



Optimal monetary policy with durable consumption goods[☆]

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Abstract

We document that the durable goods sector is much more interest-sensitive than the nondurables sector, and then investigate the implications of these sectoral differences for monetary policy. We formulate a two-sector general equilibrium model that is calibrated both to match the sectoral responses to a monetary shock derived from our empirical VAR and to imply an empirically realistic degree of sectoral output volatility and comovement. While the social welfare function involves sector-specific output gaps and inflation rates, the performance of the optimal policy rule can be closely approximated by a simple rule that targets a weighted average of aggregate wage and price inflation. In contrast, a rule that stabilizes a more narrow measure of final goods price inflation performs poorly in terms of social welfare.

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1. Introduction

In past decades, macroeconomists were acutely aware of the extent to which monetary policy can have disparate effects across the various sectors of the economy.¹ Such differences were particularly evident during the U.S. disinflationary episode of 1981–1982, when high real interest rates induced dramatic declines in auto sales and residential construction. Nevertheless, recent empirical research has mainly focused on the aggregate effects of monetary policy shocks, while normative studies of policy rules have typically utilized models consisting of a single productive sector.²

The objective of this paper is to assess the implications of sectoral heterogeneity for the design of welfare-maximizing monetary policy rules. As a prelude to the normative analysis, we document that the durable consumption goods sector is much more interest-sensitive than the rest of the economy. In particular, we perform vector autoregression (VAR) analysis of quarterly U.S. national accounts data, disaggregated into spending and prices for our broad measure of consumer durables (which includes residential investment) and for all other items. Using fairly standard identifying assumptions, we find that a monetary policy innovation has a peak impact on consumer durables spending that is several times larger than the impact on other expenditures.

We proceed to formulate a dynamic general equilibrium model with two sectors that produce durable and nondurable consumption goods, respectively. The model incorporates nominal inertia in the form of fixed-duration staggered wage and price contracts in each sector. The structural parameters are calibrated so that the each sector's output response to a monetary innovation roughly matches the VAR impulse response functions. Using estimated time-series processes for each sector's total factor productivity and for government spending, the model also exhibits an empirically realistic degree of sectoral output volatility and comovement. Following the seminal analysis of Rotemberg and Woodford (1997), we obtain a quadratic approximation to the social welfare function, and show that the deviation of welfare from its Pareto-optimal level depends on the variances of sectoral output gaps and on the cross-sectional dispersion of wages and prices in each sector. Finally, we characterize the properties of the optimal policy under commitment, and compare its performance with simple rules that respond only to aggregate variables.

In this setting, sectoral heterogeneity presents a clear challenge to monetary policy: with only a single instrument, the central bank cannot simultaneously stabilize the output gaps of both sectors. We show that the optimal policy places a disproportionately large weight on the durables sector (that is, relative to its small share in the economy); nevertheless, the cross-sectional dispersion of wages and prices and the volatility of the output gap in the durables sector are several times higher than in the nondurables sector and account for a relatively large fraction of welfare deviations from the Pareto-optimal level.

In evaluating the performance of simple monetary policy rules, we find that strict price inflation targeting induces relatively high volatility in sectoral output gaps—especially in the durables sector—and hence performs very poorly in terms of social welfare. Given that the welfare function involves sector-specific variables, one might expect to obtain relatively

¹Notable examples include Hamburger (1967), Parks (1974), Mishkin (1976), Gali (1993), and Baxter (1996).

²For example, Rotemberg and Woodford (1997) consider an economy with a continuum of producers that manufacture differentiated nondurable goods; see also Goodfriend and King (1997), King and Wolman (1999), Erceg et al. (2000), and Fuhrer (2000).

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