The Media: a missing link in the monetary transmission chain *

Ana Cristina P. Neves

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Abstract

Monetary policy's impacts on the economy are indirect, depending on the strength of the different transmission channels. The central bank's ability to influence private expectations and behavior may therefore vary with several factors that are beyond the bank's control. One of them is how the monetary authority's announcements and decisions are interpreted by the different agents. Modern central banks understand the importance of good communication strategies and many have been devoting increasing efforts to become more open and transparent. However, communication is not only about the sender but also involves how the intended audience receives and understands the relevant information. In this process of dissemination of central bank's announcements, an agent that plays a crucial role has often been neglected: the media. Because most agents only receive information on the monetary authority's actions through the news, the media is an important link in the monetary transmission chain. This results not only from their role as a conduit for information, but also from the fact that their actions go beyond the mere transmission of data: they collect, select and interpret information. Thus, when any news reaches the general public, it is subject to several shortcomings (biases, errors, misinterpretations), which implies that media coverage may impact the efficacy of monetary policy. This paper explores this issue, highlighting the importance of the media as a beliefs-shaping agent and offering a theoretical illustration of how they may affect monetary policymaking.

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1 Introduction

Expectations play a prominent role in economic theory, as they are widely recognized to influence all types of agents decisions: pricing, consumption, borrowing, investing. As a consequence, they have significant impacts on the results of economic policies in general and monetary policy in particular, whose efficacy depends, to a great degree, on effectively managing expectations.[1] Until recently, these considerations were mainly academic, but over the last twenty years the framework for monetary policymaking has changed, with openness and transparency becoming a hallmark of best practice. Many central banks' communication strategies are now designed with the aim of influencing private agents' beliefs and, through them, economic outcomes. This represented a remarkable change, given that, until as recently as the early 1990s, secrecy was the norm (Blinder *et al.*, 2008).

The change in central banking practices was in line with academic developments, which emphasized the importance of expectations as a link between short term rates and long rates. Instead of trying to surprise the markets, monetary authorities invested in becoming more predictable, which should in turn also make agents' actions more predictable, contributing to policy effectiveness. The main tools for achieving this goal are transparency and carefully managing communication. Notice that it is not just a case of releasing the bank's private information but also of *how* to do so: being clear is paramount, as a flood of difficult to interpret information may do more harm than good. That is why a carefully crafted communication strategy is essential, as is monitoring how agents react to the bank's actions and announcements and evaluating if the strategy is actually moving markets in the desired direction.

It is therefore not surprising that academic research has been very keen on studying the relationship between monetary authority's announcements and the behaviour of the financial sector. If the central bank can influence markets' expectations, monetary policy can have impacts on relevant economic variables, such as long term interest rates and the financial account of the balance of payments. Nevertheless, financial market participants are only part of the private sector agents. In fact, the efficacy of monetary policy depends to a large degree on the actions of the general public: the households and firms making their everyday consumption, pricing and borrowing decisions. Unlike more sophisticated market participants, the general public depends on media coverage to have access to central bank's announcements. As a result, the public's interpretation and understanding of the bank's decisions are heavily influenced by the media. Surprisingly, however, most of the

[1] In their book, Beaud & Dostaler (1995) present a detailed account of the evolution of economic thought since Keynes, emphasizing, among other themes, the importance of *expectations* in economic theory. They play a crucial role in virtually all major theoretical frameworks of the last eighty years, even if the way they are incorporated vary considerably. In their comprehensive work, Beaud & Dostaler remind us that Myrdal, in 1927, pointed out the role of expectations in price formation, that in the 1930s Keynes emphasized their importance for investment decisions (the motor of the economy) in an inherently uncertain environment, that the monetarists used an "expectations-augmented" Phillips Curve as part of their attack on Keynesianism, and that new classical economists embraced the concept of rational expectations as the pilar of their theory. Different treatments of money, uncertainty, probabilistic risk and information processing gave rise to distinct treatments of expectations, but no major theory ignores the relevance of agents' beliefs about the future as a determinant of their present behavior.

literature focuses solely on the effects of central bank communication on the financial sector's expectations and behaviour, usually either assuming the (rational) general public will act on a similar way or altogether ignoring the existence of "less sophisticated" agents.

In recent years, some academic economists started to look into this question, studying how central bank's announcements and policy decisions are reported by the media in a few countries. Their findings suggest that the media play an important role in the transmission mechanism of monetary policy. However, the study of the topic is at its very early days and much more research is necessary. Apart from a few empirical studies, the role of the media has so far been overlooked by the economics literature. The present paper intends to be a contribution towards feeling this gap.

The paper is structured as follows. After this introduction, we briefly review the monetary transmission mechanism, emphasizing that monetary policy's effects on economic variables are indirect, depending on the beliefs and actions of private agents and on how they react to policy decisions. Then, in section three, the main mass communication theories are presented, followed by an examination of research on media coverage of central bank communication and how their influence must be taken into account when studying the possible impacts of the bank's decisions and the effectiveness of monetary policy. The section finishes with a brief discussion of the Brazilian case and some remarks on media reporting in our country. In section four we present an illustration where the media act as an intermediary between the central bank and the public. We discuss two situations: in the first one, the media report on the central bank's interest rate decision and the bank does not share its private knowledge with the public; in the second, the media make a judgement about the bank's forecast for some relevant variable. In both, the reporting influences public's perceptions, altering economic outcomes. The main insights from the discussion are summarized in section five and section six concludes the paper.

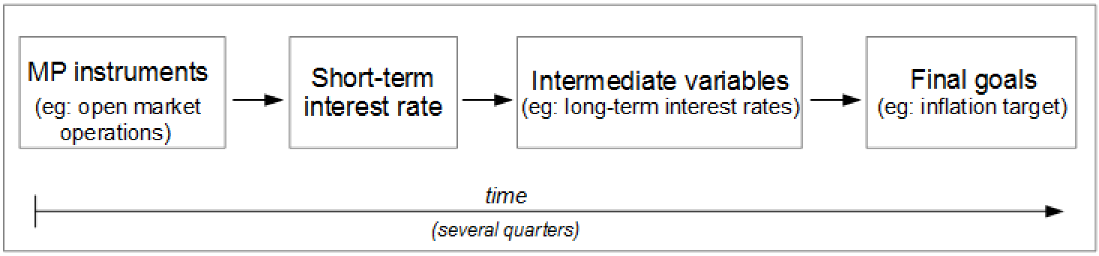
2 Monetary Transmission Mechanism

Unlike fiscal policy, monetary policy's effects on the economy are indirect: they depend on the strength of the monetary transmission mechanism, which describes how changes in the central bank's short-term nominal interest rate translate into changes in variables such as output and prices. These impacts will be stronger or weaker according to the strength and depth of the different transmission channels working in the economy, which are also essential to determine how long it will take for the bank's actions to affect the relevant variables (typically, this will take several quarters).

More concretely, monetary policy can be described as in figure 1: given its ultimate goals, the central bank sets a target for the short-term nominal interest rate, i_t, uses its instruments to achieve such a target and monitors intermediate variables (used as indicators of policy effectiveness), given that the policy's effects unfold only gradually over time.

When the monetary authority sets i_t, what it does is to decide on the price reserves will be made available to commercial banks. The central bank's open market operators will buy and sell reserves aiming at keeping i_t at the target level. This level sets a floor for commercial banks operations and also works as a signal of the monetary policy stance: a high value means the bank sees the need for the economy to cool down. Notice, however, that the central bank does not control the ultimate goals, whose level will depend on the bank's ability to influence the behavior and decisions of the private agents. That is: the efficacy of monetary policy depends on how the central bank's decision impacts the last links in the monetary chain.

Figure 1: Monetary policymaking



One way this happens is via the *interest rate channel*: an increase in the price of reserves in open market operations translates into a rise in the interest rates at which banks are willing to lend, reducing the demand for credit by both firms and households, with a negative impact on the levels of consumption, investment and income. From the commercial banks' point of view as lenders, a restrictive monetary policy means a reduction in reserves availability, affecting banks' supply of credit and, as a result, depressing aggregate demand - this is the *bank lending channel*. These channels will be particularly important in economies where credit operations have a strong impact on aggregate demand.

Another channel through which monetary policy may operate is via *asset prices*. A reduction in i_t induces an increase in bond prices leading to: (i) a rise in the demand for stocks, raising investment and, thus, the level of income (Tobin q-model); (ii) a rise in stock prices, increasing firms' net-worth, facilitating their access to credit and reducing the cost of funding via the issuing of new stocks, which in turn promotes higher investment and output (firms balance-sheet effects); (iii) higher stock prices raise households' financial wealth, reducing the likelihood of financial distress and making them more willing to consume (especially goods of higher value, such as consumer durables), stimulating production (household wealth effects) (Mishkin, 2001). The strength of the asset prices channel will depend on the level of financial development of the economy; in particular, it relies on the existence of a well-functioning market for bonds and stocks, which must be an important part of agents' wealth and a source of funding for firms.

Finally, there is the *exchange rate channel*: because changes in the central bank's discount rate induce changes in the other interest rates in the economy, they alter the attractiveness of bonds and equities issued in the country. In open economies, this leads to an international movement of capitals and an exchange rate adjustment. The result is a change in the relative price of domestic and imported goods, affecting the demand for each type of good and, as a consequence, prices and output.[2]

[2]For a detailed presentation and critical assessment of the different channels, see Arestis & Sawyer (2002).

It is important to highlight that none of these channels is guaranteed to operate. Besides the conditions mentioned above (importance of bank lending, well-developed financial markets and economic openness), it is essential to remember that all the effects depend on people's preferences, behavior and expectations. When the central bank makes reserves more easily available to banks, its aim may be to stimulate lending; but, ultimately, an increase in credit operations will depend on the banks willingness to lend and on firms and consumers wish to borrow. For instance, in a situation where banks are pessimistic about the future, their liquidity preference increases, causing their willingness to lend to fall. Thus, if expectations are negative, cheaper money may not be translated into an actual increase in the stock of credit, making monetary policy less effective as a tool to stimulate demand (Arestis & Sawyer, 2006).

Therefore, the working of the monetary transmission mechanism cannot be fully understood without incorporating the importance of expectations into the analysis. When doing so, we notice that the effects of monetary policy are quite uncertain, as they are mediated by agents' actions and beliefs, which in turn are influenced by the central bank's decisions but also by many other factors. One of them, often ignored in the economics literature, is the media. As shown in the next section, the media exert an important influence on people's views of a myriad of issues, including the future perspectives for the economy in general and the adequacy of monetary policy in particular. Thus, a given policy action may not have the desired effect if it is unfavorably portrayed in the news. For instance, an action whose objective is to foster optimism, may have the oppositive effect if the media characterize it as irresponsible or too bold. Understanding the nature and the extension of media's influence on beliefs may help central banks' fine-tune their communication strategies, contributing to the effectiveness of monetary policy.

3 The Influence of the Media

The media have a significant influence in shaping public views on a variety of subjects, especially in the medium and long terms. By focusing on some topics and not on others, they shape perceptions of what issues matter the most, as the public tends to talk about what is featured on the news and to pay less attention to what is not. By choosing the tone of the coverage of particular topics, they influence the audience's feelings, leading to positive or negative views of the matter in question.

Social scientists and communication scholars have studied the relationship between the media and politics for many decades. Although today the simplest notions of the media as an all-powerful force have lost strength, the media are still widely recognized to play an important role in society's functioning and in the political debate. More specifically, the mass media influence public perceptions of government actions in general and of economic decisions in particular.

Initially, the impact of media coverage on the audience's view of economic issues did not received as much attention from academic researchers as other topics (like politics and crime), but in the 1980s some authors started to explore the theme more carefully. More recently, new research has presented evidence that the media affect public opinion on the general direction of economic policy and on specific policy moves too, although some authors are careful enough to observe that news coverage is only one factor affecting people's perceptions about the economy - and not necessarily the most important one (Wu *et al.*, 2002). A person's view over a certain issue results from direct experiences, group experiences, observation of a reference group, interpersonal communication and information conveyed by the media. The less direct experience a person has, the stronger will be the influence of the media (Lischka, 2014).

To make the discussion of these matters clear and succinct, this section of the paper is divided in three parts: firstly, the main mass communication theories are discussed and we argue that they are consistent with the informational economics view of the media as an important beliefs-shaping agent; then we present the recent work on how the media act as an intermediary that transmits central bank's communication to the general public; finally, we briefly discuss the Brazilian case, showing how the national media played a crucial role to foster neoliberal economic ideas in the 1990s, giving support to the new direction of the economic policy.

3.1 Media Effects Theories

The influence of the media on public's perceptions has been studied for decades, and several theories on media effects have been developed. Arguably, the most influential ones are: the agenda-setting theory, the cultivation theory and the uses and gratification theory.

The *Agenda-Setting Theory* states that, through selection, filtering and reshaping of events and via concentration on a few issues, mainstream media are decisive for the determination of which topics will be considered important by the general public. Seminal work by McCombs & Shaw in the late 1960s and 1970s suggested a close association between media coverage and the themes voters considered the most important during presidential elections in the United States. Although the authors acknowledged that some people actively seek information, they argued most seem to be rather passive, just taking in whatever comes in, without much effort (McCombs & Shaw, 1972). Modern studies on agenda-setting have focused not only on *which* topics are covered by the media but also on *how* they are covered, investigating the so-called second-level effects: the media's influence on what the public thinks about an issue. In general, the empirical research on agenda-setting effects of economic news coverage supports the idea that the news influences people's perception, although this varies with several factors, including the phase of the economic cycle. A finding that seems quite robust, nonetheless, is that people pay more attention to economic news during economic slowdowns and that the media's influence is greater during recessions; one of the possible reasons for this result is the high coverage of economic issues during and immediately after recessions.[3]

The *Cultivation Theory* focuses on exposure to television content and concludes there are small but measurable long-term effects on the audience's behavior and perception of the world, which

[3]See Su (2008) for a review of the relevant literature.

tend to become rather standardized. Living in the cultural environment created by the media, people cannot avoid its “cultivating influence” (Bryant & Miron, 2004). The theory has been applied to several topics (violence, drug use, gender roles, political orientation, etc.) and, despite an initial flood of criticism, its main idea is subject to much less dispute nowadays. Even with new technologies, research suggests that television is still the main source of information, at least in the US (Morgan & Shanahan, 2010). Similarly to the agenda-setting paradigm, cultivation theory also incorporates the possibility of second-level effects, which nonetheless refer not to *how* people think about an issue but to their *feelings* and *expectations*, including economic expectations. Lischka (2014) presents a good survey on the work on how the news coverage shapes beliefs of consumers and entrepreneurs and how this can be used to explain why cultivation evolves.

Another important theory on mass communication is the *Uses and Gratification Theory*, according to which the media are one among many sources of influences on public perceptions. The audience does not passively consume information and, as a consequence, media effects are mediated by individual background characteristics, motivation and choices (Rubin, 2009). Interestingly, one of the *uses* identified - ritualistic media consumption - reinforces the notion of a passive audience, precisely the idea the theory was created to counter. Some research has applied the idea of *uses and gratification* to contemporary media issues and, starting at the public’s motivations to use a certain medium, studied the reasons for its appeal and possible roles in society. For instance, social network sites may have different uses to different people, which reflects distinct patterns of gratification. Many types of gratifications have been identified and among the most prominent ones are surveillance (acquiring knowledge of what is happening) and guidance (getting help with problem-solving and decision-making). Studying news coverage of the economy, Stevenson *et al.* (1994) present results that support the notion that the media-public relationship is a two-way street, with the public not playing a merely passive role. They found that public opinion influences economic news coverage and that, subsequently, the media reacts to the public’s concerns and news coverage affects people’s perceptions.

There are several other theories, but these three are the most cited ones in academic research on mass communication published on the field’s most prestigious journals (Bryant & Miron, 2004). They depart from different concepts and assumptions; still, all of them agree with the notion that the media are an important factor shaping people’s perceptions and beliefs, even if its influence is mediated by individual circumstances.

This is consistent with the conclusions of studies on the economics of information. As Stiglitz (2015) reminds us, high quality information is essential for good decision making but, in reality, the market for information is imperfect. Not only information is incomplete, but there are incentives for it to be distorted, altering outcomes even if agents are rational and know that market imperfections exist. Besides, information transmitted is edited by the media, who then emerge as a force that shapes beliefs.

Analyzing the media’s influence on stock market fluctuations, Shiller (2000) remarks that “a careful analysis reveals that the news media do play an important role both in setting the stage for market moves and in instigating the moves themselves" (p. 71), concluding that "the media actively shape public attention and categories of thought, and they create the environment within which the stock market events we see are played out" (p.95).

Given that the media is not a mere conduit for information diffusion, but an active agent of news-creation and beliefs-shaping, it is to be expected that they would play an important role in all matters that involve the dissemination of information to a wide audience. In the following subsection we explore this idea in the realm of central bank communication.

3.2 Central Bank Communication in the Media

Recently, many central banks have changed their communication strategies, realizing that effectively transmitting information is as important as credible policy actions (Woodford, 2001).[4] However, good communication depends on both the sender and the receiver and there may be obstacles or intermediaries between the two. The extensive literature on central bank communication and monetary policy transparency focuses on the bank's side, assessing and designing the best communication practices and formulating policy advice on *which* information should be made public and *how* it ought to be transmitted.[5] In general, the studies deal with the impact of different degrees of transparency and communication strategies on the expectations of financial market participants and, through them, on long term rates and asset prices.[6] For instance, Andersson *et al.* (2006) study the communication practices of the Swedish Central Bank, concluding that various monetary policy signals (inflation reports, speeches, base rate changes) affect the term structure of interest rates and, therefore, that communication is essential for effective policymaking. Similar results are found by Guthrie & Wright (2000) for the Reserve Bank of New Zealand, while Kohn & Sack (2003) study the effects of central bank communication on market interest rates in the United States and Connolly & Kohler (2004) find that communication affects the volatility of market rates in a sample of six central banks.

Based on the experience of the European Central Bank (ECB), Ehrmann & Fratzscher (2009) study how financial markets react to the bank's press conferences (PC). They find that PC convey relevant information, in addition to that contained in the policy decision, moving assets prices and having a lower effect on volatility than the policy decision itself. Also, the questions and answers part of the PC fulfills an important clarification role, particularly at moments of greater macroeconomic uncertainty. Interestingly, despite a preference for directly monitoring the central bank, financial markets also resort to newswire services for information: both this work and Hayo

[4]Discussing the early days of the euro, Bibow (2002) argues that the ECB's communication failures contributed to the currency weakening; the bank was rather opaque about its reaction function and failed to anchor market expectation in accordance with policy goals. Arestis & Sawyer (2003) show that, despite a stated commitment to transparency and clear communication practices, the "ECB's methods of operation and communication have been confusing to the financial markets" (p.9).

[5]See Geraats (2002) for a survey.

[6]Woodford (2001) presents a compelling case for the reduction of central bank's informational advantages over market participants. He also states that transparency increases the bank's ability to stabilize prices and economic activity.

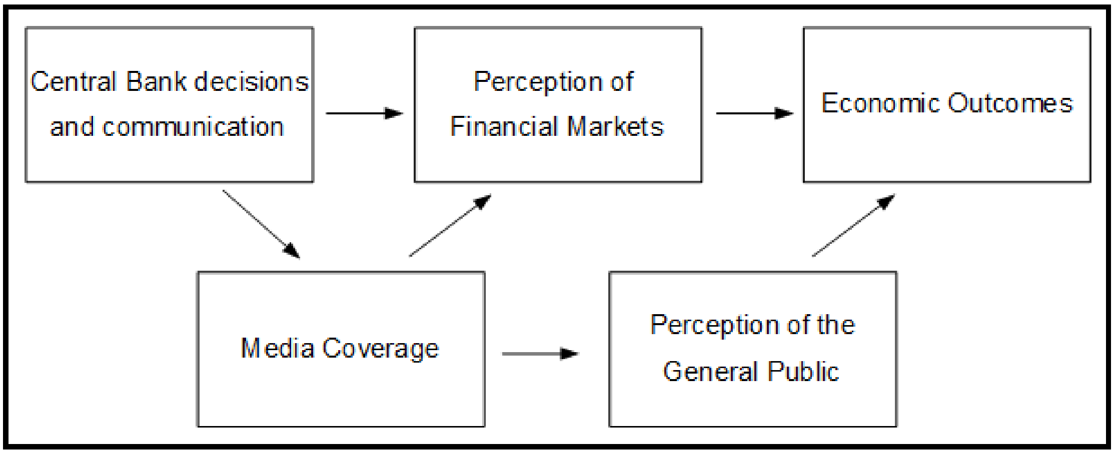
& Neuenkirch's (2015) mention that newswire snaps during the PC exert impacts on financial markets. Although aware of possible biases and misinterpretations on media coverage, pressed for time market participants need to, at least to some extent, get information from agencies like Reuters (Hayo & Neuenkirch, 2015). They combine self-monitoring with media reporting and, despite not being a substitute for self-monitoring, the media are a commonly used complement.

Most agents, however, do not have direct access to the bank's communication, resorting solely to the media for news on monetary policy. Berger *et al.*'s (2011) paper is probably the first to present a careful analysis of how the media cover and interpret monetary policy announcements. The authors study how the ECB's policy decisions are reported by the print media, analyzing both the extent and the favorableness of the coverage. The paper presents evidence that the media play an important role in the transmission mechanism of monetary policy: their coverage is decisive for the bank's information to reach a wider audience. As for the *tone* given to the message, the authors find that the favorableness of the coverage varies with the type of information being conveyed, the content of the announcement and how surprising a policy decision is given previous expectations. Policy surprises tend to receive a less favorable reporting, but clear and detailed central bank's explanations during the press conference lead to a more favorable tone. Also, inter-meetings communication influences the amount and nature of coverage.

Böhm *et al.* (2012) apply Berger *et al.*'s methodology to the Czech National Bank, finding that, unlike in the case of the ECB, policy surprises in the Czech Republic do not receive a more negative coverage by the print media and are covered more extensively. In both cases, however, reporting on policy decisions is more unfavorable under adverse economic circumstances, such as increasing inflation. Interest rate changes (in any direction) are viewed in a positive light and the media seem to have a reasonable general understanding of the bank's actions. Building on the same methodology, Reid & Plessis (2011) study the case of the South African Reserve Bank (SARB). They find that, differently from what happens in Europe, in South Africa the media play much less of a monitoring role and many articles present mistakes in economic reasoning and understanding of the inflation targeting regime. Moreover, there is a bias in media coverage: interest rate falls are seen more favorably than rises, regardless of the economic state of affairs. The authors conclude that there is room for a more effective use of communication by the SARB, including inter-meeting communication, which does not have much impact on media reporting in the country.

These studies are important contributions to the literature on monetary policy, as they are arguably the first to analyze how central bank's announcements are transmitted by the media to the general public. It would be interesting to see the results of applications of the same (or a similar) methodology to other central banks, especially in developing countries. Doing so would help shed light on a poorly explored link of the monetary policy transmission chain. After all, even though much of the literature views monetary policy as a relationship from the central bank, to private agents' actions and, finally, to economic outcomes, a more realistic description would more likely be similar to the one provided in figure 2: that is, it would acknowledge the important role played by the media as a disseminator of information.

Figure 2: Transmission of Central Bank's decisions and communication



Note: Adapted from Hayo & Neuenkirch (2015).

Specifically, figure 2 highlights the fact that most agents (the "general public") only hear about monetary policy decisions from the media, as they have neither the time nor the incentives to monitor the central bank directly. As a result, they only receive policy information after it has been through a process of selection, editing and interpretation, being therefore subject to biases and misunderstandings - although the degree of this probably varies from country to country, as the research surveyed above indicates.

Moreover, the transmission chain proposed here also makes clear an often neglected aspect, brought to light by Hayo & Neuenkirch's research: financial market participants also resort to the media when following the monetary authority's announcements and decisions. This additional layer of media influence is significant as, even if market players are consciously aware of potential shortcomings of news coverage, they are not immune to its subtle impacts on their beliefs (as clearly shown in Shiller's book).

3.3 The case of Brazil

In democratic countries, the media should play the important role of mediating and promoting debate, creating a space for a wide public participation and increasing access to quality information. In Brazil, with the re-democratization process, the mainstream media became more than a mere tool for the reproduction of government discourse. Professionalism and objectivity improved in many ways and the old elites (associated with the military regime) lost space with the emergence of new groups of power. Also, the media acquired a more diversified character, not only promoting the interests of business and government elites but addressing some of the concerns of the ordinary people, fulfilling a watchdog role. However, ownership is still highly concentrated on a few families and different points of view are not equally represented in the main newspapers and television channels. Television is the main source of information and the only medium to which the majority of the population have access; one of the reasons for this scenario is the low readership levels of the population, excluding most people from newspaper's audience (Matos, 2008).

To our knowledge, there is no study focusing specifically on how central bank communication is reported by Brazilian media. Nonetheless, many authors have analyzed the print media coverage of government actions and policies over the years, including economic decisions. Research on media coverage of the economy in the 1990s and early 2000s tends to point to a discernable bias in coverage, with a very unfavorable coverage of policy moves the media outlets disagreed with. In particular, the works that focus on the big newspapers find that clear ideological orientations (even if, in some cases, not explicitly stated) underlined both political and economic reporting.

In an extensive collection of research work, Francisco Fonseca documents how important the print media were for the consolidation of the neoliberal ideology in Brazil in the 1990s.[7] Topics like privatization and primary budget surplus were brought to center stage and fiercely defended by the country's biggest newspapers. A worldwide liberal trajectory was presented as inevitable and desirable, with its benefits being constantly praised (Fonseca, 2005). As a result, they were paramount to shifting public opinion toward the new economic agenda, described as modern and more efficient. As a matter of fact, it would be more precise to say that the *public opinion* became, in fact, the newspapers', as they succeeded in characterizing their private views as public.

The relationship between the media, the government and society in general in the period 1995-2006 is studied by Frizzarini (2007). The author argues that Brazilian media adhered to the view that the globalization process was both inevitable and advantageous to the country, supporting the government's agenda for our international insertion (which privileged economic opening and internationalization as ways to promote modernization and growth). Nunes & Xavier (2014) reach similar conclusions, highlighting the importance of the national mass media to establish the hegemony of neoliberal economic ideas in the last twenty years. Kucinski (1997) is even more emphatic, stating that Brazilian economic journalism became completely homogenous in their defense of the neoliberal agenda.

Focusing on Brazil's most influential news programme (Rede Globo's Jornal Nacional, JN), Moreira (2007) studies how economic issues are presented to the public in the period 2003-2007. His findings are similar to Fonseca's: there is a clear liberal bias on economic reporting and close to no space is given to alternative views.[8] He also finds that the JN dedicates very little time to interest rate decisions and the publication of minutes of monetary committee meetings, and much more time to presenting inflation data. Fighting inflation is presented as a government priority, but the programme does not explore the link between interest rate setting by the central bank and inflation rates.[9]

Undurraga (2016) reviews the debate about press coverage biases in Brazil. He concours that the

[7]See, for example, Fonseca (2004).

[8]In this context, the term *liberal* refers to an economic model that includes fiscal discipline, market-determined exchange rate, trade opening, privatization and less government economic intervention.

[9]Notice that in the period studied the Brazilian Central Bank was following an inflation targeting regime with a considerable degree of operational independence; it is therefore relevant that the JN coverage does not draw a close link between inflation data and central bank's decisions; but, after the publication of minutes, the news programme does briefly inform that increases in inflation might lead to higher interest rates.

empirical evidence gives support to the notion that the media helped to forge a neoliberal consensus in the country and contributed to the expansion of financial capitalism.[10]

Matos (2006) remarks that "in comparison to political reporting, economic news in Brazil has tended to be less critical and contradictory, favouring governmental and big-business sources and endorsing the economic liberal agenda" (p.122). She states that market concerns over the orientation of economic policy acted as a constraint on media coverage of the 1994 and the 2002 elections, with financial journalism apparently subordinated to market views in the period. Additionally, her research highlights the emphasis given by the press to economic issues in 1994, setting the agenda for the political debate: the press contributed to both the public and the candidates to see the economy as the most important topic in the election. Specifically, they favored a platform that included the continuation of the privatization program and the opening of Brazilian economy to foreign capital.

The academic research cited above suggests a clear bias in mainstream media coverage of economic issues in Brazil. Certainly, no one expects a completely neutral press, but such high degree of bias is cause for concern, especially in a country where education levels are still low. Although none of the work focused specifically on central bank communication, it seems logical to infer that similar biases are likely to occur on the reporting of the bank's announcements and decisions. Investigating this issue (for instance, by applying Berger *et al.* methodology to Brazil) would be an interesting and relevant topic of research.

4 An Illustration

In the previous section we presented the theoretical literature on media effects and some empirical work on how the media transmit and (to some degree) distort information. In this part of the paper we present an illustration of how media reporting may affect expectations.

Consider an economic environment marked by uncertainty and asymmetric information. The central bank has privileged knowledge on a couple of relevant variables, which it takes into account when making forecasts and setting the policy rate. Also, because the bank acknowledges the importance of agents expectations for economic outcomes, it collects data on private beliefs - for instance, through surveys that gather information on private inflation expectations, which are also an input for the elaboration of forecasts and for the interest rate decision. The bank may choose to share some (or all) of its privileged information with the public, depending on the degree of monetary policy transparency it deems adequate (and depending on the legal disclosure requirements).

With this set up in mind, we consider two situations: (1) the bank does not share any information before announcing the interest rate decision; (2) the bank shares a forecast for some relevant

[10]However, Undurraga (2016) points out that the reasons for such biases go beyond those identified in the recent literature, which tends to blame the power of *press barons* and the pressure they put on journalists. The author believes journalists' agency is much greater than traditional scholarship acknowledges and presents evidence for the case of Brazil's most important economic newspaper, *Valor Econômico*, in an interesting discussion that goes beyond the scope of the present paper.

economic variable. In both cases we assume agents do not have access to the central bank's decisions and announcements directly, depending on media reporting. Thus, when the information reaches the public it has already been filtered and interpreted by journalists. Not only it may contain imprecisions, gaps and even errors, but it may also not be reported in a neutral way: the media outlet is (deliberately or not) likely to express a favorable or an unfavorable view on the bank's estimations and decisions. All this alters how the information ultimately reaches households and firms, having an impact on their expectations and actions.

4.1 No announcement

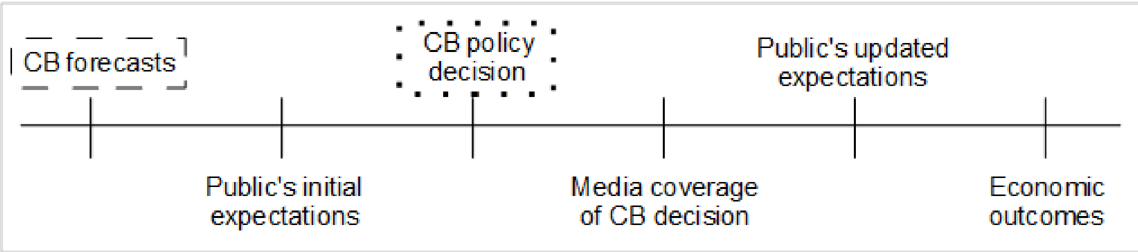
In this situation, agents will initially form their beliefs based on past information and their own impressions on the current state and future prospects for the economy. The central bank conducts surveys and collects data on these beliefs, which will be used to set the policy rate. Agents will learn about the rate through the media, whose reporting will most likely not be neutral or unbiased. The news outlets are bound to have an impression on the adequacy of the chosen rate. Suppose that the bank sets the nominal rate at a certain level that is deemed inadequate by the media. If the rate is seen as too high, the media reporting will carry a negative tone, creating a feeling that in the near future the economy may be depressed, pulling prices down. Influenced by the press coverage, the general public will update its inflation expectations, which will ultimately be lower than the initial level (the one used by the monetary authority to set the nominal interest rate). These updated expectations will guide households' and firms' consumption, pricing and investment decisions, in the end contributing to a lower level of output and inflation. If, on the other hand, the interest rate is considered too low, the media coverage is likely to emphasize the possibility of inflation pressures in the near future, contributing to an increase in the general public's inflation expectations and, ultimately, fueling price pressures.

By affecting the public's expectations, the media coverage of the bank's decision has a real impact on economic outcomes. In both cases, because the central bank's interest rate choice was based on ex ante beliefs, it will indeed be proven too high in the first case and too low in the second.

This happens because economic variables depend on agents' actions and beliefs. When the central bank sets the interest rate, it does so based on perceived private expectations; but the bank's very own rate may trigger changes on such expectations, making them differ from those held at the moment of the interest rate decision. In our example, the tone of the media reporting on the bank's policy decision is the catalyst for the change in private beliefs which, in turn, produce a rate of inflation that differs from the one planned by the monetary authority. Figure 3 illustrates this sequence of events.

The central bank collects data on the economy and produces forecasts, which it does not share with the public (the fact that this information is kept private is indicated by a dashed line). Agents form expectations and the bank uses these initial beliefs to set the interest rate. However, the general public only learns the chosen policy rate through the media (the dotted line indicates agents do not

Figure 3: Sequence of events under no announcements



access the information directly from the central bank). After learning what the chosen nominal rate is and influenced by the media reporting on the central bank's decision, private expectations are updated, leading to a different economic outcome from the one intended by the central bank.

4.2 Forecast announcement

The central bank decides to share with the public its forecast on some relevant variable (say, an international supply shock). As before, the general public does not read central bank communications, depending on the media reporting of the forecast. Let's analyze two possible cases: (I) the forecast is covered unfavorably, with the media emphasizing it is probably highly inaccurate (that is, subject to a high degree of uncertainty); (II) news outlets think the forecast is overly optimistic and expect the shock to actually be much larger.

In the first case, agents are left with the impression that they should not give much credit to the central bank's forecast, given it is reported as very imprecise. Therefore, when forming expectations they give the forecast a lower weight than they would if it were not for the media's negative coverage. Because the media cast doubts on the central bank's forecasting capabilities, the public is left to believe that the forecast is subject to a high degree of imprecision and, as a consequence, should not be given much credit. This does not mean that the bank's estimation will be discarded altogether, but that it will receive a lower weight in the process of expectations formation: unlike a "rational agent", the public undervalues the monetary authority's forecast.

Thus if, for example, the bank published an estimation of a positive (inflationary) external shock, the fact that agents undervalue the bank's forecast mean their inflation expectations will be below the level expected by the central bank. That is: because the forecast is not seen as very accurate, the bank's ability to influence private expectations is limited.

In the second case, the pessimistic reporting creates fears of a rise in inflation, leading the public to assume that the supply shock will be above the central bank's forecast. Inflation expectations increase, causing actual inflation to also be greater than it would otherwise be. In this situation, the media's alarmism gives rise to more general inflation concerns which, in the end, function as a self-fulfilling prophecy: the widespread worries about higher price increases change households and firms' actions, leading to an actual acceleration in inflation.

In both scenarios the tone of media coverage influences private beliefs, affecting economic outcomes. This is always likely to be the case, as the central bank's information only reaches households and firms through the intermediation of news outlets. If the bank is not able to convince the media that its forecast is accurate and realistic, publishing the forecast may have undesirable impacts on actual inflation. Indeed, the literature on central bank communication emphasizes announcements must be clear, precise and credible; otherwise, the bank risks adding more uncertainty to the economy (Cukierman, 2001).

This illustration is a reminder of the limits of monetary policy as a tool to steer the economy in the desired directions. Because the policy works through many channels, its effects are indirect, take a long time to unfold and depend on agents' actions and beliefs, the central bank has very little control over the ultimate policy results.

5 Discussion

From the literature mentioned above and the illustration provided, we see that the complexity of the monetary transmission mechanism is much greater than what is postulated by most theoretical models. The following points are worth highlighting:

1. When it comes to studying the efficacy of monetary policy, acknowledging the diversity of economic agents is essential;

2. Most agents are not sophisticated observers of central bank's actions and communication; they lack both the ability and the time to monitor the bank directly. As a result, they depend on media coverage, which is subject to biases and misunderstandings;

3. Although financial markets participants do tend to monitor central bank's announcements directly, they also resort to media reporting as a complement;

4. The central bank's influence on long term interest rates, economic activity and prices is indirect, depending on the actions of the various economic players. Most of these players' view of the bank's decisions and communication is influenced by the media;

5. If an effective management of private expectations is an important part of monetary policy-making, and if these expectations are influenced by the media, then it is logical to conclude that the media play a role in the transmission mechanism of monetary policy;

6. The theoretical illustration presented is extremely simple and overlooks the complexity of decision making in real economies, especially in face of the flood of information that exists in contemporary societies. This means that the public's reliance on media reporting may be even greater than we assume, which reduces even further the central bank's ability to steer the economy in the desired direction if the bank's actions and announcements are not accurately reported.

The immediate conclusion to be drawn is that, when devising a communication strategy, the central bank must take into account how the media will interpret its announcements. Assuming that journalists will behave like financial market participants is clearly not adequate. Not only they do not have the same understanding of many economic issues, but also each news outlet has its own political and editorial inclinations, making them highly susceptible to biases. The bank must choose carefully which pieces of information to disclose and, when doing so, be as clear and precise as possible. Resorting to press conferences, where journalists can ask questions and make sure they understand the bank's reasoning and decisions, may be a good strategy.

6 Conclusion

Given the complexity of the monetary transmission mechanism, the central bank's ability to influence economic outcomes is limited and surrounded by uncertainty. As it depends on people's reactions to the bank's decisions, the efficacy of monetary policy is tightly linked to private expectations, and especially more so in some monetary policy regimes, like inflation targeting. As a result, skillfully managing expectations becomes essential for the success of the policy, a concern that has been at the heart of contemporary central banks' efforts to design better communication strategies.

However, as we saw, the monetary authority's influence on private beliefs is mainly indirect, as most agents only learn about the bank's announcements and decisions through the news. Acknowledging that the media plays a role in the monetary transmission chain is important for central banks that aim to influence private expectations. This is especially relevant considering that the media is not a mere information disseminator: it selects, edits and interprets data and events, in such a way that makes reporting subject to incompleteness, biases, errors and misunderstandings.

If there is such an important intermediary between the bank and the general public, it is advisable that the monetary authority designs its communication strategy taking the media's influence into consideration. Making sure that journalists understand the policy goals and moves is essential, and so is trying to be as clear as possible to avoid misinterpretations. Regular press conferences may be an efficient instrument to clarify misunderstandings, explain the reasoning behind policy decisions and avoid biases in reporting.

In countries like Brazil and South Africa, the central bank may face an even bigger challenge, as the press seem particular biased and there is a lacking of understanding of how monetary policy works. Actions to reach out to journalists and actively improve the degree of understanding about the monetary mechanism may be fruitful in these cases. More ambitious, long term programs aiming at improving economic knowledge and reasoning could also help.

In any case, regardless of the specific challenges faced by each monetary authority, it is clear that ignoring this missing link in the monetary transmission chain is not wise. Working to improve the relationship and communication with the media might prove to be an invaluable additional tool to enhance the efficacy of monetary policy.

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