



Optimal monetary policy with imperfect common knowledge[☆]

Klaus Adam^{a,b,*}

^a*European Central Bank, Directorate General Research, Kaiserstr. 29, 60311 Frankfurt, Germany*

^b*Centre for Economic Policy Research, London*

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Abstract

This paper determines optimal nominal demand policy in a flexible price economy in which firms pay limited attention to aggregate variables. Firms' inattentiveness gives rise to idiosyncratic information errors and imperfect common knowledge about the shocks hitting the economy. This is shown to have strong implications for optimal nominal demand policy. In particular, if firms' prices are strategic complements and economic shocks display little persistence, monetary policy has strong real effects, making it optimal to stabilize the output gap. Weak complementarities or sufficient shock persistence, however, cause price level stabilization to become increasingly optimal. With persistent shocks, optimal monetary policy shifts from output gap stabilization in initial periods following the shock to price level stabilization in later periods, potentially rationalizing the medium-term approach to price stability adopted by some central banks.

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*Corresponding author at: European Central Bank, Directorate General Research, Kaiserstr. 29, 60311 Frankfurt, Germany. Tel.: +49 69 1344 6597.

E-mail address: klaus.adam@ecb.int.

1. Introduction

The decentralized nature of economic activity suggests that not all economic decision-makers base their decisions on the same information set. Friedrich A. Hayek referred to information dispersion between decision-makers as the defining feature of economic policy problems:

The peculiar character of the problem of rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. Hayek (1945).

Most economic models, however, derive policy recommendations on the assumption that private agents share a common information set. In the realm of monetary policy, for example, information asymmetries between private agents have not yet received much attention, and the literature has mainly focused on asymmetries between the private sector and the policy-maker.¹

This paper determines optimal monetary policy when there is information dispersion between firms. Analyzing information dispersion between firms seems particularly important when studying monetary policy because the real effects of nominal demand policy ultimately depend on firms' pricing decisions. Moreover, it seems plausible to assume that firms do not pay attention to all aggregate developments, e.g., because of the limited number of managerial staff collecting and processing information and taking the corresponding decisions; see Radner (1992).

Following earlier work by Sims (2003), limited attention is modeled by assuming that firms have limited capacity to process information. Such processing limitations imply that firms cannot pay attention to all aggregate developments and have to *choose* what information to process and what information to neglect. Since each firm processes information in a slightly different way, information processing leads to idiosyncratic processing errors, whose size is inversely related to the firm's processing capacity.

Using a simple model with imperfectly competitive firms, flexible prices, and a policy-maker maximizing the welfare of the representative agent, it is shown that the presence of information processing constraints and differential information has stark consequences for the conduct of optimal nominal demand policy. In particular, if firms' prices are strategic complements and aggregate disturbances display little persistence, it tends to be optimal for monetary policy to stabilize the output gap. In the presence of either weak complementarities or sufficient shock persistence, however, monetary policy should increasingly emphasize price level stabilization.²

Intuitively, private information renders coordination among firms difficult because firms are uncertain about the decisions of other firms that base their price decisions on (slightly) different information sets. Strategic complementarities increase the relevance of other firms' pricing decisions, thereby increasing strategic uncertainty among firms, which causes each firm's price to react only weakly to own information. This amplifies the real effects of

¹See, for example, Svensson and Woodford (2004).

²As shown in the paper, price level variability is a measure of the amount of information-based price dispersion in the economy.

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