COMMENTARY

International Coordination

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There have been increasing calls for international monetary and fiscal policy coordination. Notably, for example, Raghuram Rajan, who heads the Reserve Bank of India, has recently made the case that central banks in the large, high-income countries need to take into account the effects of their policies on emerging markets. It is a pleasure to read and discuss this paper by Jeff Frankel. The paper makes many important observations, but the chief point is that there is disagreement about models, which leads to disagreement about the nature of spillovers of policy.

Part of the discussion in this paper pertains to fiscal policy. Frankel observes that according to some models, in equilibrium, noncooperative policy is too contractionary. Positive spillovers are not as great as they could be because countries are concerned about trade deficits. But some believe that the noncooperative policy equilibrium is too expansionary. Countries run deficits that are too large because they do not take into account the externality that if their debt is too large, some other country or international organization will have to bail them out.

My comments will focus on the discussion of monetary policy coordination. Here the conflict is that, on the one hand, some models imply the noncooperative monetary policy game leads to a monetary stance that is too expansionary. If countries engage in a currency war, then there ends up being no effect on the exchange rate—the efforts of the policymakers cancel out. But while the exchange rate remains unaffected in equilibrium, monetary policy has become overly expansionary. On the other hand, some contend monetary policy ends up being excessively contractionary when there is no coordination. Policymakers become too concerned about inflation, but ignore spillovers—for example, the fact that the reduction in aggregated demand in one country reduces import demand from other countries.

We can all agree that examining the benefits of cooperation is very difficult. The lessons we learn are very much model dependent. Indeed, I am willing to advance two propositions:

Proposition 1: No analysis of the gains from cooperation in a particular model is general enough to be useful.

Proposition 2: Nothing that can be said about cooperation that is general is useful.

Nonetheless, in these comments, I will begin with a series of general observations that I believe we all agree on. By Proposition 2, they are useless. Then I will make a somewhat new observation, but the reader should be warned that it is likely to be subject to the two propositions.

Comment 1: Suppose, as an example, home and foreign policymakers target output, y and y^*. Their targets are $\bar{y}$ and $\bar{y}^*$. Suppose also that they each have an effective instrument, m and m^*. Because we are talking about strategic policies and the possible gains from cooperation, we can assume that there are spillovers so output in both countries depends on policies set in both countries:

$$y = F(m, m^*) \qquad y^* = G(m^*, m).$$

In this case, there should be a set of policies m and m^* that achieve $\bar{y}$ and $\bar{y}^*$. There is no need for cooperation. Each policymaker adjusts her instrument until she achieves her target. And so, Frankel's critique does not apply in this case. There is no need for agreement on the model.

What I have in mind here is the case of competitive devaluation, or currency wars. If each country has a target for output or aggregate demand, and that is their only target, and each has a valid policy instrument, then each should be able to adjust the instrument to achieve their desired target, irrespective of what happens to the exchange rate. For example, suppose that the Federal Reserve expands, and the dollar depreciates relative to the Brazilian *real*. Perhaps that has a contractionary effect on the Brazilian economy. (Or perhaps the monetary expansion in the United States has a positive spillover on the Brazilian economy through the income effect that generates greater demand for Brazilian imports in the United States.) The Banco Central do Brazil can alter its monetary policy to achieve its desired level of aggregated demand. That might in turn have spillover effects back onto the United States, but by successive adjustments, both countries can achieve their desired target using their monetary instrument.

Comment 2: The problem arises when there are more targets than instruments. For example, a country may have both an inflation and an output target, and it cannot simultaneously hit both if they have only a single instrument (perhaps a monetary-policy-controlled interest rate). Alternatively, they might have a target for capital flows, the current account, financial stability, or maybe all of these things.

In this case, spillovers from policies in another country may affect the tradeoff. The problem, and the potential need for cooperation, arises when the spillovers negatively affect the tradeoff. Even so, first, the gains from cooperation may be small, as Obstfeld and Rogoff (2002) have argued. Second, policymakers might disagree on the model. Especially if the posterior beliefs of policymakers are not much influenced by the data, there may be little point in setting up a mechanism for formal cooperation. That is one of Frankel's main points.

Comment 3: Nothing that I have said so far presumes that the exchange rate is a target of the strategic policymaker. There may be spillovers from exchange rate movements even if policymakers are targeting a domestic aggregate. If the United States needs to expand aggregate demand, expansionary policy may cause the dollar to depreciate even though the United States is not explicitly targeting the value of the dollar. The exchange rate may actually be the target of policymakers at the Fed or the European Central Bank, but they generally deny that. Instead, the exchange rate is said to be an endogenous variable that changes when the policymaker alters its instrument in order to hit its target.

As Frankel notes, even if monetary policy in one country has effects on the exchange rate, that is not the only channel of spillovers. Some channels may work in the opposite direction of the currency effect. Expansionary U.S. monetary policy may lead to dollar depreciation which generates negative aggregate demand spillovers, but the positive effects of higher U.S. income on import demand work in the opposite direction. There may also be influences through capital flows—lower U.S. interest rates may lead capital to flow abroad, which may have or may not have salutary effects on the recipient country.

So, in order for cooperation to be the right prescription, three criteria have to be met. First, spillovers have to lead to worse outcomes in other countries. Second, domestic policies must not be able to correct fully for these negative spillovers. And, third, there must be gains from cooperation that are quantitatively reasonably large in order to justify the costs (which may be primarily political) of setting up a mechanism for cooperation.

Comment 4: Here, I would like to characterize comments that have been made by some Fed policymakers. I will refrain from identifying them, and I will not quote directly. The following paraphrase, in fact, is more of a caricaturization than a characterization, but it captures the point I want to make. The hypothetical typical comment is: "Our legal mandate is to achieve low inflation and high employment. We use our policy instruments to achieve those goals. We don't pay attention to the rest of the world—that is not our mandate. So we are not engaged in non-cooperative policy."

This is the sentiment that some policymakers in the United States seem to want to convey, but this is precisely a description of noncooperative or strategic policy. The policymaker takes into account only his own goals and ignores the spillovers on the rest of the world. Noncooperation does not mean that one policymaker is obstinate, or evil, or deliberately working to harm other countries. It simply means that the policymaker is ignoring the spillovers.

Why should the Fed cooperate if its mandate is to achieve inflation and unemployment targets for the United States? It does not have a mandate to care about conditions in the rest of the world. But precisely the point of cooperation is that it can help a country achieve its own goals more effectively.

Comment 5: Does the zero lower bound (ZLB) imply there is no scope for cooperation? When we are at the zero lower bound, does that leave currency depreciation as the only channel through which monetary policy can reflate?

As Frankel points out, the ZLB does change the mechanism, but there are still channels through which monetary policy can affect the economy. For example, quantitative easing appears to have lowered long-term interest rates in the United States and perhaps boosted the stock market. And, of course, fiscal policy remains as a potential instrument even at the ZLB.

Caballero, Farhi, and Gourinchas (2015) develop a full-fledged dynamic stochastic general equilibrium model that examines spillovers and monetary policy at the zero lower bound. Let me make some observations based on a much simpler model that I presented in Engel (2016), which is essentially an open-economy version of Nagel (2015) embedded in a New Keynesian framework. In this simple setup, there are near-money assets, such as Treasury bills, that have a liquidity return. These assets are liquid because they might be useful as collateral, or can be used to meet balance sheet requirements for financial institutions.

The mechanism of the model is quite simple. These near-money assets pay a liquidity return in addition to any actual pecuniary return they offer. Even if the pecuniary return is zero because the country is at the ZLB, there remains the nonpecuniary return. The public holds a portfolio of assets—money, near money, and assets that don't pay a liquidity return. Quantitative easing cannot lower the interest rate on near money when we are at the ZLB, but it does reduce the liquidity return. Near money is less useful than actual money, so the liquidity value of near money decreases under quantitative easing as the public holds more actual money. In turn, the demand for other assets rises when the liquidity return on near-money assets falls, which pushes down their return and has an expansionary effect on the economy.

Main Observation: The main point that I want to make here is that the objectives of the global policymaker may not simply be the sum of the objectives of the individual policymakers (depending on how those objectives are expressed). For example, the Fed may have a target for inflation and output, and may wish to minimize some weighted sum of those targets. Perhaps it has other objectives as well. Other countries may have similar policy goals. But from a global standpoint, the objective of maximizing the welfare of households throughout the world might not be expressed simply as the sum of the objectives of each national policymaker.

Here is an example that should be familiar to anyone who has taken a good undergraduate international trade class. We know that in a simple neoclassical model of trade in which each country has economic power in the global market for its export, there is an optimal tariff that allows the country to achieve its terms of trade objective. For example, think of a stylized two-country world. Let the variable t stand for the home country's terms of trade—the price of its export relative to its import. It may use tariff policy to try to raise its terms of trade on global markets. Perhaps we could characterize its policy objective as trying to minimize the square of the gap between the actual terms of trade, t, and the optimal target for the terms of trade, t_h. In other words, the home country's objective is to minimize $(t - t_h)^2$.

In a "tariff war," the foreign country also has a target for the terms of trade, t_f. It will be the case that $t_f < t_h$, because the foreign country prefers a higher price for its export. We can characterize the foreign country's objective as one of trying to minimize $(t - t_f)^2$.

From a global perspective, there is an optimal terms of trade, t_w, that lies in between the targets of the home and foreign policymakers: $t_f \leq t_w \leq t_h$. The global or cooperative policymaker wants to minimize $(t - t_w)^2$, and of course in a simple model, free trade is the policy that achieves the minimum. My point is that the global policymaker's objective function cannot, in general, simply be expressed as the sum (or weighted sum) of the objectives of the policymakers in each country: $(t - t_w)^2 \neq (t - t_h)^2 + (t - t_f)^2$.

The point carries over to monetary policy. In particular, the global policymaker might be concerned about global misallocation of resources, but that is not necessarily a particular concern of each national policymaker.

It may be helpful to do a quick review of the New Keynesian approach to monetary policy to shed some light on this point. One of the key differences between old-style Keynesian economics and the new style is the approach to monetary policy. In New Keynesian economics, monetary policy is thought of

the way the field of public finance has attacked optimal tax policy. Policy should be aimed at reducing distortions, and the policy objective can be characterized by the weight that each distortion should take on in the policymaker's loss function. In the monetary policy literature, distortions may arise from price stickiness, monopoly power, wage stickiness, credit constraints, etc.

Here is an example from a simple closed-economy model. The policymaker wants to maximize expected utility of a representative household, which depends on consumption and leisure:

$$E_t \sum_{j=0}^{\infty} U(C_{t+j}, L_{t+j}).$$

One of the great achievements of this literature has been to show how, at least in some simple cases, we can rewrite the objective function of the policymaker as a loss function, expressed in terms of macro aggregates:

$$E_t \sum_{j=0}^{\infty} V(y_{t+j} - \bar{y}_{t+j}, \pi_{t+j} - \bar{\pi}_{t+j}).$$

Here $\bar{y}_{t+j}$ and $\bar{\pi}_{t+j}$ are output and inflation levels in an efficient economy, and are the targets of monetary policy. This way of representing the objective function is appealing both intuitively and as a pedagogical device.

Now consider a global economy made up of two countries. It is reasonable to state the objective of the global policymaker as a weighted sum of home and foreign expected utility:

$$\omega E_t \sum_{j=0}^{\infty} U(C_{t+j}, L_{t+j}) + (1-\omega) E_t \sum_{j=0}^{\infty} U^*(C^*_{t+j}, L^*_{t+j}).$$

However, it does not generally follow that the objective of the global policymaker can be rewritten as a weighted sum of the same loss functions that hold for each individual policymaker:

$$\omega E_t \sum_{j=0}^{\infty} V(y_{t+j} - \bar{y}_{t+j}, \pi_{t+j} - \bar{\pi}_{t+j}) + (1-\omega) E_t \sum_{j=0}^{\infty} V^*(y^*_{t+j} - \bar{y}^*_{t+j}, \pi^*_{t+j} - \bar{\pi}^*_{t+j}).$$

The analogy to the case of the optimum tariff and the tariff war applies here—that there may be global considerations that are different than those expressed in the sum of the loss functions for each policymaker under strategic policy setting. Intuitively, each country's loss function does not include the spillover, or loss imposed on the other country.

An important example of what might matter from the global perspective is currency misalignment, which I have written about in Engel (2011). Suppose both countries were producing at full employment and had zero inflation. Why would we care about currency misalignment? With local-currency consumer price stickiness, consumers in different countries could be paying very different prices for identical or near-substitute goods. It is inefficient to have pricing to

market—consumption can be reallocated to improve global welfare when prices paid by consumers in different countries are out of line. For example, the purchasing power of U.S. consumers has dropped 20 percent relative to European and Japanese consumers in the past year. The reason for this has little to do with the cost of delivering the goods to these consumers. It is the combination of the effects of nominal exchange rate movements that respond quickly to news about monetary policy or other macro events, and sticky prices in the consumers' currencies. With nominal wage and price stickiness, production patterns may also be misaligned. For example, with a weak euro, German exporters may be advantaged relative to U.S. firms. The U.S. economy may then tilt too much toward nontraded goods and services.

To reiterate, in the end, policymakers care about the welfare of individuals. From the New Keynesian perspective, loss functions are a convenient, intuitive way to summarize utility. While global welfare is a weighted sum of each country's welfare, global losses are not necessarily a weighted average of each country's losses. There are global distortions, in other words. These are things that matter for global welfare, but no country finds it in their individual interest to target. This is a key point that is missing from Frankel's discussion (as well as many other recent discussions, such as Bernanke's (2015) Mundell-Fleming lecture).

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