



The international policy trilemma in the post-Bretton Woods era



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ABSTRACT

The international macroeconomic policy trilemma suggests that despite the appeal of exchange rate stability, financial account openness and monetary sovereignty, these cannot be achieved simultaneously. Using elements of Euclidean geometry, this paper proposes a new method for testing the trilemma and finds considerable evidence in support of it. Further tests indicate that, on average, policy configurations are not on the trilemma constraint, i.e. there is a degree of 'trilemma-ineffectiveness', which is costly for real output growth and price inflation. It is shown that these costs are associated with limited exchange rate stability and financial account openness.

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1. Introduction

There are several reasons why each aspect of the international macroeconomic trilemma—exchange rate stability, financial account openness and monetary sovereignty—may appeal to policymakers. Exchange rate stability prevents unnecessary resource shifts into and out of trade-oriented sectors that may result from exchange rate overshooting; it may be desirable as a nominal anchor for inflationary expectations; and, it protects a dollarised banking system from balance sheet shocks.¹ Financial openness should lead to an increase of investment inflows, which boosts output in the short-run.² It may also generate long-run benefits through a more efficient allocation of capital and by increasing the costs of policy mistakes and lack of reforms.³ Monetary sovereignty allows for a more effective policy toolbox both for achieving internal balance and for responding to external shocks.

But, despite the attractiveness of each aspect of the trilemma, a policymaker cannot achieve all three simultaneously. For example, operating an open financial account and achieving perfect exchange rate stability necessarily implies the loss of monetary sovereignty. Any effort to change the monetary base (or, correspondingly, the interest rate) will lead to offsetting actions by the central bank in order to maintain the current level of the exchange rate. In the case of an expansion accompanied by a lower interest rate, the reduction in capital inflows will tend to weaken the domestic currency. In order to

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¹ See Calvo and Reinhart (2002).

² See Bussière and Fratzscher (2008).

³ The seminal contribution of Kose et al. (2009) explores all aspects of financial globalisation and concludes that it can have a "catalytic role" for total factor productivity (TFP) growth and welfare in developing countries.

prevent the exchange rate (expressed here as the price of the foreign currency in local currency units) from appreciating, the central bank will have to absorb the extra liquidity it has generated by running down its international reserves. So, in order to maintain a degree of monetary sovereignty, the country needs to implement restrictions in its financial account or sacrifice—to the required extent—the exchange rate stability objective.⁴

This logic presumes that there are limits to the extent that the monetary authority can sterilise the foreign exchange market intervention by injecting liquidity in the banks' balance sheets. Sustaining a monetary expansion under fixed exchange rates with an open financial account would require a prolonged reserve haemorrhage, something which the policymaker cannot accept for too long.⁵ Irrespective of the hoard, international reserves are an exhaustible resource and such policies cannot persist indefinitely. Ultimately, the trilemma should be a binding constraint.

In spite of the importance of the trilemma's implications for conducting macroeconomic policy, systematic efforts in assessing its empirical validity using large datasets are relatively recent.⁶ This paper contributes to the related literature by offering a new way of testing the trilemma using elements of Euclidean geometry. The procedure is described, and, using data from the post-Bretton Woods era, implemented in Section 2. In addition, the paper explores the macroeconomic consequences of failing to implement policies that maximise the extent to which the three aspects of the trilemma are met. This is done in Section 4, following the introduction of the term 'trilemma effectiveness' in Section 3. Section 5 concludes.

2. The trilemma constraint

Previous studies have investigated the trilemma constraint by gauging the responsiveness of the domestic interest rate to the foreign one (the latter is the interest rate of an appropriately selected 'base' country). The interest rate of a country implementing a fixed exchange rate regime with an open financial account will converge to—and fluctuate in tandem with—the foreign interest rate. If this is not the case, then there will be arbitrage opportunities. For example, a too-high domestic interest rate vis-à-vis the foreign interest rate will see an inflow of foreign capital exploiting the differential. This inflow, given perfect capital mobility, will result in higher asset prices and lower yields. The arbitrage activity will continue until the interest rate differential between the domestic and foreign assets, which are assumed to be perfect substitutes, is zero.⁷

In other words, under these arrangements, a country is not expected to possess a meaningful degree of control over its monetary policy. Shambaugh (2004) and Obstfeld et al. (2005) find evidence that broadly support this expectation. Bleaney et al. (2013) find that pegs without capital controls are linked to a higher degree of monetary sovereignty than the constraints of the trilemma would suggest. Nevertheless, when they account for peg credibility issues, their results become more consistent with the trilemma.⁸

A different approach, more closely related to the one pursued in this paper, is implemented by Aizenman et al. (2013). Instead of concentrating on interest rate correlations, they include measures of exchange rate stability, financial account openness and monetary sovereignty in a regression framework. Their three goals are to determine whether the relationship among the three trilemma variables is a linear one, to obtain estimates of the tradeoffs between them and to test the trilemma itself. They find that the trilemma has been binding for industrialised countries since the early 1990s and for developing countries since the mid 2000s. Most important for the aims of this paper, their results suggest that the relationship between the trilemma variables is likely to be a linear one.

The presumption of linearity allows the depiction of the trilemma constraint as a triangle in the space defined by the three aspects of the trilemma. This is shown in Fig. 1 as triangle *ABC*. At each point in time, the combination of exchange rate stability, financial account openness and monetary sovereignty determines each country's location in this three-dimensional space. In the context of this paper, each point represents a macroeconomic policy outcome (or configuration). If the trilemma is binding, then the mean distance between the constraint and policy configurations exceeding the constraint, i.e. points that lie off the trilemma triangle in the opposite direction of the origin, will be statistically insignificant. This is the essence of the test proposed and implemented in this paper.

The trilemma constraint is given by

$$s + m + f - 2 = 0, \quad (1)$$

where *s* stands for exchange rate stability (the abscissa in Fig. 1), *m* stands for monetary sovereignty (the ordinate) and *f* stands for financial account openness (the height), and $0 \leq s, m, f \leq 1$. Geometrically, the distance between a point and a plane is found by projecting a vector that connects the point of interest with a point on the plane onto the unit normal vector (i.e. a vector of length one, which is perpendicular to the plane). The length of a vector **v** connecting, e.g., a point $P(s_1, m_1, f_1)$, which is off the plane, and, e.g., a point $Q(s, m, f)$, which lies on the plane, is

⁴ See Aizenman (2013) for more examples on the constraint the trilemma places on policymakers.

⁵ Quantitatively, the relationship between the change in the domestic component of the monetary base and the corresponding change in international reserves is captured by the *offset coefficient*. An early discussion of sterilisation and the offset coefficient can be found in Herring and Marston (1977).

⁶ See, e.g., Shambaugh (2004), Obstfeld et al. (2005), Bleaney et al. (2013) and Aizenman et al. (2013).

⁷ In reality, however, transaction costs may allow a financially open, exchange rate-fixing country some degree of monetary sovereignty. This is a point made by Obstfeld et al. (2005).

⁸ Their argument is that in low-credibility pegs, devaluation expectations feed into the domestic interest rate disentangling it to some extent from the base country's rate and generating a false perception of relative monetary independence.

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