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Introduction

There are many ways – ranging from monetary policy minutes to announcements made by monetary policy committee members, from the disclosure of economic outlook forecasts to statements made by its chairmen – in which Central Banks communicate with the general public. This paper considers the role played by communication as a *policy* instrument by the Central Bank.

Over the past few years, there has been an increasing trend toward more communication by the Central Banks' part. As an example, starting in 1994, the Federal Reserve Board (FED) began disclosing changes in its operating stances. In 1999, they began to announce a “bias” for future policy actions, and in 2000 they started to publish a minute of the Federal Open Market Committee meetings.¹

The amount of communication between the Central Bank and the public we now observe has not always prevailed. In fact, as put by the current FED's chairman, Ben Bernanke:

“Central bankers long believed that a certain “mystique” attached to their activities; that making monetary policy was an arcane and esoteric art that should be left solely to the initiates; and that letting the public into the discussion would only usurp the prerogatives of insiders and degrade the effectiveness of policy.²”

There are at least two reasons why a Central Bank should communicate. First, due to its independence, it is important to make the Central Bank accountable for its actions: the requirement of some information disclosure is one of the ways in which this can be done. Second, communication can

¹See (6) for further details on the evolution and scope of Central Bank's communication.

²“*Fed speak*”, *FBR Speech*, January 3, 2004.

influence agents' expectations about important aspects of monetary policy.

This paper addresses explicitly the policy motive for communication in a simple model in which a Central Banker, who is better informed than the price setters about the state of the Economy, can, through communication, condition their behavior. The assumption that the Central Banker is better informed than price setters is founded on both anecdotal and formal empirical evidence (see (18)). The information asymmetry is key in our model, as it is the reason why a Central Banker may want to communicate. In the model, the Central Banker is concerned with the Economy's average price level, and with the overall price dispersion/variability. The source of misalignment of incentives between the Central Banker and the price setters is a bias toward (average) prices that are lower than a state that the Central Banker has.

Communication takes the form of cheap talk, in the sense that communication is direct and it is costless for the Central Banker (see (11)). In fact, our approach follows closely the partisan advice model in (5). There are two substantial differences. The first one is that there are many "receivers" (the price setters), who, after observing the message sent by the "sender" (the Central Banker), decide independently on prices. They care both about the overall state of the Economy and *relative* prices, which leads to a coordination motive among the price-setters. Individual prices are aggregated into an average price level which is, along with the price dispersion, the relevant variable for the Central Banker. Second, and most important, the price setters receive private signals regarding the state of the Economy. This is meant to capture the dispersion and heterogeneity of information across the firms in the Economy. Also, it allows us to analyze how the Central Bank's communication policy is affected by the information the *agents* in the economy have.

The main results we obtain are as follows. First, in general, communication between the Central Bank and firms involves noise: given the misalignment of incentives, the Central Bank cannot reveal all the information he possesses. The second main result is that the more the Central Bank cares about price dispersion, the more information he can convey to firms. In the limit case in which he just cares about price dispersion, full revelation of the state can be approximated. Third, if the Central Bank does not care about price dispersion, and the precision of the price setters' is sufficiently high, no meaningful communication can prevail between them: in any equilibrium, irrespective of the economy's state, the Central Bank will always make the

same statement; so no information can be learned by the price setters. Finally, if the price setters' decision depends more on relative prices than on the overall economy's state, then the Central Bank can always transmit some information.

In addition to those general results, upon imposing some additional restrictions on the model's informational structure, we are able to fully characterize the set of all possible communication equilibria of the game between the Central Banker and the price setters. For such case, a single parameter, which we interpret as being that *de facto* bias degree of misalignment of incentives between the Central Bank and the price setters, completely pins down the Central Bank's communication possibilities. Such parameter depends on the degree of complementarity in the price setters' decisions (as measured by the weight the relative prices have in their optimal price), the precision of their signals, the Central Bank's bias, and the parameter that measures its with price dispersion. Hence, by analyzing the behavior of the *de facto* bias, we are able to perform many exercises relating the maximum amount of information conveyed by the Central Bank to changes in fundamentals, as captured by preferences and technology parameters.

There are other theoretical papers that study communication by Central Banks. In a model in which the Central Bank cares about both interest rates and the real exchange rate, (19) shows that, if the public does not know what goal the Central Bank is pursuing, an inflationary bias would emerge. To mitigate this problem, the Central Banker can use "cheap-talk" messages to influence the pricing decisions. In contrast to his work, we take the inflationary bias as given, and show how communication policy changes as the fundamentals of the economy change.

Our approach to model the price setters' interaction is similar to the one used in the "Global Games" literature (see, for example, (14), and (16)). The imperfect common knowledge implicit in those models allows us to study, in a tractable way, how information affects decisions and coordination in a imperfect information environment. It also allows us to analyze how a greater transparency from the Central Bank's part might influence pricing decisions, output and welfare.

(15), (21), (1), (2), (9) and (13) have used Global Games to study how Central Bank's transparency affect welfare. With the exception of the first, all of these articles show that social welfare increases with Central Bank's transparency.

As (20) argues, the cases in which more information can be detrimental to welfare in (15) can be seen as special cases.

In those papers, greater transparency is viewed as an exogenous increase in the precision of the public information. That is, a more transparent Central Bank is translated into a more precise information that is common to all price-setters. This paper, in contrast, takes a step back and treats transparency as a strategic *choice* by the Central Banker. Indeed, the Central Bank's communication policy (and, therefore, its transparency) is derived endogenously in our model.

This paper is organized as follows. In section 2 we describe the model. In section 3 we characterize the equilibrium set and some properties of the equilibria, in section 4 we further restrict the model to be able to have stronger properties of the equilibrium set. In section 5 we briefly discuss the possibility of costly communication instruments and finally present our conclusions in section 6