



Interest rates, government purchases and the Taylor rule in recessions and expansions



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ARTICLE INFO

Article history:

Received 5 March 2013

Accepted 23 August 2013

Available online 10 September 2013

JEL classification:

C12

E32

E52

E58

Keywords:

Monetary policy

Asymmetries

Recessions

Expansions

Output gap

ABSTRACT

In this paper we study asymmetries in the Taylor rule for the United States during the 1970–2012 period. We show that monetary authorities have been constantly concerned with excess demand in overheated periods – when the output gap is positive or the unemployment rate falls below 7% or 7.5% – raising the interest rate aggressively in that case. However, the Fed seems more reluctant to decrease the fund's rate during recessions. On the contrary, monetary authorities react symmetrically and forcefully to inflation in booms and busts. Finally, we provide evidence that an expansionary fiscal policy does not lead to an increase in interest rates, and thus there is not necessary a “crowding-out” effect in recessions.

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1. Introduction

The fiscal tightening to counter the recession still going on in many advanced economies has received a great deal of attention in recent times. Indeed, structural deficits across major advanced economies were reduced from almost 6% of GDP in 2010 to 4% in 2012, a contraction that is expected to continue in the following years. However, rather than solving the economic slack, fiscal consolidation seems to have deepened it.

In a recent paper, [Blanchard and Leigh \(2013\)](#) find that the effect of planned fiscal cuts had been underestimated, such that for example a fiscal expenditure reduction of 1% of GDP generally led the International Monetary Fund (IMF) to overestimate a country's subsequent growth by about a percentage point. According to their estimates, fiscal multipliers since the recession seem to have been between 0.9 and 1.7, rather than the 0.5 figure used in initial forecasts.¹ Moreover, short-term austerity in the aftermath of a severe crisis may prove more painful than thought. For instance, [Auerbach and Gordanichenko \(2012\)](#) argue that the fiscal multiplier may be negative during booms, meaning that spending cuts actually raise growth while in recessions, by contrast, it could be as high as 2.5. These studies, among others, lend credence to the concern

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¹ For many years, the ample consensus was that multipliers were typically around 1, or perhaps a bit below. Moreover, others, like [Alesina and Ardagna \(2010\)](#), argue that fiscal consolidation may actually raise growth, even in the short run.

about the negative impact of austerity that now looms large in important segments of the economists' community and the society in general.

One could infer from the majority of works undertaken that the fiscal multiplier is likely to depend on a number of factors that vary both across countries and time. In particular, the literature proposes that the size of the multipliers is larger if: (a) "leakages" are minimized (i.e., only a small part of the stimulus is saved or spent on imports), (b) the country's fiscal position after the stimulus is sustainable and (c) the monetary policy stance is accommodative (i.e., the economic authorities do not raise the interest rate when fiscal expansion is carried out).²

The aim of this paper is to contribute to this ongoing debate by focusing on monetary conditions and fiscal spending. To this end, we study how the monetary authorities, through Taylor-type interest rate rules, have reacted in episodes of economic slack and expansions in the United States over the 1970q1–2012q3 period. Our proposed econometric models capture two types of asymmetric Taylor rules: asymmetric reaction, and nonlinear regime-switching process; the link between inflation, economic activity and interest rate depending on the economic cycle and the unemployment rate in the second case.

Indeed, if the central bank pursues a standard Taylor Rule, then monetary policy should function as an automatic stabilizer that works as a counterpart for fiscal policy. In conformity to this rule, spending cuts that menace to draw growth below a desired level should bring about monetary easing, which would appear to limit the size of the multiplier. Equally, the central bank has to offset, at least partially, any increase in real GDP, even if the economy is weak. Thus, the value of the fiscal-policy multiplier depends on the strength of the central bank's offsetting reaction: if the Taylor rule is operative, the nominal interest rate rises in response to an expansionary fiscal policy shock that puts upward pressure on output and inflation. In this case, the government-spending multiplier is quite modest. On the contrary, the multiplier can be much larger when monetary authorities do not increase interest rates when a fiscal expansion is accomplished.³

In this context, Hall (2012) advances two possible explanations, related to nonlinear features of the Taylor rule, for the Auerbach and Gorodnichenko's (2012) findings related to the multiplier. He proposes that, if the multiplier is larger in economic recessions than in expansions, it is possible that: (i) The response of the interest rate to the output gap is smaller during recessions or when unemployment is high and (ii) the coefficient telling how much to raise the interest rate when inflation rises is smaller in recessions. These two statements imply that the Taylor rule is not effective in recessions but becomes highly important during overheating periods. They also imply that the link between the interest rate and government purchases – which in turn affects inflation and output – is stronger in booms than in busts.

The first case can arise if the central bank is highly attentive to an overheated economy and raises the interest rate aggressively in that case, but is reluctant to stimulate by cutting the rate when the economy is slack. In fact, some bank presidents (i.e. Kocherlakota, Plosser, etc.) have attributed high unemployment to structural problems, and have therefore doubted the ability of monetary policy to stimulate the economy and reduce unemployment without triggering inflation.⁴ As noticed by Hall (2012), economist rarely suggest that unemployment is low for similar reasons. Contrary to this point of view, it has been argued that during normal times the central bank in the United States is more averse to negative than to positive output gaps in part because correcting a negative output gap is thought to be more difficult than closing a positive gap (the "pushing on a string" argument).⁵

In the second case, Hall (2012) suggests that this nonlinear response might occur if the central bank believes that higher inflation is more likely to be transitory in a slack economy than in a strong one. If this is the case, the Taylor rule is less operative in recessions than in expansions, explaining why the fiscal multiplier is highly important in these episodes. Another possibility is that during periods of inflation stabilization, in which monetary policy-makers are trying to build credibility up, they may be more averse to positive than to negative inflation gaps of equal size (e.g. Cukierman and Muscatelli, 2008).

Regarding the tie between interest rates and government purchases, the mainstream idea is that, in normal circumstances, a government spending expansion stimulates output and, therefore, inflation. The standard mechanism is that monetary authorities increase interest rates which, in turn, reduces current consumption and investment demand, limiting the multiplier. This implies that the higher the link between interest rates and government spending, the lower the multiplier. It follows that if the fiscal multiplier is higher in recessions than expansions, then the interest rate-government purchases tie must be stronger when unemployment is low.

The empirical literature gives some support to a nonlinear feature of the Taylor rule. For instance, Martin and Milas (2004) find that positive inflation gaps attract a more aggressive response than negative gaps in the UK. Also for the UK and allowing the interest rate instrument to experience three regimes depending on whether inflation is above, below, or inside a band around the target level, Taylor and Davradakis (2006) show that the standard Taylor rule becomes active once expected inflation is significantly above its target. Rabanal (2004) provides evidence that the Federal Reserve places much more weight on inflation stabilization in expansions, while it shifts its focus to output stabilization in recessions. Dolado et al. (2005)

² See, for instance, Spilimbergo et al. (2009), Corsetti et al. (2012), etc.

³ In the extreme case, the interest rate does not respond to an increase in government spending when the zero lower bound on the nominal interest rate binds. According to some macroeconomic models, this should have reduced the effectiveness of monetary policy and increased the efficacy of fiscal policy (e.g. Christiano et al., 2011). This is so because in a deep recession, the rule may want the central bank's policy rate to be negative. When that rate has reached its lower bound of zero the Taylor rule is suspended. See Swanson and Williams (2012).

⁴ For instance, Kocherlakota (2010) using a Diamond, Mortensen and Pissarides model of unemployment, attributes unemployment to a skills or geographical "mismatch". This is the same as claiming that unemployment is mostly "structural".

⁵ See Blinder, 1997; Cukierman and Gerlach, 2003; Doyle and Falk, 2010, etc.

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