

# An Identity Crisis? Examining IMF Financial Programming

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**Summary.** — The IMF uses its well-known “financial programming” model to derive monetary and fiscal programs to achieve the desired macroeconomic targets in countries undergoing crises or receiving debt relief. This paper considers under what conditions financial programming would work best, and then tests those conditions in the data. The key restrictions of financial programming are assumptions about exogeneity of some components of identities with respect to others, and the assumption of stable and “reasonable” parameters for some very simple behavioral relationships. In at least the literal applications of the framework, financial programming does not do well in forecasting the target variables, even when some components of the identity are known with certainty.

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## 1. INTRODUCTION

One of the most widely used applied models in macroeconomics is the financial programming (FP) model of the International Monetary Fund. The IMF utilizes the monetary, balance of payments, and fiscal identities in its design of macroeconomic programs for developing countries with goals for inflation and foreign exchange reserve accumulation, and secondarily for calculating debt relief requirements and import requirements for growth. As [Barth et al. \(2000\)](#) write in the official training manual for IMF financial programming, the accounting framework “is helpful in policy simulations and in analyzing the ramifications of policy options” (p. 210).<sup>1</sup> Likewise, [Blejer, Leone, Rabanal, and Schwartz \(2002, p.5\)](#) note “quantitative macroeconomic performance criteria in Fund programs do not typically rely on a specific macroeconomic model. They do, however, make use of various balance-sheet identities that link monetary and fiscal variables with the balance of payments, to ensure that the Fund program is internally consistent.”<sup>2</sup> [Mussa and Savastano \(1999\)](#) note that a “blueprint” that contains “a preliminary assessment of the proximate and underlying sources of

the aggregate imbalances” is based on “a simple flow-of-funds accounting the framework of key macroeconomic relationships.” Iteratively applied, [Mussa and Savastano, 1999](#) say, this blueprint “enables the staff and the authorities to assess in simple quantitative terms the interactions between the policy measures agreed and the main targets of the adjustment programs.” [Mussa and Savastano](#) say the policy measures “on which almost all IMF programs focus are the public sector deficit and the creation of domestic credit by the central bank.”

Of course, all macroeconomic models contain identities, and it makes no sense to “test” identities as they have to hold by definition. However, there are many different ways to use identities, and a particular use of identities

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may impose restrictions that are rejected by the data. How does FP use identities?

The simple version of FP would recognize three types of variables in accounting identities. First, one of the elements in it is a target variable, which will absorb movements in the other components of the identity. The paper will call this the endogenous variable. Second, there is another element upon which the IMF is acting through its conditions or its own actions, such as net domestic credit or loan disbursements. The paper will call this the policy variable. The policy variable is assumed to be exogenous with respect to the target variable. Third, there are other elements in the identity that are projected exogenously or with econometric equations. The paper will call these the exogenous variables. The definition of exogeneity does not rule out their being affected by many other economic variables; typically these responses are taken into account in the projection. The exogeneity is with respect to the policy variable—they are assumed not to respond to changes in the policy variable (nor do they affect the policy variable). In other words, changes in the policy variable will affect the endogenous variable (the residual in the identity) but not the exogenous variables (the other variables in the identity). The key is that the exogenous variable is projected independently of the policy variable, based on the assumption that they are orthogonal to each other.

The exogeneity restriction is the first potential problem of FP. The paper will test this exogeneity restriction by assuming that the financial programmer knows the actual value of the policy variable for the next period, but projects the exogenous variable independently (in this paper, as a random walk). The paper will compare this forecast to the naïve forecast of the endogenous variable as a random walk, and see how much FP helped when one of the variables was known with certainty. The forecast tests are not intended to evaluate FP as a method for predicting macroeconomic variables (which is not its purpose), but only to check the exogeneity restriction.

Assuming the orthogonality of the exogenous variable with respect to the policy variable to be the null hypothesis, this will allow us to estimate an unbiased coefficient when we regress the endogenous variable on the policy variable with ordinary least squares. The effect of the exogenous variables on the endogenous variable will be captured by the constant term and the error term (orthogonal to the policy

variable because of the exogeneity restriction). The implication of this use of identities is to assume a one for one effect of the policy variable on the endogenous variable. This paper will test this implication.

The endogenous variable is typically of concern because it affects some economic outcome of concern. For example, if money is the endogenous variable, it affects inflation. If the quantity of imports is the endogenous variable, it affects growth. Usually, the relationship between the economic outcome and the endogenous variable is checked by seeing whether a behavioral parameter, such as the elasticity of imports with respect to GDP or the velocity of money, falls within a reasonable range. The reliance on such a simple behavioral relationship between the endogenous variable and economic outcomes is the second potential problem with FP. This paper will examine just how reasonable these behavioral relationships are in practice. This paper will also ask how stable and economically meaningful are the behavioral parameters—such as the import elasticity with respect to income and the velocity of money—and how accurate are forecasts based on these parameters.

A third possible problem is with measurement. Although the identities hold by definition, imperfect data coming from different sources and classification problems often imply a balancing item such as “other items, net” to make the sum of the policy variable and the exogenous variable equal to the endogenous variable. Since there is even less knowledge and theory about the behavior of this balancing item, this also makes FP more problematic. The paper will examine how large these balancing items are in practice.

The paper is not necessarily testing how the IMF applies financial programming in practice, since that involves many subjective judgments by IMF staff which this paper cannot model or test. IMF practitioners suggest that the application of financial programming is considerably less mechanical than the above description would indicate. IMF staff are very aware of the complex relationships among macroeconomic variables and the endogeneity of many of the key variables. They suggest that financial programming is mainly useful as a consistency check of assumptions made for different sectors: balance of payments, fiscal accounts, and monetary balance sheets. Moreover, the program is usually arrived at iteratively as parameters change. Waivers of program conditions

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