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Policy risk and the business cycle

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ABSTRACT

The argument that uncertainty about monetary and fiscal policy has been holding back the recovery in the U.S. during the Great Recession has a large popular appeal. This paper uses an estimated New Keynesian model to analyze the role of policy risk in explaining business cycles. We directly measure risk from aggregate data and find a moderate amount of time-varying policy risk. The "pure uncertainty" effect of this policy risk is unlikely to play a major role in business cycle fluctuations. In the estimated model, output effects are relatively small because policy risk shocks are (i) too small and (ii) not sufficiently amplified.

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1. Introduction

The supposedly negative influence of "policy risk", i.e., uncertainty about fiscal and monetary policy, has become a recurring theme in the political discourse. The popular argument espoused in speeches and newspaper articles by politicians and economists alike is that the uncertainty surrounding future policy stuns economic activity by inducing a "wait-and-see" approach. In the following, uncertainty is defined as the dispersion of the economic shock distribution, i.e., a mean-preserving spread. Rational consumers and firms react to the fact that future shocks will be drawn from a wider distribution. This reaction is distinct from the ex-post effect of higher volatility resulting from on average more extreme shock realizations. The goal of the present study is to isolate the first effect and answer the question: are uncertainty shocks to policy variables quantitatively important?

Scientific evidence on the aggregate effects of uncertainty is still inconclusive. Empirical studies using different proxies and identification schemes to uncover the effects of uncertainty have produced a variety of results. One group of studies reports a large impact of uncertainty about productivity on aggregate variables like GDP and employment (Bloom, 2009; Bloom et al., 2012; Alexopoulos and Cohen, 2009). A one-standard deviation shock to uncertainty in these studies typically leads to a 1–2% drop in GDP, followed by a recovery with a considerable overshooting. In contrast, a second group of studies reports little to no impact at all (Bachmann and Bayer, 2013; Bachmann et al., 2013; Chugh, 2011; Bekaert et al., 2013). In the theoretical literature, while most studies have emphasized the contractionary effects of uncertainty on economic activity, it is generally acknowledged that there are different effects working in opposite directions, thereby making the overall effect ambiguous. For example, an increase in uncertainty may depress investment due to the "wait-and-see" approach. But at the same time economic agents may want to self-insure by working more to build up a buffer capital stock, which ceteris paribus leads to an increase in investment.

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This paper answers the question of whether policy risk shocks are quantitatively important in an estimated DSGE-model.[1] The focus is on aggregate uncertainty as it has been shown to have potentially important output effects (Fernández-Villaverde et al., 2011). The previous literature is expanded in the following ways. First, together with the independently conducted contemporaneous work by Fernández-Villaverde et al. (2012), we are the first to study the effect of policy risk on business cycles. Second, aggregate uncertainty is directly measured from the respective time series without the need to resort to proxies. Third, level shocks and uncertainty shocks are considered jointly. Regarding uncertainty shocks, the focus lies on policy risk, i.e., uncertainty about future tax liabilities, government spending, and monetary policy, to test the hypothesis that policy risk may be an important factor in explaining the prolonged Great Recession. Uncertainty with respect to total factor productivity (TFP) and investment-specific technology is also included in order to have a benchmark for comparison with our findings. Fourth, these processes are integrated into a medium-scale New Keynesian DSGE-model of the type typically used for policy analysis (see, e.g., Christiano et al., 2005; Smets and Wouters, 2007) and this model is solved using third-order perturbation methods. The model is then estimated using the Simulated Method of Moments. This approach allows us to control for the effects of level shocks to TFP, investment-specific technology, government spending, monetary policy, and taxes when estimating the importance of policy risk.

Our main finding is that the role of policy risk in explaining business cycles is overstated. Although the output effects of policy risk are seven times larger than the effects of TFP uncertainty, even a two-standard deviation shock to policy risk decreases output by a mere 0.065%. There are two reasons for this: first, uncertainty shocks are relatively small and, second, the propagation is too weak to result in a significant amplification of aggregate uncertainty shocks.

The most important mechanism driving the response to policy risk in our model is the price and wage setting behavior of firms and unions constrained by sticky prices and wages. An increase in uncertainty induces households to work more, which lowers wages and firms' marginal costs. As prices are sticky this translates into higher markups. In an economy that is fundamentally demand-driven in the short run, this increase in markups is contractionary. This economic mechanism has been documented in great detail in Basu and Bundick (2012). At the same time, there is an "inverse Oi–Hartman–Abel effect" because sticky prices make the firms' marginal profit function convex, as firms have to satisfy demand given their preset price. Being stuck with a too low relative price means selling more goods at a lower profit or even a loss, while too high a price reduces the quantity, but at the same time increases per-unit profits. Thus, in response to increased uncertainty firms will raise markups in order to self-insure against being stuck with too low a price, leading to a decrease in output and an increase in inflation.

After the first working paper version of this paper, we have become aware of independently conducted work by Fernández-Villaverde et al. (2012), studying a similar issue in a calibrated model. Due to the common antecedents in our contemporaneous work (Fernández-Villaverde et al., 2011; Leeper et al., 2010; Smets and Wouters, 2007; Christiano et al., 2005), the methodology and many modeling choices are similar. Differences lie in the set of shocks considered and in the details of the model specification and parametrization. In terms of results, the effects of policy uncertainty in their study are qualitatively similar to ours but somewhat larger, stemming mostly from a larger steady state demand elasticity. Also closely related to our work is the paper by Baker et al. (2013), who construct a measure of policy uncertainty from newspaper articles, legislative texts, and surveys. Using a structural VAR identification, they argue that policy uncertainty was a main factor driving the Great Recession, but find it hard to establish causality. Our study can be seen as a quantitative thought experiment that takes all uncertainty observed in the data as a causal driving force and analyzes its implications through the lens of a monetary DSGE model.

The outline of the paper is as follows: Section 2 discusses the theoretical transmission channels of uncertainty. Section 3 explains the model. In Section 4, uncertainty is measured directly from aggregate time series. Section 5 estimates the model and Section 6 studies the effects of policy risk in the estimated model. Section 7 concludes.

2. Uncertainty: potential transmission channels

Three different mechanisms through which aggregate uncertainty may affect economic activity have been identified in the microeconomic literature: Oi–Hartman–Abel effects, real option effects, and precautionary savings. While these categories are helpful in shaping our thinking about the effects of uncertainty, they are partial equilibrium effects. In general equilibrium, each of these effects necessarily induces equilibrating price and quantity changes that may significantly dampen the aggregate effects. In a partial equilibrium model, uncertainty may have ceteris paribus large contractionary effects on investment and output (e.g., Bloom, 2009). However, in general equilibrium wages and interest rates may adjust, thereby significantly reducing the resulting net effect (Bachmann and Bayer, 2013).[2]

The first category are the so-called Oi–Hartman–Abel effects (Oi, 1961; Hartman, 1972; Abel, 1983). Under certain conditions, it follows from the firm's FOC that the expected marginal revenue product of capital is convex in output prices

[1] The online appendix accompanying this paper is available through ScienceDirect.

[2] While the main result of Bachmann and Bayer (2013) is that the overall volatility of uncertainty shocks is too small to matter for unconditional moments, they also report that when shutting off the general equilibrium effects in their model, the importance of uncertainty shocks increases by about 50%.

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