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Fiscal Impulse

Prepared by Garry J. Schinasi and Mark S. Lutz */

Authorized for distribution by Gérard Bélanger and Sheetal Chand

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Abstract

The concept of fiscal impulse is defined, discussed, and differentiated from measures that attempt to summarize the macroeconomic effects of fiscal policy. Two methodologies are briefly discussed and their corresponding measures presented for the G-7 countries over the ten-year period ending in 1989. Controversies about the measure are highlighted and potential improvements are also discussed.

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*/ Senior Economist, European Department, and Economist, Fiscal Affairs Department, respectively. Prepared as an entry for The New Palgrave Dictionary of Money and Finance. The views expressed are those of the authors and do not necessarily represent those of the Fund.

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Summary

Conceptually, the fiscal impulse is measured as the change in the government budget balance resulting from changes in government expenditure and tax policies. It ignores changes in the fiscal balance that are attributed to other, nonfiscal, origins. Fiscal impulses have often been confused with fiscal policy multipliers, which attempt to measure the effects of changes in fiscal policy on economic activity.

Properly constructed fiscal impulse measures are useful for two purposes. First, insofar as they measure the effects of government's fiscal policies on budget outcomes, they are useful for monitoring the performance of these policies. Second, fiscal impulse measures are useful for international comparisons of fiscal policy changes, to judge within a multilateral surveillance exercise, *for example, whether fiscal policy has changed over time.*

This paper examines two methods of calculating fiscal impulses, those of the IMF and the OECD. It also discusses whether or not it is possible to construct fiscal impulses without making assumptions about macroeconomic behavior. The paper concludes with a overview of some attempts to further refine impulse calculations.

I. Introduction: Basic Definition

Conceptually, the fiscal impulse is defined as the change in the government budget balance resulting from changes in government expenditure and tax policies. It differs from changes in actual measures of the fiscal balance published in government reports by attempting to remove the effects of other factors on the measured budget balance. These may include the cyclical position of the economy, the effects of inflation on government interest payments, changes in unemployment compensation and other influences.

Fiscal impulse measures, if properly constructed, are useful for at least two purposes. First, in so far as they measure the effects of a government's fiscal policies on budget outcomes, they are useful for monitoring the performance of fiscal authorities. Second, fiscal impulse measures are useful for international comparisons of fiscal policy changes, to judge within a multilateral surveillance exercise, for example, whether fiscal policy has changed over time. Fiscal impulse measures have been designed to summarize in a single measure the aggregate effects of fiscal policy actions on the government's budget balance and have served as a basis for policy discussions and international comparisons of fiscal policy actions.

Measures of fiscal impulse have often been confused with fiscal policy multipliers, which attempt to measure the effects of changes in fiscal policy on economic activity and other economic variables. For example, economists and policymakers have often stated that fiscal policy in a particular year was "expansionary" or "contractionary," implying that it had a positive or negative effect on economic activity, respectively, when they meant to say that an estimate of the change in the discretionary component of the budget increased or decreased. Thus there are at least two questions of interest relating to fiscal policy of a country over time. Fiscal impulse measures try to answer the question, "has there been a policy-based change in the government's budget balance?" Fiscal policy multipliers, on the other hand, try to answer the question, "what is the impact of changes in fiscal policy on economic activity and other economic variables?"

Doubts have been expressed about whether or not fiscal impulse measures can be designed without resort to a structural macroeconomic model. While a structural model is required to measure the impact of economic policies on output, employment, prices and other economic variables of interest, it is not obvious that such models are required (or desirable) to measure the impact that budgetary policies have on the budget balance. A structural macroeconomic model necessarily entails subjective judgements about the structure of the economy and may bias the fiscal impulse measure towards one or another view about the potential effects of monetary and fiscal policies. A fiscal impulse measure free of such biases may still not be model-free, however, since measuring the direct impact of policy changes on the budget may require the estimation of microeconomic parameters such as microeconomic

tax elasticities. It is preferable to have an objective measure which indicates the direction in which fiscal policy itself has changed. (See further discussion of this point below.)

II. Alternative Measures of Fiscal Impulse

There are a number of different methods of calculating fiscal impulses, with each having different data and computational requirements. (See Chand (1977) and Heller et al (1986) and the references cited therein for a more detailed overview of these methods.) In light of their visibility, it is useful to compare the methods used as components of the International Monetary Funds' (IMF) World Economic Outlook exercise with that contained in the Organization of Economic Cooperation and Development's (OECD) Economic Outlook.

The IMF measure of the fiscal impulse is the change in the fiscal stance, which is an estimate of the initial amount of expansionary or contractionary pressures placed by the budget on aggregate demand. This measure of fiscal impulse attempts to remove changes in the actual budget balance that are transitory in a cyclical sense. It removes unemployment compensation payments and assumes that changes in revenues due to the business cycle are proportional to changes in output; in other words, the cyclical elasticity is assumed to equal one. To the degree that taxes actually vary more than proportionately (because, for example, profits vary more than GDP over the cycle), the measured impulse includes a degree of the automatic stabilizing nature of the tax system. It also includes fiscal drag (the tendency for growing economies with progressive taxation to have rising tax ratios) as well as current discretionary policy changes. This method was first developed and used by the German Council of Economic Experts.

In contrast, the OECD approach attempts to classify changes in budgetary positions as endogenous and exogenous, and in principle tries to remove all effects other than fiscal drag and current discretionary changes in fiscal policy. Therefore, this method would exclude the impact of automatic stabilizers on fiscal balances from the definition of the fiscal impulse. Operationally, the OECD measure makes use of estimated revenue and expenditure elasticities, which may exceed unity, in removing cyclical influences on fiscal balances. (See Muller and Price (1984) for a detailed description of the OECD method.) Similar methods have been used in the United States by the President's Council of Economic Advisors and the Department of Commerce.

The table below presents general government fiscal impulse measures produced by the IMF and the OECD for the G-7 countries for the ten year period ending in 1989 (as a percent of GNP for the U.S., Germany, and Japan and GDP for the other countries). Averages and standard deviations of the differences for each country over the 1980-89 period are included in the

IMF and OECD Calculation of General Government
Fiscal Impulses, 1980-1989

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Average Difference	Standard Deviation
United States												
OECD	0.5	-0.9	0.9	0.7	0.5	0.8	0.4	-0.8	0.2	-0.2		
IMF	0.7	-0.4	0.4	0.6	0.7	0.7	0.1	-0.7	0.2	-0.4		
Difference	-0.2	-0.5	0.5	0.1	-0.2	0.1	0.3	-0.1	0.0	0.2	0.020	0.271
Japan												
OECD	-0.2	-0.6	-0.3	-0.5	-1.0	-0.9	-0.1	-1.3	-0.9	-0.8		
IMF	-0.4	-0.8	-0.5	-0.3	-1.5	-0.8	-0.2	-1.3	-0.4	-0.8		
Difference	0.2	0.2	0.2	-0.2	0.5	-0.1	0.1	0.0	-0.5	0.0	0.040	0.258
Germany												
OECD	0.2	-0.1	-1.2	-1.1	-0.2	-0.6	0.3	0.4	0.9	-1.7		
IMF	-0.2	-0.5	-2.1	-0.5	0.5	-0.7	0.4	0.2	0.9	-1.7		
Difference	0.4	0.4	0.9	-0.6	-0.7	0.1	-0.1	0.2	0.0	0.0	0.060	0.448
France												
OECD	-1.3	1.0	0.6	0.1	-0.4	-0.6	0.1	-0.9	0.6	0.2		
IMF	-1.4	1.1	0.7	0.0	-0.7	0.2	0.0	-0.9	0.4	0.1		
Difference	0.1	-0.1	-0.1	0.1	0.3	-0.8	0.1	0.0	0.2	0.1	-0.010	0.288
United Kingdom												
OECD	-1.1	-2.9	-1.5	1.3	0.8	-0.4	0.3	0.1	-1.4	0.0		
IMF	-1.9	-2.8	-0.7	0.7	-0.3	-0.5	-0.3	-0.7	-1.1	0.8		
Difference	0.8	-0.1	-0.8	0.6	1.1	0.1	0.6	0.8	-0.3	-0.8	0.200	0.648
Italy												
OECD	-1.0	3.4	-0.6	-2.2	1.7	1.2	-0.6	-0.7	0.6	-0.5		
IMF	1.3	1.8	-2.0	-0.3	1.9	1.9	0.1	-0.6	0.5	-0.6		
Difference	-2.3	1.6	1.4	-1.9	-0.2	-0.7	-0.7	-0.1	0.1	0.1	-0.270	1.172
Canada												
OECD	0.5	-0.9	0.4	1.6	1.2	0.6	-1.3	-0.4	-0.9	0.6		
IMF	0.5	-0.9	1.2	0.9	1.1	1.2	-1.2	-0.7	-0.5	0.5		
Difference	0.0	0.0	-0.8	0.7	0.1	-0.6	-0.1	0.3	-0.4	0.1	-0.070	0.415
Memorandum items:												
Average Annual Difference	-0.143	0.214	0.186	-0.171	0.129	-0.271	0.029	0.157	-0.129	-0.043		
Cumulative Annual Difference	-0.143	0.036	0.086	0.021	0.043	-0.010	-0.004	0.016	-0.000	-0.004		

Sources: OECD Economic Outlook, various issues; IMF World Economic Outlook, various issues. In percent of GNP for the U.S., Japan and Germany, and in percent of GDP for the other countries.

final two columns, while simple (unweighted) annual and cumulative averages of the differences for the seven countries are included in the last two rows, respectively. The impulse measures from the two institutions were of the same sign for 62 of the 70 calculations. More importantly, the absolute differences, with the exception of Italy in the first half of the 1980s, were small relative to the size of the impulse. Moreover, as seen in the chart, the average differences do not appear to have been biased, as the cumulative differences are extremely close to zero.

It is possible to point to a number of explanations for the differences in the two measures. First, the two calculations are based upon data from the desk officers in the case of the IMF and from the OECD National Accounts for the OECD. Therefore the actual budget and national accounts data upon which the calculations are based may differ. Second, both calculations require assumptions about potential GDP, which may differ. Third, the two follow different methodologies in calculating the impulse, with the IMF measure defining impulses more broadly to include some automatic stabilizing features of the tax system. (See Schinasi (1986) for an analysis of the differences in the two measures for a number of countries over the period 1979-1984.)

III. Can Fiscal-Impulse Measures be Model-Free?

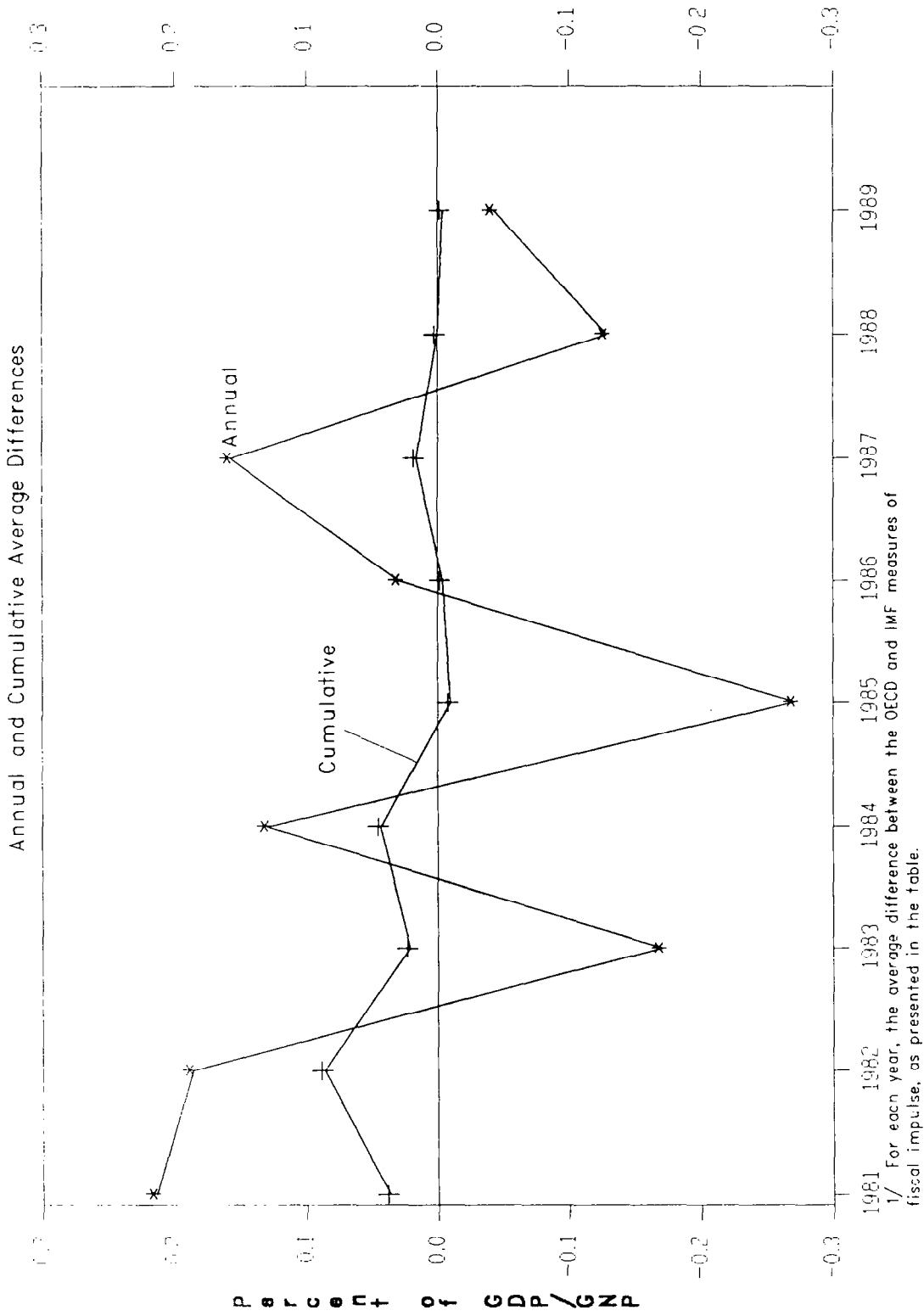
There is some controversy whether fiscal impulse measures can be designed without taking a position on whether the macroeconomic structure of the economy is Keynesian, Neoclassical, Ricardian, or any other view. Much of this is due to the intellectual setting in which the notion of fiscal impulse calculations were first constructed and the subsequent diversity of outlooks. It also often reflects linguistic imprecision in using the term "impulse", when in fact the entire effect of a given change in fiscal policy, including the general equilibrium reaction to the impulse, is meant. One can conceptually separate fiscal impulses from the reactions to them, with the former not depending upon a specific macroeconomic model, and also identify nonfiscal influences on the budget balance. This does not mean that a measure of fiscal impulse is model-free, however.

Consider the disaggregation of all governmental activities, both those that have direct influences on public finances (e.g., revenue and expenditure programs) and indirect influences (e.g., regulations), into separate line items. Each can be thought of as the product of a government policy and the base or activity that policy is designed to influence. For example, revenue from a particular tax (say on alcohol) can be expressed as the product of the rate and its base.

$$(1) \quad R = tB$$

However, the size of the base itself depends upon the tax rate, t , macroeconomic variables, M , and other factors, e .

Differences in IMF and OECD Calculations of General Government Fiscal Impulses 1/



$$(2) \quad B = B(t, M, e)$$

(In general the base will also depend upon past rates or expected future rates as well.) Therefore the change in revenues can be decomposed into those due to the change in the tax rate, dt , and other factors.

$$(3) \quad dR = Bdt + t(\partial B/\partial t)dt + t(\partial B/\partial M)(\partial M/\partial t)dt + t(\partial B/\partial e)de$$

If a measure of fiscal impulse is to be free of a macroeconomic structure it should exclude from each line-item all influences captured by the third and fourth terms on the right hand side of equation 3. But even after removing these terms, what is left is not model-free, even though all that is left is the "direct" impact of a change in tax rates on revenues. The second term represents the change in revenues stemming from a change in the tax base induced by the change in the tax rate, *ceteris paribus*, which requires an estimate of microeconomic elasticities. If fiscal impulse measures were aggregated from individual goods or markets, they would then require microeconomic models of responses to policy changes.

The only term in equation 3 that could be measured without resort to a model is the first term. It measures the change in revenues resulting from a change in the tax rate, abstracting from any micro- or macroeconomic changes that result from this policy change. Conceptually, it should therefore be possible to identify every policy decision in a given year, "cost it out" under the assumption of zero elasticities for the affected bases, and calculate the fiscal impulses as the sum of all the separate policy changes. In fact, this is generally the first step undertaken when tax reforms or changes in expenditure programs are considered. There is no need to have any economic model to undertake such a calculation, only the necessary data on the bases and rates and computational equipment and manpower. However, this is an extremely narrow definition of a fiscal impulse.

Therefore, whether a fiscal impulse measure is model free or not ultimately depends on the interpretation of the word "direct" in the definition of fiscal impulse. Given that policy changes are intended to have some impact on the economy, either at a micro- or macroeconomic level, policy makers and economists are often interested in the sum of the first two terms; i.e., the total effect of the policy change, taking into account changes in the base directly related to the incentive effects of altering the policy variable. This calculation necessarily requires making assumptions about the probable reactions of economic agents to the policy change, though it need not entail holding an opinion about the macroeconomic effects of changes in fiscal policy or monetary policy. This is not to belittle the difficulties that still remain, as the debate in the United States about the revenue implications of capital gains tax rate reductions clearly reminds us. The calculation made by the government will be based upon, either explicitly or implicitly, a model of behavior for the market in question.

While it is conceptually feasible to construct macroeconomic model-free impulse calculations, it appears that the information and manpower requirements are vast. Hence the art of constructing fiscal impulse measures revolves around using "shortcuts" in deriving impulses. Both the IMF and the OECD fiscal impulse calculations are summary measures derived at the macroeconomic level using simplifying assumptions. The IMF measure defines the fiscal impulse rather broadly, minimizing informational requirements but at the cost of precision. In contrast, the OECD measure explicitly attempts to exclude more precisely the influences of automatic stabilizing forces on the fiscal balance in their calculation of the fiscal impulse but is therefore explicitly model specific.

IV. Potential Improvements

A number of attempts have been made to further refine the calculation of fiscal impulses, with the view to overcoming perceived shortcomings of the above measures. For example, during periods of inflation the nominal interest rate contains a component that compensates lenders for the reduced real value of their nominal securities. The interest payments by the debtor can be thought of as containing, in addition to the amount of compensation necessary for the lending of real purchasing power, an amount of pre-paid amortization to maintain the real value of the amount borrowed. Some have argued that this component should be excluded from government expenditures when calculating the fiscal balance and the fiscal impulse, as the recipients of these flows will not treat them as income as they would other government expenditures (See the discussion in Tanzi, Blejer and Teijeiro (1988) and Blejer and Cheasty (1990)). The OECD has, for the past few years, published measures of fiscal impulses that are net of interest payments. This has resulted in quite different impulse measures in some cases, especially for those countries with significant amount of government debt.

The current method of calculating fiscal impulses requires assumptions about potential output. As shown in Heller et al (1986) changes in these assumptions can result in significant changes in estimated impulses. Therefore, Blanchard (1990) has suggested that the impulse be calculated as the difference in the primary surplus (the surplus net of net interest payments, in order to abstract from the inflation problem) that would have held this year were the unemployment rate at the same value it was in the previous year, and the primary surplus in the previous year. This does not require an assumption about potential GDP; however, it still makes use of estimated elasticities, with greater data requirements and potential for intertemporal instability of the parameter coefficients.

Another area in which impulse calculations can be refined, and applies to some of the countries above, as well as to many developing countries, relates to the appropriate treatment of changes in exchange rates on the domestic value of government debt, and the domestic currency value of debt service expenditures. An exchange rate induced increase in debt servicing

may increase measured fiscal impulses, while the actual impact on the domestic economy may be neutral or even contractionary. To our knowledge, however, this adjustment has not been undertaken.

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