FISCAL POLICY AND ECONOMIC ACTIVITY DURING RECESSIONS IN ADVANCED ECONOMIES

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1. Introduction

This paper is concerned with the effectiveness of fiscal policy in responding to downturns in economic activity and in particular to recessions.[1] Macroeconomic thinking is still largely dominated by the Keynesian view that a fiscal expansion is an appropriate policy response to downturns and recessions. However, the fact that fiscal multipliers are generally found to be quite small raises doubts about the payoff to fiscal expansions.[2] Furthermore, the experience in Europe during the 1990s, which points to the possibility that fiscal contractions can be expansionary, or in other words that fiscal multipliers can be negative, has challenged the Keynesian view.

Uncertainty about the impact of fiscal policy on growth is reflected in debates about the role of fiscal policy during the Asian crisis and in helping to turn around the stagnant Japanese economy and about the fiscal policy response to the downturn in the United States, especially post-September 11, 2001, and to the weakening in the euro area. To inform the issues involved, it would clearly be helpful to know whether fiscal expansions have been relatively effective or relatively ineffective in stimulating economic activity during recessions, and in particular to be aware of the circumstances under which fiscal contractions may have been expansionary. This paper begins by describing what in theory influences fiscal multipliers and by summarizing the available empirical evidence. Attention then turns to some new empirical work on the relationship

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The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the IMF or of the Ministère des Finances.

1 Throughout this paper, the terms economic activity and growth are used interchangeably, in each case with a focus on the short-term impact of fiscal policy. Recessions are defined below.

2 References in this paper to fiscal multipliers are intended to convey the general impact of fiscal expansions and fiscal contractions on economic activity.

between fiscal policy and growth during recessions in advanced economies.[3]

2. Review of Theory and Evidence

The theoretical literature spans the simple Keynesian model, closed and open economy IS-LM models, demand-side models incorporating rational expectations, Ricardian equivalence, interest rate premiums and credibility, uncertainty and supply-side (including new classical) models. This literature, which is reviewed in detail in Hemming, Kell and Mahfouz (2000), suggests that fiscal multipliers will tend to be positive and possibly quite large when:

- there is excess capacity, the economy is either closed or it is open and the exchange rate is fixed, and households have limited time horizons or are liquidity constrained;
- increased government spending does not substitute for private spending, it enhances the productivity of labor and capital, and lower taxes increase labor supply and/or investment;
- government debt is low and the government does not face financing constraints; and
- there is an accompanying monetary expansion with limited inflationary consequences.

Fiscal multipliers are likely to be smaller, and could turn negative, when:

- there is crowding out either directly as government provision substitutes for private provision and through imports, or as interest rates rise and a flexible exchange rate appreciates in response to a fiscal expansion;
- households are Ricardian, in which case a permanent fiscal expansion can reduce consumption;

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[3] Advanced economies is an IMF World Economic Outlook country grouping. The 29 advanced economies overlap significantly with the 30 OECD member countries; the former include the newly industrialized Asian economies (Hong Kong SAR, Singapore, and Taiwan Province of China), Cyprus, and Israel, but exclude the EU accession countries (the Czech Republic, Hungary, Poland, and the Slovak Republic), Mexico, and Turkey.

- there is a debt sustainability problem and risk premia on interest rates are large, in which case a credible fiscal contraction can result in a significant fall in interest rates; and
- expansionary fiscal policy increases uncertainty which leads to more cautious saving and investment decisions by households and firms.

The empirical literature has three substantive components. First, there are estimates of fiscal multipliers derived from macroeconomic model simulations and reduced-form equations. Second, there are studies that draw lessons by looking across episodes of fiscal adjustment, with a special emphasis on identifying expansionary fiscal contractions. Third, some studies look at factors that influence fiscal multipliers, focusing on the evidence to support crowding out and Ricardian equivalence. Nearly all the available empirical literature relates to OECD countries, indeed much of it concentrates on the United States, Japan and major European countries. The main conclusions are as follows.

- Estimates of fiscal multipliers are overwhelmingly positive but small. Short-term multipliers average around a half for taxes and one for spending, with only modest variation across countries and models (albeit with some outliers). There are hardly any instances of negative fiscal multipliers, the exception being that they can be generated in some macroeconomic models with strong credibility effects.
- There is nevertheless evidence of non-Keynesian expansionary fiscal contractions. The most frequently cited examples, first by Giavazzi and Pagano (1990) and subsequently by others, are Denmark (1983-86) and Ireland (1987-89). Expansionary fiscal contractions appear to be more likely where a fiscal contraction: is large and focuses on cuts in unproductive spending; occurs against a background of high debt which leads to sizable risk premia on interest rates; is accompanied by a significant depreciation and wage restraint; and increases the credibility of fiscal policy.

There is little evidence of direct crowding out or crowding out through interest rates and the exchange rate. Nor does full Ricardian equivalence or a significant partial Ricardian offset get much support from the evidence.

3. New Empirical Work

Following the approach of Giavazzi and Pagano (1996), Alesina and Perotti (1997) and others, this paper analyses specific episodes. However, instead of episodes of fiscal adjustment and their growth consequences, the focus is on recession episodes, the fiscal response to these episodes and the impact of fiscal policy on growth during recessions.

The rationale for concentrating on recession episodes is that fiscal policy is more likely to be guided by the stabilization objective during recessions, and its effectiveness in this regard is obviously crucial for policymakers and should therefore be more apparent. Analyzing fiscal policy in good times as well as bad times would also require that careful attention is paid to the broader objectives of fiscal policy and to political and institutional influences on fiscal policy (Fatás and Mihov, 2002). Only political constraints are touched on below.

3.1 Definitions and Data

The following definitions are used in the paper.

- A recession episode is a single year or consecutive years in which real GDP growth falls more than one standard deviation below trend growth.
- The depth of a recession is the difference between average annual real GDP growth during a recession episode and trend growth. A larger difference indicates a deeper recession.[4]
- The fiscal response to a recession is the difference between the fiscal balance in percent of GDP for the year before the episode and the average annual fiscal balance during the episode. When this difference is positive (negative), there is a fiscal expansion (contraction).[5] The fiscal balance refers to the overall balance of the general government.[6]

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[4] The correction for trend growth in defining depth of recession is based on an assumption that differences in trend growth across countries reflect structural factors unrelated to short-term fiscal policy. If real GDP growth was –1 percent and –2 percent respectively in two years of recession, while trend growth was 2 percent, the depth of recession would be 3½ percent.

[5] If the fiscal deficit was 1 percent of GDP before the recession, and increased first to 3 percent of GDP then to 4 percent of GDP over two years of recession, the fiscal response would be 2½ percent of GDP.

[6] Alternative fiscal balance indicators are discussed in Section 3.5.

It should be noted that the definition of a recession used in the paper is not standard (i.e., two consecutive quarters of negative growth). It accords more with the view that a recession involves a significant and widespread decline in economic activity which lasts for more than a few months. This view is reflected in the work of the Business Cycle Dating Committee of the National Bureau of Economic Research. It should also be noted that prolonged recessions need not show up in the data in their entirety if, despite there being a sizable negative output gap, growth climbs to within one standard deviation of trend (which explains why 1981 is not shown as a recession year in the United States, contrary to the consensus view that it was). However, a definition based on output gaps would not capture periods of negative growth that fail to eliminate a large positive output gap.

Annual data for the 29 advanced economies over the period 1970-99 are derived from a number of IMF databases, but mainly that maintained for the World Economic Outlook, complemented by World Bank debt data.

3.2 Recession Episodes and Fiscal Response

Using the preceding definition, and after excluding recession observations where data on growth or the fiscal balance are either incomplete or significant outliers, there were 61 recession episodes in 27 of the 29 advanced economies over the period 1971-98.[7] These episodes are listed in Table 1.[8] It should be noted that, because the focus is on episodes of recession rather than fiscal adjustment, the Denmark and Ireland fiscal adjustments mentioned above are not included. But of the ten fiscal adjustments discussed in Alesina and Ardagna (1998), three are covered – Greece (1987), Ireland (1983) and Italy (1993).

As Figure 1 shows, recession episodes were more numerous (i.e., there were three or more recessions a year) at certain times, most notably 1974-75, 1980-83, 1991 and 1993, and 1998, in turn reflecting

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[7] There are no episodes in Cyprus or Switzerland.

[8] Recessions are not identified in the beginning and end years of the data period (1970 and 1999) because reference is made to pre-recession and post-recession values of certain variables. Of 82 initial recession observations, 18 are excluded because of missing data for the pre-recession, recession, or post-recession period and there are three outliers where either growth is more than 15 percent or the fiscal balance shows a deficit of more than 15 percent of GDP in the pre-recession, recession, or post-recession period.

primarily the impact of the two oil shocks, the global recession of the early 1990s and the Asian crisis.

Recessions are generally quite deep. Average growth is about 4½ percent below trend, as reported in Table 2, and negative growth is a feature of all recession episodes. However, with an average length of slightly less than 1½ years, the typical recession is quite short; most last a year, while only a few are longer than two years.[9]

Table 1

Recession Episodes by Country, 1971-98 [(1)]

Australia	***1982-83, 1990-91***	Japan	*1974,* ***1993-94***
Austria	***1978, 1981, 1984, 1993***	Korea	*1980, 1998*
Belgium	***1983, 1993***	Luxembourg	1975, 1977, 1981-83
Canada	***1982, 1990-92***	Netherlands	***1993***
Denmark	***1974-75, 1980-81, 1989, 1993***	New Zealand	***1991***
Finland	***1991-93***	Norway	1978, ***1982, 1988***
France	1975, ***1991, 1993***	Portugal	**1983-84, 1993**
Germany	***1981-1982, 1993***	Singapore	1975, 1985-86, 1998
Greece	*1982, 1987,* ***1993***	Spain	***1981, 1992-93***
Hong Kong SAR	1985, 1998	Sweden	***1991-93***
Iceland	*1983, 1988-89, 1992*	Taiwan ROC	1982, 1998
Ireland	***1983***	United Kingdom	1974-75, ***1980-81, 1991-92***
Israel	*1989*	United States	**1974-75***, 1980, 1982, 1991*
Italy	***1982, 1993***		

[(1)] See footnotes 11 and 13 for an explanation of the italicized and bold-faced episodes.

9 The average is biased upwards because by definition no recession can be less than a year in length. In fact, the average postwar recession in industrial countries has lasted about a year, which means they can reasonably be analyzed using annual data.

Fig. 1

Recession Episodes in Advanced Economies, 1971-98

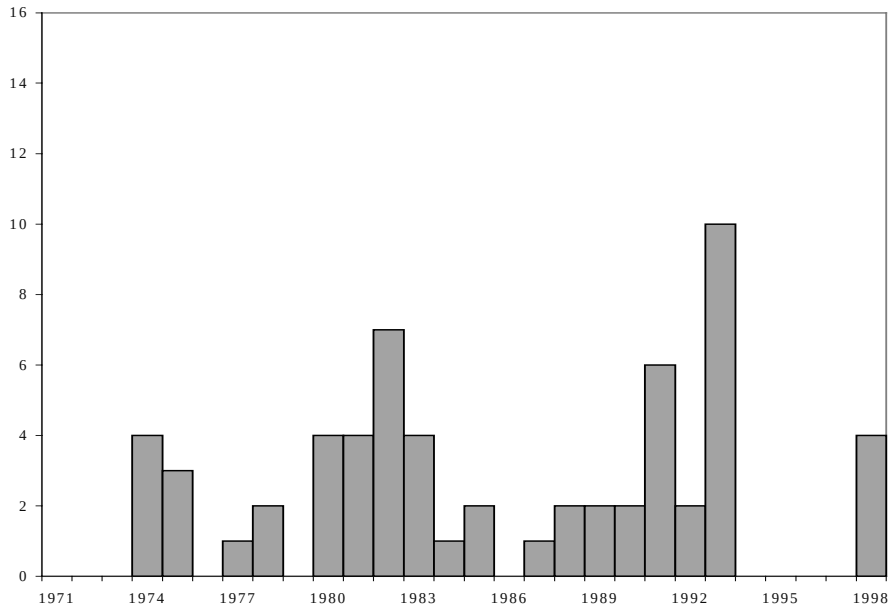

Table 2

Summary Description of Recession Episodes [1]

Number of episodes	61
Depth of recession [2]	4.4
	(2.3)
Average length of recession (years)	1.4
	(0.6)
Fiscal response [2]	1.9
	(2.5)

[1] Standard deviations in parentheses.
[2] As defined in the text.

The fiscal response to a recession is on average expansionary, with the fiscal balance deteriorating by slightly less than 2 percent of GDP. Of the 61 recession episodes, Table 3 indicates that 49 (i.e., 80 percent) were responded to with fiscal expansions, the fiscal balance deteriorating by 2½ percent of GDP on average. For the 12 recession episodes that were responded to with fiscal contractions, the fiscal balance improves by about ¾ percent of GDP on average. Fiscal deficits are the norm before, during, and after recession episodes.

A number of factors could explain why the fiscal response to recessions is in some cases expansionary and in other cases contractionary. The initial fiscal position could clearly be important, and on average fiscal deficits and debt are indeed much lower before fiscal expansions, which is to be expected given that this provides more room for fiscal policy manoeuvre. Government size is also slightly bigger, which probably reflects a correlation between government size, and in particular the size of the welfare state, and the strength of automatic stabilizers (van den Noord, 2000, Fatás and Mihov, 2001).

Macroeconomic conditions could also matter. Fiscal expansions typically occur against the background of initially higher growth and a stronger reserve position, both of which are unsurprising. They also accompany negative terms of trade changes, possibly because there is a greater readiness to let fiscal policy accommodate an exogenous deterioration in the external environment. That larger current account deficits and higher inflation precede fiscal expansions is distinctly counterintuitive, although the latter could reflect the fact that inflation was higher and fiscal policy looser in many advanced economies during the 1970s and 1980s.

Governments may also face political constraints in implementing the desired fiscal policy. An index of political constraints, based on the number of veto points in the executive, legislative, and judicial branches of government and on the ideological alignment of each branch, has been constructed by Henisz (2000). Fiscal expansions are associated with there being more political constraints, possibly reflecting the fact that the ability to offset automatic stabilizers with discretionary measures is limited. However, the difference in the index is not large.

Table 3

Characteristics of Fiscal Expansions and Fiscal Contractions

	Fiscal expansions	Fiscal contractions
Number of episodes	49	12
Fiscal response [1]	2.5	–0.7
Initial fiscal position [2]		
Fiscal balance (percent of GDP)	–0.3	–5.3
Debt (percent of GDP)	24.2	55.9
Government size (revenue in percent of GDP)	39.8	35.4
Macroeconomic conditions [2]		
Growth (relative to trend, in percent)	–0.4	–1.3
Current account balance (percent of GDP)	–2.3	–1.2
Reserves (percent of imports)	19.1	15.9
Terms of trade (percentage change) [3]	–2.1	4.0
Inflation (percent)	10.0	8.8
Political constraints (index) [4]	0.7	0.6

[1] As defined in the text.
[2] Before a recession episode.
[3] During a recession episode.
[4] A larger number indicates more constrained government.

3.3 Descriptive Analysis of Depth of Recession

One way to gauge the effectiveness of fiscal policy is to compare the depth of recessions accompanied by fiscal expansions and fiscal contractions. Such an approach provides a straightforward indication of whether fiscal multipliers are positive or negative, and an indication as to whether they are large or small.[10]

Table 4 indicates that average depth of recession for episodes accompanied by fiscal expansions and fiscal contractions is little different at 4¼ percent and 4½ percent respectively, and the fiscal multiplier therefore can be no more than marginally positive. However, the theoretical and empirical literature summarized above suggests that a number of factors can influence the effectiveness of fiscal policy, and sharper differences in average growth rates may emerge once these factors are taken into account.

Table 4 reports results based on thresholds that control for differences in the following factors: capacity utilization; openness and exchange rate regime; initial fiscal position; composition of fiscal response; and accompanying macroeconomic policies. This is not an exhaustive list of relevant factors, since some (and especially the underlying determinants of household and firm behavior) are difficult to quantify.

Some care is needed in comparing fiscal expansions and fiscal contractions in Table 4, in particular to distinguish between the effectiveness of fiscal expansions *relative to* fiscal contractions under the same circumstances, and between the effectiveness of fiscal expansions *and* fiscal contractions under different circumstances. Moreover, data relevant to the various factors are not available for all 61 countries in the sample of recession episodes, and so the sample size, and its composition in terms of the number of fiscal expansions and fiscal contractions, varies with the comparison being made.

Table 4 suggests the following:

Capacity utilization. As expected, fiscal expansions are generally more effective (i.e., they are more effective in both the senses just noted) when there is excess capacity as reflected in GDP in the year before recessions being below its trend level.

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[10] However, differences in average growth rates relative to trend cannot be translated into precise multiplier estimates.

Openness and exchange rate regime. Fiscal expansions are generally more effective in open economies with a fixed exchange rate. This is the standard prediction, because monetary policy is directed towards preserving the fixed exchange rate and fiscal policy is therefore not significantly crowded out by interest rates or the exchange rate. Also as expected, fiscal expansions are more effective in closed economies than in open economies with a flexible exchange rate.

Initial fiscal position. Fiscal expansions are more effective when debt is in the first instance low, but not when the fiscal deficit is initially low. The latter is unexpected. Fiscal contractions are generally more effective when the fiscal deficit is in the first instance high, but not when debt is initially high. The latter is especially surprising given that high debt is a well-established feature of expansionary fiscal contractions. That fiscal expansions are generally more effective when government is big is probably because larger automatic stabilizers provide a more timely and effective response to recessions.

Composition of fiscal response. Expenditure-based fiscal expansions are more effective, reflecting the fact that fiscal multipliers are larger for expenditure increases than tax cuts. Fiscal contractions are more effective when they are expenditure based, which is an established characteristic of expansionary fiscal contractions.

Accompanying macroeconomic policies. Fiscal expansions are more effective when accompanied by expansionary monetary policy, as expected, while fiscal contractions are more effective when accompanied by a depreciation, which is again consistent with the characteristics of expansionary fiscal contractions.

The various comparisons in Table 4 suggest that the sign and size of fiscal multipliers are sensitive to circumstances, and that differences in this regard are to some extent consistent with expectations. However, the comparisons have to be viewed cautiously. Standard deviations, which have only been reported in Table 2, are generally large, and differences between averages for fiscal expansions and fiscal contractions are in many cases not statistically significant (which is why the comments above are based only on larger differences). Moreover, comparing averages fails to

Table 4

Factors Influencing the Depth of Recession

		Fiscal Expansions	Fiscal Contractions
		Depth of recession [1] *(percent)*	
Overall		4.3	4.5
Capacity utilization			
Excess capacity [2]	Yes	3.9	5.3
	No	4.5	4.2
Openness and exchange rate regime			
Closed economy [3]		3.6	3.5
Open economy/flexible exchange rate		6.5	3.7
Open economy/fixed exchange rate		3.4	4.3
Initial fiscal position			
Large fiscal deficit [4]	Yes	4.3	3.8
	No	4.4	5.3
High debt [5]	Yes	4.5	4.7
	No	4.1	4.1
Big government [6]	Yes	3.8	4.1
	No	6.2	5.9
Composition of fiscal response			
Expenditure based [7]	Yes	4.3	3.5
	No	4.5	4.6
Accompanying macroeconomic policies			
Monetary expansion [8]	Yes	3.7	5.3
	No	5.0	3.6
Depreciation [9]	Yes	4.5	4.0
	No	4.1	5.5

(1) As defined in the text.
(2) GDP below trend level before a recession.
(3) Imports less than 20 percent of GDP before a recession.
(4) Fiscal deficit more than 5 percent of GDP before a recession.
(5) Debt more than 50 percent of GDP before a recession.
(6) Revenue more than 30 percent of GDP before a recession.
(7) Expenditure change larger than revenue change (in absolute terms).
(8) Interest rate declines.
(9) During a recession.

exploit the information content of the differences within the grouped fiscal expansions and fiscal contractions which give rise to the large standard deviations. Consequently, descriptive analysis is at best capable of picking out certain empirical regularities across recession episodes.

3.4 Regression Analysis of Fiscal Response and Depth of Recession

Regression analysis may reveal more about fiscal multipliers. The econometric approach chosen involves estimating a system of two equations for the fiscal response and the depth of recession. The fiscal response is initially specified to be a function of the depth of recession, together with the initial fiscal position, macroeconomic conditions, and political constraints variables indicated in Table 3. The depth of recession is initially specified to be a function of the fiscal response, together with the capacity utilization, openness and exchange rate regime, initial fiscal position, composition of fiscal response, and accompanying macroeconomic policy variables indicated in Table 4 and growth (before a recession); a number of variables are interacted with the fiscal response. Complete information is available for 43 recession episodes.[11] Most variables are included in continuous form; however, dummy variables are used for the exchange rate regime (which is not continuous) and for expenditure-based fiscal policy (for which the corresponding continuous variable would be the fiscal response).

Estimation then proceeds as follows:

- Each equation is identified so that structural parameters can be estimated by two-stage least squares.
- General specifications are estimated for each equation, and then variables with insignificant coefficients are dropped in stages to yield a final specification in which all remaining variables are significant at the 10 percent level. This is specification 1 in Tables 5 and 6.
- The fiscal response equation is reestimated to exclude the current account balance because its coefficient has a counterintuitive sign which may reflect spurious correlation. This is specification 2 in Table 5.

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[11] These episodes are italicized in Table 1.

- Each equation is then reestimated using as instruments only those variables that remain significant in the final specification of the other equation. This yields final specification 3 in Table 5 and final specification 2 in Table 6.
- Lastly, these final specifications are estimated as a system using three-stage least squares. Since the results indicate that the depth of recession (and other variables) are no longer significant in the fiscal response equation, this system is reestimated excluding these variables as seemingly unrelated regression (SUR) equations. The results are given in Table 7.

The final specification in Table 7 is the preferred model.

In this model, the fiscal response is determined by the fiscal balance before a recession and government size. Governments that pursue sound fiscal policy in good times take advantage of their additional room to manoeuvre in bad times, and bigger governments undertake more stabilization, for reasons given above. At the mean government size (about 40 percent of GDP), a fiscal deficit of 3 percent of GDP or lower on average yields a fiscal expansion. While the depth of recession does not influence the size of the fiscal response in the preferred model, it should be noted that the regression results are conditional on there being a recession. This being the case, while the depth of recession does not influence the size of the fiscal response, a recession episode can still trigger a fiscal response.

The depth of recession is determined by the fiscal response, and in a closed economy the marginal effect of fiscal policy is Keynesian. A one percentage point of GDP larger fiscal expansion increases growth during a recession by 0.7 percent. However, there is an offset in an open economy which leads to an overall reduction in growth by 0.8 percent when the exchange rate is flexible and by 0.4 percent when it is fixed. In other words, fiscal policy becomes non Keynesian. While such an offset, and the fact that it is larger with a flexible exchange rate, is consistent with expectations, it is too big; crowding out through imports and the exchange rate should not reverse the effects of fiscal policy.

Countries with bigger governments also have less deep recessions, but this effect is independent of the size of the fiscal response and therefore not necessarily indicative of the relative effectiveness of automatic stabilizers (as suggested by the descriptive analysis). Nor is it inconsistent with the possibility that more open economies have bigger governments

Table 5

Regression Results for Fiscal Response [1]

	General Specification 1		Final Specification 1		General Specification 2		Final Specification 2		Final Specification 3	
Observations		43		43		43		43		43
F-test for overall significance	F(10,32)	3.05	F(3,40)	12.28	F(9,33)	3.65	F(4,38)	5.44	F(4,38)	6.29
R-squared		0.55		0.66		0.51		0.47		0.49
Adjusted R-squared		0.41		0.64		0.38		0.41		0.44
Wald test: Final vs. general specification			F(8,32)	0.93			F(5,33)	0.50		
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Depth of recession	0.23	0.88			0.36	1.17	0.54	1.70	0.37	0.66
Fiscal Balance	0.32	2.98	0.33	3.98	0.23	1.86	0.26	3.60	0.27	3.89
Debt	–0.00	–0.15			–0.01	–0.75				
Government size	0.08	1.62	0.05	5.01	0.10	1.84	0.10	2.19	0.09	1.34
Growth	0.01	0.02			0.01	0.03				
Current account balance	–0.24	–1.64	–0.23	–2.23						
Reserves	–0.03	–1.32			–0.01	–0.79				
Terms of trade	0.03	0.60			0.02	0.48				
Inflation	–0.00	–0.02			0.03	0.98				
Political constraints	1.36	1.08			1.98	1.54	2.39	1.69	1.85	0.96
Constant	–2.64	–0.87			–4.22	–1.21	–5.58	–1.67	–3.84	–0.66

[1] Estimated by two-stage least squares, except final specification 1 which is estimated by ordinary least squares. Excess capacity, monetary policy, and depreciation are used as instruments, except for final specification 3 which uses growth.

Table 6

Regression Results for Depth of Recession

	General Specification 1		Final Specification 1		Final Specification 2	
Observations		43		43		43
F-test for overall significance	F(15,27)	3.65	F(5,37)	4.75	F(5,37)	3.20
R-squared		0.66		0.55		0.54
Adjusted R-squared		0.47		0.49		0.48
Wald test: Final vs. general specification			F(10, 27)	1.75		
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Fiscal response	–1.10	–1.49	–0.85	–1.98	–1.02	–2.72
* Excess capacity	–0.07	–1.58				
* Open economy/flexible exchange rate	1.34	2.71	1.56	3.18	1.81	3.31
* Open economy/fixed exchange rate	1.10	2.04	1.27	2.97	1.49	3.15
* Fiscal balance	–0.00	–0.09				
* Debt	0.00	0.39				
* Government size	–0.00	–0.18				
* Expenditure based	0.15	0.44				
Excess capacity	0.06	0.60				
Fiscal balance	0.21	1.66				
Debt	0.02	1.55				
Government size	–0.16	–3.23	–0.17	–4.22	–0.18	–3.75
Growth	–0.24	–1.02	–0.29	–2.53	–0.30	–2.26
Monetary Policy	–0.04	–0.16				
Depreciation	0.01	0.51				
Constant	9.98	4.16	10.23	6.14	10.64	5.57

(1) Estimated by two-stage least squares. The current account balance, reserves, terms of trade, inflation and political constraints are used as instruments, except for final specification 2 which uses political constraints alone.

Table 7

Regression Results for Fiscal Response and Depth of Recession

	General Specification (1)		Final Specification (2)	
	Fiscal Response			
Observations		43		43
R-squared		0.47		0.62
	Coefficient	z-value	Cofficient	z-value
Depth of recession	0.18	0.79		
Fiscal balance	0.30	4.61	0.31	5.04
Government size	0.07	1.91	0.06	8.22
Political constraints	0.81	0.43		
Constant	–1.53	–0.53		
	Depth of Recession			
Observations		43		43
R-squared		0.54		0.56
	Coefficient	z-value	Coefficient	z-value
Fiscal response	–0.93	–2.56	–0.68	–2.23
* Open economy/ flexible exchange rate	1.80	4.62	1.52	4.60
* Open economy/ fixed exchange rate	1.40	3.39	1.05	3.24
Government size	–0.18	–5.21	–0.16	–5.96
Growth	–0.31	–2.33	–0.29	–2.19
Constant	10.45	7.89	9.70	8.79

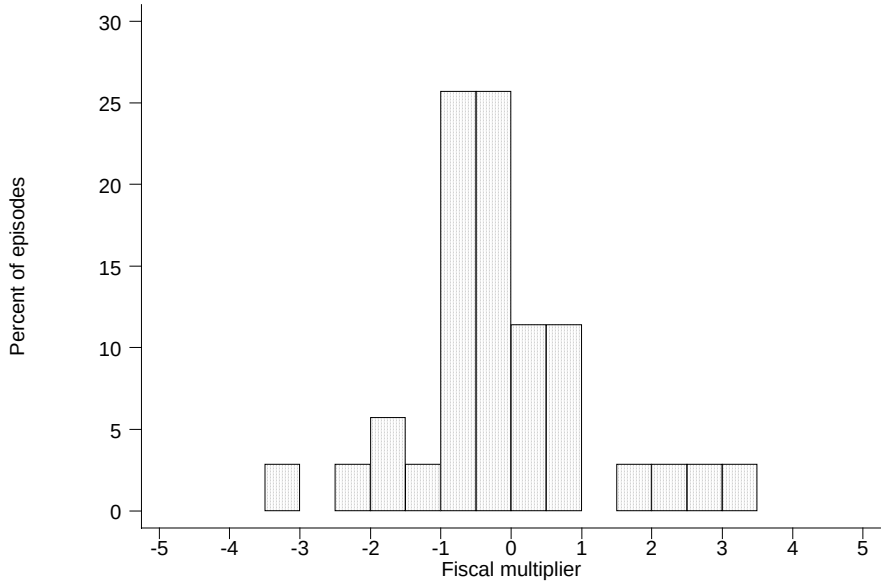
(1) Estimated by three-stage least squares.
(2) Estimated as seemingly unrelated regression (SUR) equations.

(Rodrik, 1998), although it does imply that these characteristics have an offsetting influence on the depth of recession. Lower growth before a recession is associated with deeper recessions, which is to be expected given that growth is usually serially correlated.

While the government size and growth variables do not affect the impact of the fiscal response on the depth of recession at the margin, they do affect the average relationship between the two, and the average fiscal multiplier (since the latter is the average relationship between the fiscal response and growth during recessions). The average fiscal multiplier across all 43 recession episodes is –1.5. However, this is due to some implausibly large and mainly negative multiplier estimates which reflect the fact that the depth of recession equation represents an incomplete characterization of growth during recessions. Excluding 8 episodes with fiscal multipliers lying outside the range +/– 5, the average multiplier is only marginally negative. Moreover, as Figure 2 indicates, more than two-thirds of the remaining episode specific multipliers lie in the range +/–1, with open economies tending to be in negative territory.

Fig. 2

Frequency Distribution for Fiscal Multiplier



3.5 Measuring Fiscal Policy

Fiscal policy has so far been measured using the overall fiscal balance. This contrasts with the literature on fiscal adjustments, which focuses on the primary structural balance, the argument being that fiscal adjustment should be represented by the discretionary component of fiscal policy alone. The overall balance should therefore be purged of the impact of automatic stabilizers and changes in interest payments. However, when attention turns instead to the effectiveness of fiscal policy, automatic stabilizers should clearly be taken into account because they are part of fiscal policy (i.e., 'letting automatic stabilizers work' is a policy decision). And anyway, distinguishing the automatic and discretionary components of fiscal policy can be quite problematic.[12] Changes in interest payments also have an effect on aggregate demand (via changes in income from capital).

Because data on structural and primary balances are available for many advanced economies, the impact of using alternative fiscal indicators can be investigated. However, the number of recession episodes is reduced to 39.[13] For this smaller sample, the impact of using alternative fiscal balance indicators is shown in Figure 3 and Table 8. The dispersion of recession episodes in Figure 3 looks similar for each fiscal balance indicator, but Table 8 reveals that a number of fiscal expansions are transformed into fiscal contractions. This is because on average part of the widening overall deficit during a recession is accounted for by higher interest payments, while the bulk of it reflects the operation of automatic stabilizers. The primary structural balance in fact indicates that there is on average a small discretionary fiscal tightening during recessions, which partly offsets the operation of automatic stabilizers.

Regression analysis is possible for the alternative fiscal balance indicators using data for 33 recession episodes.[14] While the results for the fiscal response are not much affected, the results for the depth of recession are not very informative; statistically satisfactory models do not make

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[12] This is not only because of the usual technical issues that have to be addressed (related to calculating output gaps and the output responsiveness of taxes and spending in the usual gap+elasticity approach), but also because the distinction between discretionary and nondiscretionary measures (especially where policy inaction, such as a failure to index government wages, has to be interpreted) can become quite blurred (IMF, 1998).

[13] These episodes are bold-faced in Table 1.

[14] The episodes which are italicized and bold in Table 1, but excluding Finland (1991-93) which is an outlier (see Figure 2) that prevents reasonable results being achieved for any fiscal balance indicator.

Table 8

Impact of Alternative Fiscal Balance Indicators

	Overall Balance	Primary Balance	Structural Balance	Primary Structural Balance
Number of episodes	39	39	39	39
Fiscal expansions	33	31	19	16
Fiscal contractions	6	8	20	23
Fiscal response [1]	2.0	1.8	0.1	–0.1
Fiscal expansions	2.5	2.5	1.9	2.2
Fiscal contractions	–0.7	–0.9	–1.6	–1.8
Depth of recession	3.5	3.5	3.5	3.5
Fiscal expansions	3.5	3.4	3.6	3.5
Fiscal contractions	3.6	3.6	3.4	3.5

[1] Overall and primary balances are in percent of GDP and structural and primary structural balances are in percent of potential GDP.

Table 9

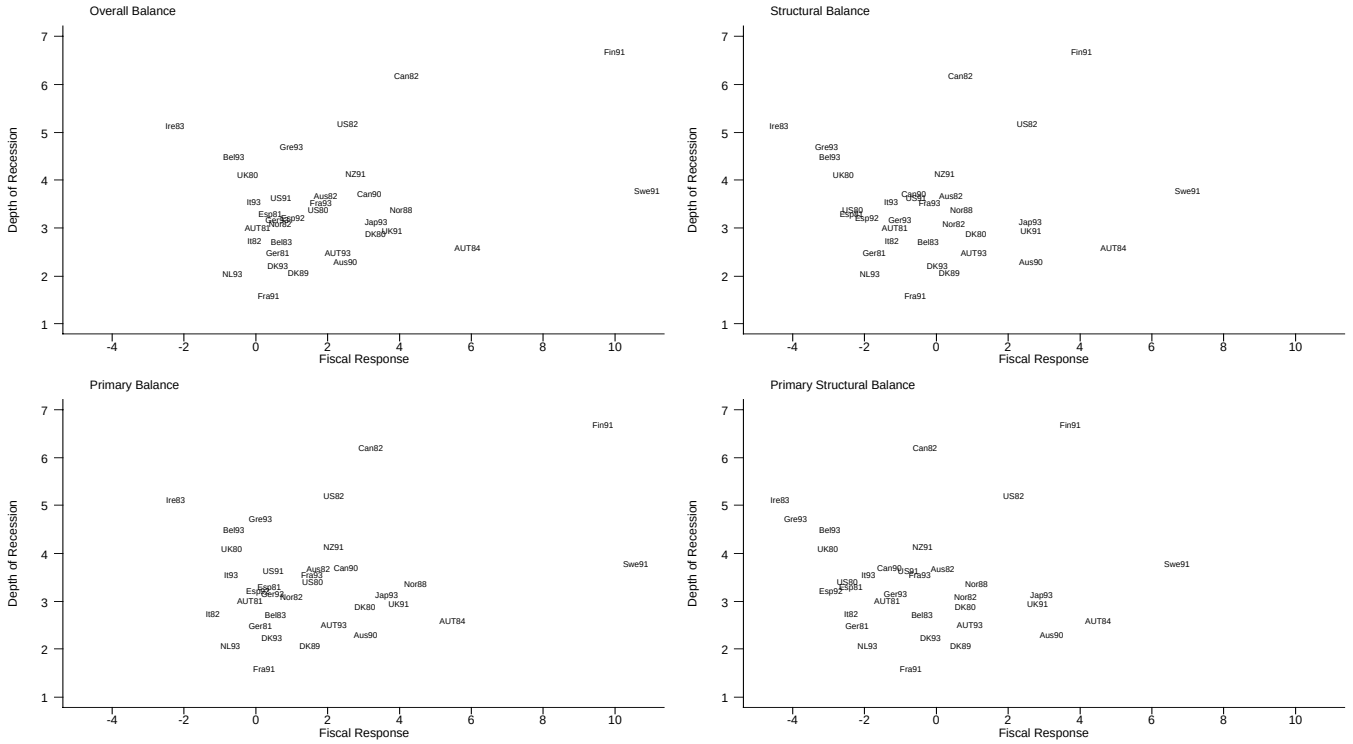
Regression Results for Fiscal Response (Measured by Structural Balance) and Depth of Recession

	General Specification [1]		Final Specification [1]	
	Fiscal Response			
Observations		33		33
R-squared		0.51		0.51
	Coefficient	z-value	Cofficient	z-value
Structural balance	0.34	5.78	0.34	5.94
Government size	0.03	3.84	0.03	3.87
	Depth of Recession			
Observations		33		33
R-squared		0.39		0.20
	Coefficient	z-value	Coefficient	z-value
Fiscal response	–0.47	–2.06	–0.38	–1.47
* Government size	0.01	1.56	0.01	1.28
Government size	–0.28	–1.77	–0.43	–2.46
Monetary policy	–0.27	–3.03		
Constant	4.20	5.77	5.05	6.76

[1] Estimated as seemingly unrelated regression (SUR) equations.

Fig. 3

Fiscal Response, Depth of Recessions, and Alternative Fiscal Balance Indicators (1)



(1) The fiscal response is measured using the corresponding fiscal balance indicator.

much economic sense. Table 9, which is based on the structural balance, reports typical results for the preferred model.[15]

4. Concluding Comments

This paper is fairly informative about the fiscal response during recessions, that is whether there are fiscal expansions or fiscal contractions, and what determines which is chosen. The initial fiscal balance and government size are important in this regard, but the depth of recession is not. The importance of establishing sound fiscal positions in good times to provide room for fiscal policy manoeuvre in bad times is a clear lesson from the results. As regards the effectiveness of fiscal policy in responding to recessions and the factors that influence it, the results in the paper are more mixed. While descriptive analysis points to fiscal policy having effects that are to some extent consistent with economic analysis, regression analysis is much less clear. On balance, it would appear that:

- Fiscal policy is Keynesian during recessions in closed economies, but the fiscal multiplier is quite small (i.e., it is unlikely to exceed unity).
- While fiscal policy during recessions seems to be non-Keynesian in open economies, this does not reflect factors suggested by the expansionary fiscal contraction literature. Rather, it is an implausibly large effect of crowding out. It is probably more appropriate to conclude that the fiscal multiplier is very small in open economies (and probably close to zero with a flexible exchange rate).
- However, these conclusions do not preclude the possibility that, where the circumstances are right, fiscal expansions can be an effective response to a recession. The right circumstances would feature some or all of: excess capacity; a closed economy or an open economy with a fixed exchange rate; big government; expenditure-based fiscal policy; and an accompanying monetary expansion.

One question that remains is whether fiscal policy has stronger effects that the empirical work described in the paper is not picking up. A number of considerations could bear upon the answer to this question.

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[15] The regression analysis was also repeated focusing not on the depth of recession but on the severity of recession, that is the depth of recession multiplied by episode length, and on growth relative to trend in the year following a recession. Neither approach yields better final models for any fiscal balance indicator.

First, the paper does not present a full-fledged analysis of the determinants of growth during recessions, and key factors that could influence the way short-term growth reacts to fiscal policy may not be properly taken into account. For example, it is widely accepted that fiscal policy in Japan will have limited impact on the economy as long as structural impediments on the supply side remain.[16]

Second, fiscal policy implementation is tricky. There are the usual lags in recognizing the need for a fiscal response, designing measures, and then approving them, which can mean that fiscal policy kicks in too late, and may indeed end up being procyclical. This problem is compounded where politicians cannot agree on the required measures. The fiscal stimulus package in the United States was affected in this way. The consequence may be that, in terms of their demand impact, fiscal responses are generally weaker than intended or needed to elicit a significant growth response.

Third, fiscal systems may have institutional weaknesses that make it difficult to implement fiscal policy as intended. Thus attempts to shift from the fiscal contractions initially called for by external financing constraints and the need to finance bank restructuring during the Asian crisis to fiscal expansions to support collapsing demand faltered because budgetary systems proved incapable of delivering the required boost to spending.[17] Again, fiscal responses may be weaker than intended or needed.

And fourth, it may be necessary to pay more careful attention to the distinction between automatic stabilizers and discretionary measures. As noted, the former may be able to deliver a more timely and effective fiscal response to a recession. Whether they can do so is certainly of some interest in the euro area, where the emphasis is on using automatic stabilizers that tend to be larger than in other advanced economies to respond to slower growth. However, discretionary measures can be tailored more specifically to the need to get out of a recession, and the ineffectiveness of fiscal policy may in part be due to badly designed measures.

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[16] Looking at growth rates relative to trend accounts for influences on long-term growth, but does not account for the different ways in which short-term and long-term growth can be affected by structural weaknesses.

[17] Although Korea (1998) is the only core Asian crisis recession episode covered in this paper.

The search for a more satisfactory explanation of the way fiscal policy works in a recession may have to take account of each of these considerations, which probably means that a more episode-specific (case study or event study) approach would be most revealing.

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