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"Talking Down Monetary Policy" - A Note*

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Abstract

There is a recent debate about whether monetary policy is no longer effective in stimulating demand, a concern often voiced in the euro area. As a response, the ECB warns against "talking down monetary policy" (ECB Vice-President Vítor Constâncio, 2016). This note uses a textbook model of optimal monetary policy to study a situation in which the public misperceives the interest rate elasticity of aggregate demand, which reflects policy effectiveness. We show that as a result of underestimating policy effectiveness demand shocks can no longer be stabilized perfectly, thus resulting in inefficient inflation and output dynamics. In the presence of misperceptions, a negative demand shocks leads to a prolonged period of negative inflation rates.

Keywords: Optimal monetary policy, policy effectiveness, shocks, inflation, misperception

JEL classification: E31, E32, E58

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1 Introduction

In the euro area, the ECB fights low inflation using a series of bold unconventional measures such as asset purchases and negative deposit rates. Since there a no signs of a pick-up in inflation even after more than a year of aggressive policy easing, concerns emerged about a general loss of policy effectiveness.

This concern is reflected in media reports. Figure (1) plots the number of English articles in newspapers contained in the *Nexis* database and in the *Financial Times* archive containing the expressions "monetary policy" and "ECB" and "ineffective". Concerns about ineffectiveness as measured by the number of articles increased when the ECB adopted the Asset Purchase Programme (APP) in January 2015 and rose sharply when the APP was extended and the case for negative deposit rates was strengthened in March 2016.

Recently, the ECB Vice-President, Vítor Constâncio (2016), warned against underestimating the effectiveness of monetary policy:

> "not only is it wrong to start talking down monetary policy – it's actually dangerous."

In light of these concerns, this paper models such a situation. We use a standard New-Keynesian model of optimal monetary policy in which only a demand shock hits the economy. The central bank maximizes a quadratic loss function under discretion. It is a common finding that in this case demand shocks can be neutralized completely. If the public misperceives the central bank's ability to affect demand, however, and perceives a reduction in policy effectiveness, this ability to perfectly stabilize shocks breaks down. We find that under an underestimated interest rate elasticity of aggregate demand leads to inefficient fluctuations in inflation and output. For widely accepted parameter values, a negative demand shocks results in negative inflation and output. We also offer an interpretation of misperceptions: if households underestimate the share of households without access to the capital market, this translates into skepticism about policy effectiveness.

Section two introduces the model and derives the main results. In section three we provide a rationale for misperceptions and section four draws some conclusions.

2 The model

The economy is described by a standard New Keynesian model that features nominal rigidities and imperfect competition in the goods market.[1] Here we describe only the

[1] For a textbook treatment see Walsh (2010).

linearized equilibrium conditions of such a textbook model. Due to price stickiness, monetary policy affects output, y_t, through the demand side described by

$$y_t = \mathbb{E}_t y_{t+1} - \eta \left(r_t - \mathbb{E}_t \pi_{t+1} - r^* \right) + u_t, \tag{1}$$

where r_t is the short-term policy rate controlled by the central bank, r^* is the natural real interest rate, π_t is inflation and u_t is a demand shock with persistence $\rho < 1$ and a variance σ_u^2. The expectations of households and firms are denoted by the expectations operator $\mathbb{E}_t$. The parameter η, the slope of this dynamic IS curve determines the strength of the transmission of policy rates to output and is a key parameter for our argument. Below we will introduce a $\hat{\eta}$ perceived by households which can differ from the true η.

We do not distinguish between conventional monetary policy and unconventional policy. Think about r_t as a (shadow) policy rate (Wu and Xia, 2016) which reflects the overall policy stance. Based on this interpretation we can abstract from the zero lower bound if we are willing to accept that (1) applies also at the zero lower bound. Inflation is related to aggregate demand through the New Keynesian Phillips Curve (NKPC)

$$\pi_t = \beta \mathbb{E}_t \pi_{t+1} + \kappa y_t, \tag{2}$$

of which $\kappa > 0$ determines the slope. This parameter is pinned down by the degree of price stickiness assumed to prevail in this economy. Without loss of generality, we have set π^*, the inflation target of the central bank, to zero. Finally, households discount the future by $\beta < 1$.

Monetary policy is assumed to operate under discretion, i.e. the public's expectations are taken as given. Monetary policy will set its instrument as a linear function of the demand shock and the natural rate, that is,

$$r_t = r^* + \gamma u_t. \tag{3}$$

The parameter γ, the strength by which the central banks responds to a demand shock, is chosen optimally to minimize the following loss function

$$L = \pi_t^2 + \lambda y_t^2, \tag{4}$$

where λ is the relative weight of output stabilization in the central bank's loss function.

2.1 Optimal monetary policy

It is well known that in the absence of a supply shock, the central bank can perfectly stabilize demand shocks. In this case the demand equation would not be a binding constraint of the central bank's policy problem. To see that, notice that by choosing

$$\gamma = \frac{1}{\eta} \tag{5}$$

for given expectations perfectly neutralizes the demand shock in (1) such that output and, as a consequence, inflation, remain unchanged. We state this results for future reference, because a misapprehended η on the part of the public leads to a breakdown of perfect stabilization of demand shocks.

2.2 Output and inflation if the public misperceives η

Now assume that "talking down monetary policy", the theme of this paper, results in a misperception of the effectiveness of monetary policy. In particular, the public perceives the economy to be driven by this demand schedule

$$y_t = \mathbb{E}_t y_{t+1} - \hat{\eta}\left(r_t - \mathbb{E}_t \pi_{t+1} - r^*\right) + u_t, \tag{6}$$

whose only difference with respect to (1) is that the slope of the curve is now $\hat{\eta} \neq \eta$.[2] We assume

$$\hat{\eta} < \eta,$$

that is, the public beliefs a reduction of r_t is less expansionary than it actually is based on the true model of the economy.

Since the central bank by construction designs policy based on the true model of the economy, it still sets $\gamma = \eta^{-1}$. To obtain the resulting output and inflation dynamics, we put optimal monetary policy into the misperceived model and use the method of undetermined coefficients to find solutions.

Assume that eventually output and inflation are determined as linear functions of the demand shock, that is, $y_t = b_y u_t$ and $\pi_t = b_\pi u_t$, respectively, where b_y and b_π are coefficients to be determined. The expectations of both variables are then given by

$$\begin{aligned} \mathbb{E}_t \pi_{t+1} &= \rho b_\pi u_t \\ \mathbb{E}_t y_{t+1} &= \rho b_y u_t. \end{aligned}$$

[2] Note that this paper focuses on misperceptions on part of households. Romer and Romer (2013) study the ineffectiveness of policy as perceived by policymakers themselves.

Putting these hypothesized solutions as well as optimal monetary policy in the misperceived model results in two equations in the two unknown solution coefficients. Solving for both coefficients gives the solution for output and inflation as

$$\begin{aligned} b_y &= \left(1-\frac{\hat{\eta}}{\eta}\right)\frac{1-\beta\rho}{(1-\rho)(1-\beta\rho)-\hat{\eta}\rho\kappa} \\ b_\pi &= \left(1-\frac{\hat{\eta}}{\eta}\right)\frac{\kappa}{(1-\rho)(1-\beta\rho)-\hat{\eta}\rho\kappa}. \end{aligned} \tag{7}$$

There are several interesting implications of this solution:
First, if $\hat{\eta}=\eta$, both solution coefficients collapse to zero. This is again the benchmark result in the absence of misperceptions, in which demand shocks can be fully stabilized.[3] As a result, inflation is at the target rate and the output gap is closed. Hence, any deviation of $\hat{\eta}$ from η must result in inefficient fluctuations of output and inflation.
Second, to the extent that the denominators of (7) are positive, a lower $\hat{\eta}$ relative to η leads to positive responses of inflation and output to a demand shock. Thus, a negative demand shock, such as the one arguably hitting several advanced economies at the time of writing, translates into negative inflation and output dynamics.
To study the sign of the responses, Table (1) reports a fairly general calibration of the model. The parameter values for κ and β are in line with a large literature. Moreover, the choice of η reflects a standard parameterization, which is consistent with log-utility. In the following, we let $\hat{\eta}$ and ρ vary to derive the values of b_π and b_y.

Table 1: Parameter values

model			misperception	shock process
β	κ	η	$\hat{\eta}$	ρ
0.99	0.05	1.00	0.50 - 1.00	0.10 - 0.80

The results are shown in Figures (2) and (3). It can be seen that both inflation and output volatility increases if $\hat{\eta}$ falls and ρ increases. Only for $\hat{\eta}=1$, the shock persistence has no influence and both variables are zero. "Talking down" monetary policy as reflected by $\hat{\eta}<1$ results in negative inflation and output as a results of a negative demand shock.
Of course these results would also be consistent with a second interpretation: if the public is perfectly informed about the true η and the central bank overestimates η,

[3] This solution is independent of λ. This reflects the "divine coincidence" that is characterizing the dynamics resulting from a demand shock.

the resulting dynamics of inflation and output would be observationally equivalent. In this case the central bank would not be active enough to stabilize the economy. Hence, this note is about diverging views of policy effectiveness, whereby one party has perfect information about η and the other has not.

3 A potential mechanism

The model equations presented before are log-linearized equilibrium conditions of a micro-founded model. Hence, the coefficients have a structural interpretation. It is not straightforward to justify a misperception of a deep, structural parameter.
In this section we offer a mechanism which does not rest on misperceiving a structural elasticity. This interpretation draws on the concept of Limited Asset Market Participation (LAMP) formalized by Bilbiie (2008, 2016). Assume there are two types of households: A share of households θ has no access to the capital market. As a consequence, these households consume their current income. Their behavior is not described by an Euler equation since there is no substitution effect of interest rates on these households' behavior. In contrast, the share $1-\theta$ has perfect access to the capital market and trades in a full set of state-contingent assets, including shares of the monopolistically competitive firm. Both types work and take an optimal labor supply decision. Bilbiie (2016) shows that in this case the interest rate elasticity of demand is

$$\eta = \frac{\sigma}{1 - \frac{\theta}{1-\theta}\varphi}, \tag{8}$$

where φ is the elasticity of marginal utility of leisure and σ is the aggregate elasticity of intertemporal substitution. We assume $\theta < (1+\varphi)^{-1}$ such that the IS curve has a negative slope. Importantly, $\partial\eta/\partial\theta > 0$. A larger fraction of LAMP-households makes policy more attractive.
Let us assume that the central bank has perfect knowledge of θ. However, each household knows its own status, but cannot observe the aggregate θ. This gives the central bank an informational advantage. Because the central bank is perfectly informed, it designs policy based on the true equation (8). Households, however, might underestimate the share of unobservable LAMP-households. As a result, the perceived η is

$$\hat{\eta} < \eta.$$

Moreover, households with full access to the capital market are more likely to "talk down" monetary policy, since their income is indeed less affected by policy compared to LAMP-households.

4 Conclusions

This note shows that "talking down" monetary policy, if interpreted as a misperceived effectiveness of the central bank's ability to use the interest rate to affect demand, leads to welfare-inefficient fluctuations in inflation and output. Hence, this note supports the ECB's rejection of any claim of policy ineffectiveness.
A final note of caution is warranted: this note presents a highly stylized model only. In particular, the misperception is static and does not respond endogenously to the past ability of the central bank to stabilize inflation. Endogenizing a "talking down" behavior is an interesting topic for future research.

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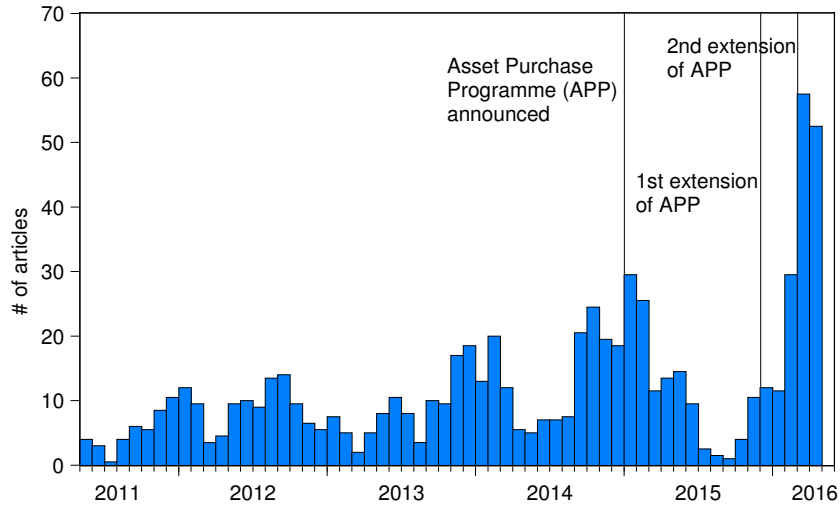
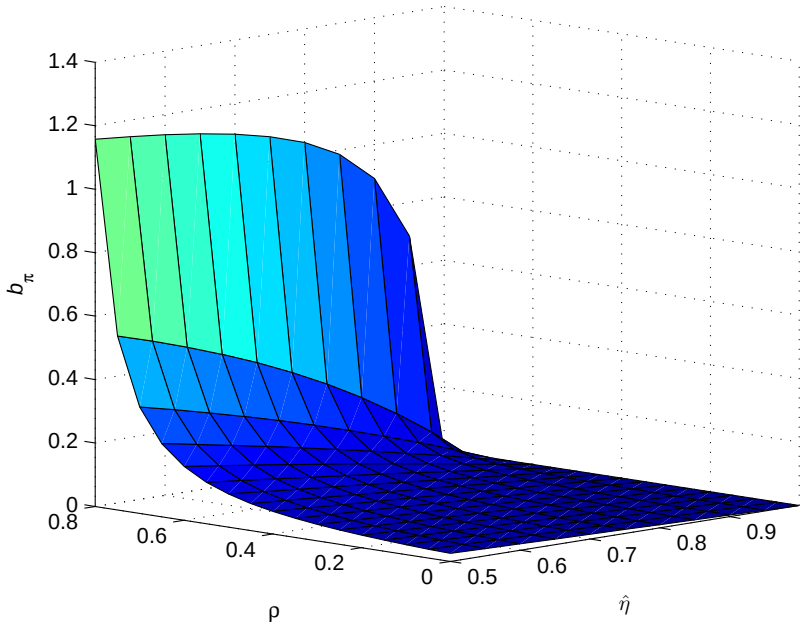
Figure 1: Newspaper articles on policy ineffectiveness



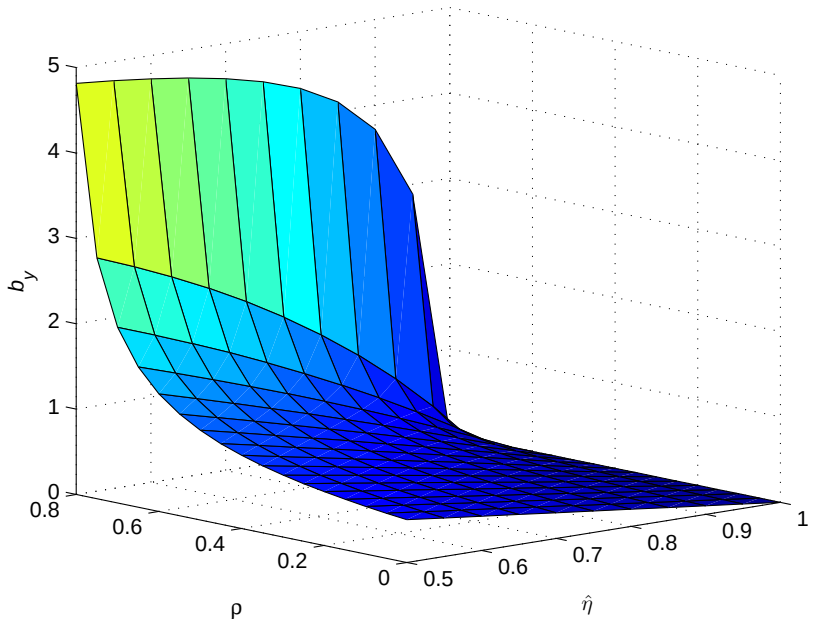
Notes: The graph shows the number of articles on the *Nexis* database and the *Financial Times* archive in which the phrases "monetary policy", "ECB" and "ineffective" occurred jointly.

Figure 2: Inflation response to demand shock



Notes: The vertical axis reports the inflation response to a demand shock as a function of $\hat{\eta}$ and ρ.

Figure 3: Output response to demand shock



Notes: The vertical axis reports the output response to a demand shock as a function of $\hat{\eta}$ and ρ.