Automatic Stabilizers in a Low-Rate Environment

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Until the financial crisis, the nearly exclusive focus of macroeconomic stabilization policy was on monetary policy. It made good sense. In terms of theory, if nominal rigidities are at the core of inefficient output fluctuations, monetary policy is exactly the right instrument to counter their adverse effects. In terms of practice, monetary policy is nimble, and, by institutional design, largely protected from political winds. In terms of outcomes, the Great Moderation, i.e. the stability of output and inflation over more than 20 years, seemed to confirm the wisdom of that choice. By contrast, fiscal policy was a backwater. Governments were willing to let automatic stabilizers play out, even though their strength was the incidental result of decisions about the tax and spending structure that had little to do with stabilization. There were few attempts to improve them.

Large research departments at independent central banks and their local branches assured extensive research output on every aspect of monetary policy. Finance ministries responsible for fiscal policy had no parallel infrastructure and the field of public economics focused largely on allocation and equity rather than stabilization issues.

Even before the crisis however, neutral interest rates, and by implication, the policy rates set by the central banks, had steadily decreased, reducing the margin of maneuver of central banks. Whether the phenomenon is labelled secular stagnation, Japanification or a long term liquidity trap, today's rates are very low and expected to remain very low for a long time. In both Japan and the Euro area, policy rates are negative, and, while policy rates have become positive again in the United States, the margin of maneuver left for monetary policy is extremely limited. For advanced economies as a whole, long term real rates are negative.

This should be seen as a regime change, in which fiscal policy will have to play a major

and likely dominant role in stabilization policy. This requires a fundamental reconsideration of both discretionary fiscal policy and of automatic stabilizers and fiscal rules.

In this paper we focus on automatic stabilizers and what we call semi-automatic stabilizers—stabilizing fiscal policies that operate according to preset rules. Purely automatic stabilizers are movements in public spending and revenues coming from the interaction between existing spending and revenue schedules and economic fluctuations, without discretion or explicit triggers. Altering them significantly would require fundamental changes in tax or benefit structures that reflect deep political choices. What can be done however is to develop what can be called ``semi-automatic'' stabilizers, i.e. tax or spending measures triggered by the crossing of some statistical threshold, be it a low output growth rate, or a high unemployment rate. A few such stabilizers already exist, such as the extension in the US of the length of unemployment benefits when the unemployment rate in a particular state exceeds some threshold, but they have only minor stabilization impacts.

In this short paper we offer four observations about the design and implementation of semi-automatic stabilizers. The first regards the choice of triggers, output-based or unemployment-based. The second considers the size of the hole left to fill by fiscal policy if monetary policy cannot be used. The third is the articulation between automatic stabilizers and discretionary policy. The fourth takes up the choice between stabilizers working mainly through income and stabilizers working mostly through intertemporal substitution effects.

I. Trigger: Unemployment or Output?

Ideally, stabilizers should reduce deviations of output from potential output, but not react to movements in potential output. If an increase in output reflects an increase in underlying productivity, a stabilizer that led to a fiscal contraction in response to this increase would be counterproductive.

Existing automatic stabilizers respond to both output and to unemployment. In the US, about 2/3 of their response reflects changes in tax revenues, and thus depends mostly on output. About 1/3 reflects changes in transfer programs, in particular changes in unemployment benefits, and thus depends mostly on unemployment. [1]

In contrast, when designing semi-automatic stabilizers, one is free to choose the trigger,

[1] See Russek and Kowalewski (2015)

output or unemployment (more complex combinations are probably infeasible).

The evidence strongly suggests that the trigger should be unemployment rather than output: Take for example the decomposition between shocks with permanent effects on output and shocks with transitory effects on output used in the Blanchard Quah (1989) decomposition. Based on re-estimation of the implied structural VAR for the period 1950 to 2019, the proportion of the variance 8 quarters ahead accounted for by the transitory component is 11-20% for output, and 53-81% for unemployment (with the ranges reflecting different specifications of deterministic trends). The mapping from shocks with permanent effects to shocks to potential output, and from shocks with transitory effects to deviations from potential output is far from straightforward, but these numbers suggest that the trigger should be based on unemployment rather than on output movements. [2]

II. Replacing the Large hole left by Monetary policy

If, based on the argument of the previous section, we take the role of automatic stabilizers as alleviating slumps in unemployment (rather than focusing on output and recessions), the next question is how much it might take to replace monetary policy, if monetary policy is indeed constrained and cannot help.

To think about it, we perform a counterfactual exercise, and ask how much worse the slumps of the last 30 years would have been, had monetary policy not been able to help.

Formally, we do the following. Let ΔY be the rate of change of aggregate demand and decompose ΔY between the part due to the change in the real interest rate, a(L) Δr, where a(L) is a distributed lag, and the part due to other factors, call it ΔX:

$$\Delta Y = \Delta X + a(L)\ \Delta r$$

We can think of ΔX as the growth that would have taken place if the real interest rate had remained constant, and thus construct it as:

$$\Delta X = \Delta Y - a(L)\ \Delta r$$

Using Okun's law, and letting b be the Okun coefficient, we can then construct a counterfactual series for the unemployment rate, call it UC (C for counterfactual) by using

$$\Delta\ UC - \Delta U = b\ (a(L)\ \Delta r)$$

We construct such counterfactual series for the unemployment slumps associated with the

[2] Among the various caveats. If hysteresis is present, demand shocks may have permanent effects. If, instead, the economy is in a state of secular stagnation, the permanent component may partly reflect demand shocks rather than potential output. Furthermore, even if the mapping to demand and supply shocks is appropriate, the adjustment to supply shocks may reflect a combination of changes in potential output and of deviations from potential output.

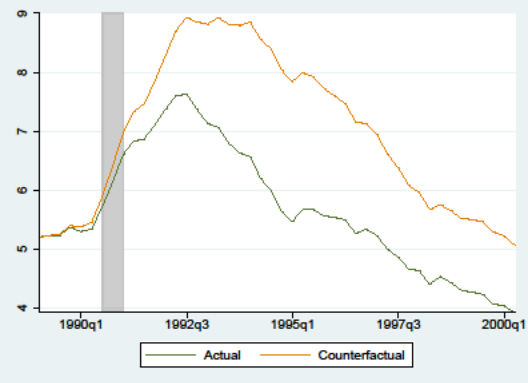
last three recessions. In each case, we look at the period starting with the first increase and ending with the final decrease in the unemployment rate, so 1989:1 to 2000:2 for the 1990 recession, 2000:4 to 2007:2 for the 2000 recession, and 2007:4 to 2019:3 for the 2008-9 recession. In each case, we assume that the actual and the counterfactual unemployment rates are the same at the start of each episode. The distributed lag a(L), giving the effect of a sustained increase in the real policy rate on output over 16 quarters, comes from a separate simulation of the FRBUS model under the assumption of neutral fiscal policy (i.e. in the absence of a feedback rule from debt to the primary deficit). It implies that a sustained 100 bp decrease in the real policy rate has a steadily increasing effect on output, reaching 1.9% after 16 quarters. To construct the real policy rate, we use the difference between the federal funds rate and the one-year forecast of CPI inflation from the Survey of Professional Forecasters. For the more recent episode, during which the policy rate reached the zero lower bound, we present two counterfactual series for the unemployment rate, one based on the real policy rate, and one based on the real shadow policy rate, using the nominal shadow rate calculation of Wu and Xia (2015)[3] [4]

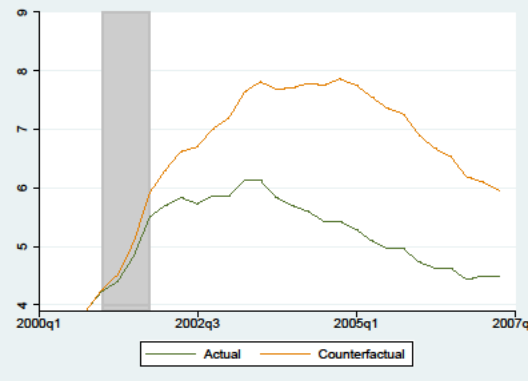
The results are shown in the three panels of Figure 1. The shaded areas represent the quarters during which the economy was in recession, as determined by the NBER dating committee. The three episodes yield largely similar conclusions. First, because of the lags and the slowly building effects of interest rates, monetary policy did not make a substantial difference during the recession itself. Second, monetary policy made a substantial difference to the overall unemployment slump, both with respect to the size of the maximum increase in unemployment and to the length of the slump, defined, say, as the number of quarters during which unemployment exceeded 6%. In the episode associated with the 1990 recession, maximum unemployment would have been higher by 1.3%, and the slump would have been longer by 13 quarters. Put another way, the integral of the difference between the counterfactual and actual unemployment rate would have been 40 point-quarters more of unemployment. In the episode associated with the 2001 recession, the corresponding

[3] This exercise also comes with many caveats. While, in particular, we assume a constant real policy rate, the zero lower bound constrains the nominal policy rate. A constant nominal rate during a recession is likely to be associated with lower inflation, and a higher real rate. To the extent that, in our counterfactual, inflation would have been lower, our computation understates the effect of monetary policy on unemployment.

[4] The lowest value of the Wu Xia index reaches -3% in 2014:2

numbers would have been 1.7%, and 20 quarters, leading to an integral of 60 point-quarters of unemployment. And in the episode associated with the 2008-9 recession, the corresponding numbers would have been 1.5%, and 16 quarters, leading to 81 point-quarters of unemployment.





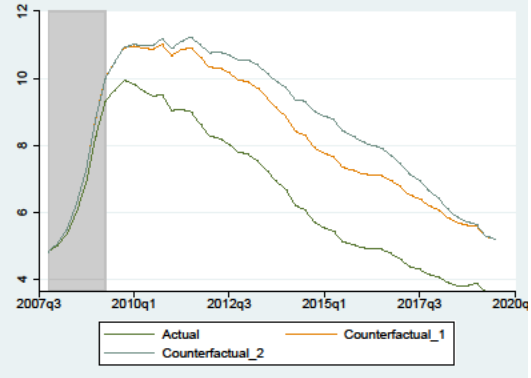


Figure 1. Unemployment, actual and counterfactual, for the episodes associated with the 1990, 2001, and 2008-9 recessions.

These results have two implications. First, even if monetary policy can operate, there is substantial stabilization benefit to be had from fast-acting semi-automatic stabilizers because of the lags in monetary policy. Second, if monetary policy is constrained, there are likely to be substantial gains from fiscal policy taking up its role in accelerating recoveries.

III Automatic stabilizers versus Discretionary Fiscal Policy?

If fiscal policy is going to fill the large unemployment hole created by the limits on monetary policy, how should we think of the division of tasks between automatic stabilizers and discretionary fiscal policy?

Should we think of the role of automatic stabilizers as providing a bridge to discretionary measures until political and implementation lags have worked themselves out, or should we think of them as playing a sustained role for the duration of the slump? The answer clearly depends on whether we can trust discretionary policy to eventually do the right thing. Here, it is again useful to look at what happened in the past three recessions recalling that the need for fiscal policy will be

greater in the future if monetary policy is constrained.

Figure 2 plots the accumulated increase in the total Federal deficit from the start of each episode, together with the contribution of automatic stabilizers to the total (using the CBO series for both the deficit and for automatic stabilizers).

Figure 2. Total fiscal impulse, and part due to automatic stabilizers. Source CBO

In each case, not surprisingly given their mechanical nature, automatic stabilizers follow the mirror image of unemployment. And in all three episodes, discretionary policy eventually comes into play, reinforcing the automatic stabilizers. The response of discretionary policy is however somewhat different across the three episodes. In the 1990s, discretionary policy played a limited role, being actually procyclical during one of the quarters of the recession, and then turning countercyclical rather late in the slump. (The rest of the decade reflects the steady "Clinton-Greenspan" fiscal consolidation, which led to a large decrease in debt by the late 1990s). The response of discretionary policy in the 2000s was quick and very strong, but reflected in large part a parallel agenda, to decrease taxes more permanently, as reflected in the ``Bush tax cuts'' of 2001 and 2003. Similarly, the response of discretionary policy in 2008-9 was both quick and strong, reflecting the worry, specific to that episode, that the recession might turn into a depression and required a very strong fiscal policy response (and the fact that interest rates had already reached their lower bound).

A much deeper analysis, of other recessions, and of the political process behind discretionary responses would be needed to reach a firm conclusion about the potential of of discretionary countercyclical fiscal policy and how discretionary policies might be impacted by semi-automatic stabilizers. What is true however of those three recessions is that discretionary policy eventually came into play. As we now discuss, this is relevant for the choice among semi-automatic stabilizers.

IV. What type of stabilizer?

Potential semi-automatic stabilizers and countercyclical fiscal policies more broadly come in two forms.

Standard policies work primarily through income and liquidity effects, to enhance household spending or to directly increase government spending. They include longer unemployment benefits; more generous food stamps (known as SNAP); and various forms of direct stimulus payments to poor households as well as direct government spending measures like increased highway repair or summer jobs programs.

Timing policies work primarily through intertemporal substitution effects. Examples include temporary investment tax credits (ITC); similar tax credits for the purchase of consumer durables, such as the ``cash for clunkers'' program put in place in July 2009; and in countries that have a value added tax (VAT), temporary decreases in the VAT.

To the extent that semi-automatic stabilizers should work quickly and strongly, timing policies seem attractive. But using the ITC as an example, they raise a number of questions. If the ITC is triggered by the slump, and the slump is anticipated, isn't there the risk that the anticipation of the ITC will trigger an earlier and possibly a worse slump? Should the ITC have a clear and short terminal date, or be more open-ended? Will an ITC lead to a slump when it is removed and investment encounters an airpocket because the investment that would otherwise have taken place has been pulled forward?

To explore these issues, we use a simple model based on quadratic adjustment costs for investment.[5] Adjustment costs imply that investment is a function of the ratio of ``q'' to the price of investment, which itself is equal to the price of the capital good times 1 minus the ITC rate. ``q'' is the present value of future marginal products, discounted at a rate that we take as given, reflecting the limits on monetary policy. We choose the adjustment cost parameter so that a 10% increase in q leads to an increase in investment of 2% of GDP. We close the model with a simplistic

[5] An early study of the dynamic effects of the ITC under rational expectations was performed by John Taylor (1982), who looked at the effects of the Swedish investment funds system.

aggregate demand equation, with demand equal to investment plus a component taken as exogenous and following an AR(1) process.

It turns out that the impact of timing policies depends very much on the issue discussed in the previous section, whether discretionary policy eventually comes online and substitutes partially or fully for automatic stabilizers.

First consider the case when discretionary policy does not come online at all, so the only fiscal adjustment is from automatic stabilizers. Figure 3 looks at the evolution of output after an unanticipated adverse shock, expected to decrease over time at a rate of 0.9% per quarter. It plots the evolution of output absent an ITC, and the evolution of output under two alternative ITCs, one announced (and anticipated) to be in place for one quarter, the other announced to last for five quarters.

One might have expected the 1-quarter ITC to have a more powerful initial effect on investment and, in turn, on initial output. It turns out that it is not the case. The reason is that, while the longer duration of the 5-quarter ITC reduces the incentives to intertemporally substitute, the expectation of more sustained investment and output roughly offsets this first effect. For the same reasons, when a slump is anticipated, the incentives to wait to invest are offset by expectations of stronger demand and output, and the effects roughly cancel.

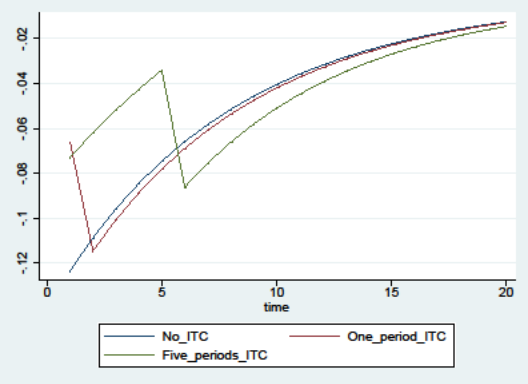


Figure 3. Effects of a one quarter and a five quarter ITC in response to an adverse demand shock.

Taken at face value, this has an important implication for the design of ITCs. The announced duration may not matter very much for the initial effect on output. Given the genuine uncertainty about the length of a slump, it is better to announce an open-ended ITC and keep flexibility in terminating it than to announce one with a short duration, which may turn out to end too soon.

These conclusions however depend very much on our assumption that discretionary policy plays no role in the adjustment. Take the other extreme case in which, when the political lags have worked out, the sum of stabilizers and discretionary policy is independent of the composition. In other words, discretionary policy, when it comes into play, is assumed to fill any gap left by automatic stabilizers. Then,

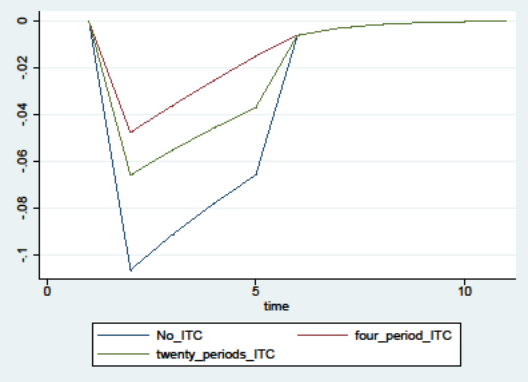


Figure 4. Effects of four quarter and twenty quarters ITCs in response to an adverse demand shocks and a delayed discretionary policy response.

expectations of output once discretionary policy comes into play will be invariant to automatic stabilizers, and the intertemporal effect will be the only one at work.

This is shown in Figure 4, which shows again the effects of a one-period and a five-period ITC on output under the assumption that discretionary policy responds (and is anticipated to respond) after four quarters, by increasing the speed of return to steady state (with the AR1 coefficient on the exogenous shock decreasing from 0.9 to 0.5. In the absence of an ITC, output decreases by 1.2% In the presence of a 20-quarter ITC, output decreases only by 0.6%; and in the presence of a 4-quarter ITC, output decreases by only a bit more than 0.4%. Put simply, in the presence of an anticipation of a discretionary policy response, the shorter the anticipated length of the ITC, the stronger the initial effect on output.

These are only examples of a general point. How to design automatic stabilizers depends very much on the nature and the credibility of the general fiscal rules determining stabilization fiscal policy in general. With good fiscal rules or principles, they can serve as a bridge and can rely on intertemporal substitution to increase their effect . If not, they have to act for longer, and in effect, become a substitute for non-existent fiscal rules.

V. Conclusions

In a world where monetary policy cannot assume responsibility for stabilization policy, there is a strong need for fiscal policy to address stabilization issues. In this context, we have argued that semi-automatic stabilizers should be aimed at reducing unemployment slumps rather than output recessions; that the hole left by the limits on monetary policy implies a large role for fiscal policy in general, and for semi-automatic stabilizers in particular; and that the design of stabilizers, whether they focus on mechanisms that rely primarily on income or on intertemporal substitution effects, depends crucially on the general design of discretionary policy.

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