facts in the data waiting to be uncovered.

Third, the authors thoroughly check the robustness of their results. In particular, growth during crises is compared to typical growth as measured by several cohorts: for example, the entire world, the same country before the crises, and countries with similar debt problems. Furthermore, the authors checked the sensitivity of results to removal of individual observations. The following several patterns emerge.

- Inflation rates of up to about 40 percent per year are sustainable in the sense that growth effects are difficult to discern. This is much the same conclusion reached by Dornbusch and Fischer (1993).
- Inflation above 40 percent is generally not sustained. The median length of such inflation bouts is about six years. Though the basic fact that inflation crises are short-lived is established, I was somewhat disappointed with the cursory way in which Bruno and Easterly summarize the data about the dynamics of entering and exiting inflation crises. Given their correct emphasis on inflation crises as dynamic phenomena, a more thorough analysis of these dynamics would be an interesting supplement to the current article.
- Inflation above 40 percent is associated with negative growth effects. This appealing result is the most important of the article and appears to be very robust—no matter how the data are cut, this result comes through. The claim that inflation greater than 40 percent is associated with subpar growth should be elevated to the status of conventional wisdom.
- Postcrisis growth exceeds the norm; this excess growth may entirely make up the output lost during the crisis. This claim is probably the least well established in the article and is the focus of several of Kenneth D. West's comments. The data seem to support the fact that growth quickly returns at least to normal after the crisis. The claim that all lost output is regained probably does not yet deserve the exalted status of conventional wisdom.

WHAT DO WE LEARN ABOUT THE CONSEQUENCES OF HIGH INFLATION?

High inflation almost certainly lowers economic growth. Quantifying the losses caused by inflation, however, is compli-

cated by the fact that societies under severe economic or social distress may turn to high inflation for various reasons—for government revenue or as a means of redistributing wealth. Thus high inflation may be a symptom rather than a cause of low growth. Though this point is worth dwelling on, I want to be clear that the authors did not set themselves the goal of determining causality. Indeed, they are scrupulous in avoiding causal interpretations. However, Bruno and Easterly work for policy institutions, as do I, and we are well aware that policymakers may be invited to draw their own causal inferences from raw correlations. In citing critiques of earlier cross-section work, Bruno and Easterly astutely note that we should not make policy recommendations to, say, the Bank of Canada based on results dominated by the civil war experience of Nicaragua and Uganda. They make no similar disclaimer about their own work, and indeed, the article provides no guidance about what the results mean for policy. It is the discussant's nature to abhor a vacuum.

To illustrate my views on the topic, I'll follow the time-tested tradition of commenting on some of my own work. I recently completed a study of human body temperature and research output among junior faculty members. I find that junior faculty with low-grade fevers—up to 100 degrees—may have lower productivity than typical junior faculty but that this difference is not statistically significant. Junior faculty with fevers above 100 degrees have low productivity, but after the fever passes, these workers tend to have a burst of supernormal productivity, perhaps making up for the lost research output while ill.

On this basis, I formed a theory of cleansing fevers. Furthermore, I recommended a policy of ice baths for those with fevers. My wife—who is a philosopher, and not well trained in the magic of time-series inference—told me I was nuts. Confident in my likelihood ratio tests, I talked to a physician, who pointed out some interesting things. The fever might be a symptom, rather than a cause, of an

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illness that accounts for low productivity. Thus exogenously lowering the body temperature without resolving fundamental problems might not improve productivity. He suggested that I check whether those with fevers took some medicine that might have cured some underlying problem and simultaneously accounted for the lowered fever. The philosophers appeared to be winning. On the other hand, the doctor did indicate that high fevers can themselves be destructive and that cooling the body can play an important role in treatment. The doctor provided no guidance on how to quantify the lost productivity caused by only the fever or on how important lowering the fever would be, absent other curative measures.

As Bruno and Easterly (1995) note, there are generally a whole host of things—most notably, political disruption and civil war—going wrong in countries that experience inflation crises. Furthermore, the end of inflation crises typically is associated with a broad array of institutional and policy reforms that go well beyond lowering the growth rate of the money supply.

Even if high inflation itself causes losses in growth, the work of Bruno and Easterly sheds little light on the magnitude of those costs (though perhaps it gives an upper bound). Even if the low inflation portion of stabilization packages is important in the resumption of strong growth, the work sheds no light on the relative importance of low inflation vs. the other measures.

POLICY CONCLUSIONS

Though Bruno and Easterly do not claim to establish the direction of causality linking inflation crises and growth, the work does suggest some valuable conclusions for policymakers. First, the onset of inflation above 40 percent is a reliable indicator that an economy has problems that will precipitate low growth. High inflation signals that steps should be taken to determine and rectify what is going wrong in the economy. Discovering just what prob-

lems exist and identifying the proper solution will require looking far beyond the data on growth and inflation. Second, successful stabilizations of inflation have involved a package of reforms that are good for growth.

Neither of these conclusions is surprising or entirely new, but neither had been clearly established previously. Thus Bruno and Easterly have made a nice contribution to the conventional wisdom on inflation crises and growth.

REFERENCES

- Bruno, Michael, and William Easterly. "Inflation Crises and Long-Run Growth," NBER Working Paper No. 5209 (August 1995).
- Dornbusch, Rudiger, and S. Fischer. "Moderate inflation," *World Bank Economic Review* (January 1993), pp. 1–44.