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Building Credibility and Influencing Expectations: The Evolution of Central Bank Communication*

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Abstract

We provide a brief historical overview of the rise of central bank communication (CBC) limiting the analysis to the conduct of monetary policy but with a focus on emerging market economies which have been neglected somewhat. After the financial crisis a shift emerged: CBC evolved from being a complement to a substitute for monetary policy actions. We explore the implications of this shift. We conclude CBC must first and foremost always complement central bank decisions. Whether crisis conditions prevail plays an important role in CBC.

We list various channels and devices central banks use to communicate. Next, we focus on the key characteristics of CBC, namely credibility, clarity and consistency. The choice is based on the extant literature's views about the forms of CBC that move markets and expectations the most. Finally, we consider some of the challenges in seeking the best possible CBC strategy. These include: audience heterogeneity; the state of the economy; the volume of CBC. We are especially interested in the impact in emerging markets.

Our approach draws on and provides evidence from the international experience but we aim to highlight differences between advanced and emerging market economies. We also speculate about the future of CBC as a result of the pandemic.

JEL Classification codes: E58, E42, E63, G41, C83

Keywords: central bank communication, inflation expectations, surveys, central bank reputation and credibility, media, emerging and advanced economies.

Quality desirable in a central banker? *"The ability to foretell what is going to happen tomorrow, next week, next month, and next year – and…to explain why it did not happen."* (Churchill 1902 (Roberts 2018)).

"What is optimism?... "Alas" said Candide, it is the madness of maintaining that everything is right when it is wrong. (translated from the French, Voltaire (1759, p.25).[1]

1. Introduction

Theories about the inflation expectations channel in the transmission mechanism of monetary policy and central bank communication has provided a scant skeleton, offering useful but limited practical insights into the process by which inflation expectations are formed and feed into the actual inflation outcome. As a result, central banks continue to struggle, for example, with the content of forecasts, how to communicate them, as well as explaining why these are occasionally quite inaccurate. It can also lead central bankers to delay acknowledging errors in judgment for fear of being accused of 'shouting fire in a crowded theatre'. The opening quotes capture well the tensions faced by central bankers who strive to be transparent and accountable.

Yet, macroeconomists have largely been persuaded that, when all else fails, communication that shifts expectations is able to boost economic activity and inflation (Eggertsson and Woodford, 2003). The absence of a universally accepted framework to describe the behaviour that underlies the process by which expectations are formed limits the confidence with which policy makers can use communication as a monetary policy tool. Furthermore, the existing theory has not always performed well against the data. This is partially exemplified by the fact that many central banks present charts illustrating how the monetary policy transmission mechanism is thought to work but omit an explicit role for central bank communication.[2]

Despite the aforementioned difficulties, central banking across the world over the past three decades has undergone a 'quiet revolution' (Blinder, 2004). One of the main ingredients of this is an increased commitment of central banks across the world to enhance transparency (Eichengreen, Geraats, and Neyapti (2019), Siklos (2011, 2018)), and references therein) and the use of communication in support of the goals of low and stable inflation. A flourishing

[1] « Qu'est−ce qu'optimisme ? disait Cacambo. Hélas ! dit Candide, c'est la rage de soutenir que tout est bien quand on est mal. »

[2] A search of the websites of major central banks in late 2019 gives expectations pride of place in the monetary transmission mechanism but not central bank communication. Once exception we found is from the New York Fed but, as of this writing, the link is broken. An earlier vintage of the chart is found at https://ftalphaville.ft.com/2013/04/10/1454092/revisiting-monetary-transmission-and-something-to-look-for-in-the-fomc-minutes/.

empirical literature has begun to offer insights into some of the pieces of the puzzle. In this paper, we will explore some of the principal challenges faced by central banks in their efforts to use communication, taking stock of what the empirical literature has to offer and provide some suggestions of our own as well. Our survey is also interested in insights from emerging market economies (hereafter EME), because the extant literature has understandably focused on the experience of advanced economies. The experience of South Africa is used to motivate some of the issues of concern germane to emerging markets and central banks more generally.

Potentially, there are four reasons for central bank communication to present challenges for monetary authorities in EME that may be less acute among their counterparts in advanced economies. In no particular order of importance, they are: a historic lack of monetary policy credibility; the fragile condition of central bank autonomy; the amplified importance of external shocks to domestic inflation; and, the potential contrast between headline inflation and the relatively greater sensitivity to volatile food and energy prices.

Arguably, communication by central banks is both more challenging and more important in EME. The reason is that these economies have only recently, at least in historical terms, adopted the institutions (e.g., central bank autonomy) and policy regimes (e.g., inflation targeting) that are taken for granted in advanced economies (hereafter AE).[3] We conclude, despite the undertheorized state of the role of expectations and communication in monetary policy (Tarullo, 2017), that the empirical literature is making progress ((Blinder *et al.* (2008), and Binder (2017a)), and that the evolution towards greater transparency is a one way street (Blinder *et al.* (2017), Siklos (2018)) though recent events may well test this hypothesis and the impact on EME has been downplayed somewhat.[4] In what follows we also contribute to this literature with some additional illustrative empirical evidence.

The mainstream view within both academia and policy circles is that central bank communication matters because inflation expectations and central bank credibility matter. Policy makers use communication as a monetary policy tool with the aim to: (1) build

[3] At least until recently. The role and independence of the monetary authority is increasingly being called into question in some advanced economies, in part as a reaction to, or dissatisfaction with, the massive interventions of important central banks (i.e., the U.S. Federal Reserve, the European Central Bank, the Bank of Japan, and the Bank of England) in financial markets in the aftermath of the Great Financial Crisis. Indeed, for this reason, some central banks have been labelled the "Only Game in Town" (El-Arian 2017).

[4] Blinder (2017) asked 47 central bankers whether they believed forward guidance should remain as a policy instrument now that the crisis is behind them, and found that nearly 60% believed it should, not a single respondent thought it shouldn't, and the rest believed it should be adopted in a modified form or that is too early to tell.

credibility of the central bank in order to protect monetary policy institutions; and, (2) persuade the public (price setters) to behave in a manner that is consistent with the price stability goal of central banks, thereby improving the effectiveness of monetary policy.

The challenge facing monetary policy practitioners is to make sense of the evidence that we do have at our disposal because, as is too often the case, practitioners are in the storm while academia catches up. What it means to be in the storm also does not mean the same thing across countries (and certainly when we compare advanced economies and emerging market economies). For example, central banks' decisions about quantitative easing are prominent in AE whereas, in EME, up until the covid-19 shock, quantitative easing (hereafter QE) was mainly presented as a shock from outside that impacts its financial markets. South Africa is a case in point.[5] On the other hand, given the extreme level of inequality in South Africa and inadequate levels of economic growth, questions such as the optimal level of the inflation target have been more prominent.[6] Furthermore, Bordo and Siklos (2019) show that institutional resilience is generally more fragile in EME in the face of a shock such as the great financial crisis of 2007-2008.

In this paper, we offer some perspective regarding what we have learnt about the contribution of central bank communication, as well as some of the main challenges central bankers face in using communication effectively. In section 2, we first provide a brief historical overview of the rise of central bank communication (CBC) over the past decade or so, limiting our analysis to the conduct of monetary policy. We also consider the motivation and evidence for adopting communication as a policy instrument. We explore the implications of this shift and conclude that, ultimately, CBC must first and foremost always complement decisions taken by central banks. Whether crisis conditions prevail is also important for determining the role of CBC.

We turn, in section 3, to a list of the various channels and devices central banks use to communicate with the public, focusing on key communication devices and their characteristics. The choice is based on the extant literature's views about the forms of CBC that move markets

[5] The concept did recently appear dramatically in the media headlines in South Africa when the secretary general of the African National Congress (ANC) announced that the ANC was considering "constituting a task team to explore quantity easing measures to address intergovernmental debts to make funds available for developmental purposes," (Davie, 2019). Of course, the ANC's interpretation of QE, namely providing cash directly to citizens, is not the same as the one deployed in AE.

[6] Whether differences in inequality complicate the task of monetary policy makers is unclear since redistributive policies are the domain of fiscal policy. However, to the extent that education contributes to inequality, and this complicates the communication task of central banks, inequality poses a challenge. Complexities abound when attempting to male cross-country inequality comparisons, but this is beyond the scope of this paper.

and expectations the most. We also discuss some evidence about the complexity and detail of central bank communication, as well as the sources of information used by households to learn about inflation and monetary policy.

In section 4, we consider some of the challenges many central banks are facing in seeking the best possible CBC strategy on which there remains no consensus. These include: the volume of CBC (i.e., seeking the right balance between quantity and clarity); recognition of the heterogeneity of the audience (i.e., domestic households, firms, experts and the media); and the influence of the state of the economy (i.e., recessions versus expansions, crisis versus normal times).

We then conclude by asking whether, and to what extent, best practice in CBC can be improved and why greater institutional humility (i.e., admitting mistakes when they happen) requires more oversight in the form of regular externally conducted policy strategy reviews.[7] We also provide a short list of changes that can be made to improve how central banks communicate. Our approach draws on and provides evidence from the international experience, with consideration of how EME differ.

To illustrate some of the points above, as well as to draw distinctions between the experiences of AE and EME, we rely at times on data from South Africa. We believe this is especially useful for at least three reasons. First, it has targeted inflation since 2000 and, as such, is among the earliest adopters of IT among EME. One of the sparks that ignited greater emphasis on central bank communication is the decision by governments to focus on a price stability objective. Second, South Africa is a large EME with a sophisticated financial system. This allows us to explore how, for example, financial asset prices respond to monetary policy communication. Finally, South Africa has the distinction of having an extremely rich data set on inflation expectations, at the micro and macro levels, both for households and firms. Many AE do not possess comparable data sets. Since public trust and credibility in the monetary authority depends critically on its ability to influence expectations this means that understanding the nature of these expectations is central to assessing both the conduct of monetary policy and the potential influence of central bank communication.

[7] Since the time the first draft of this paper was written both the US Federal Reserve and the European Central Bank are undergoing strategic reviews. Nevertheless, what is missing is a role from governments as instigators or interested bystanders in such reviews. Other central banks face a different process with regularly mandated reviews and consultations with government (e.g., Canada, Norway, Sweden).

2. The Sparks That Kindled Interest in Central Bank Communication: How and Why it became Critical for The Conduct of Monetary Policy

Over the past three decades central banks have evolved from being shrouded in mystery to placing a high value on building credibility and managing the inflation expectations of the public through communication Haldane (2017). CBC is today viewed as critical to the implementation of monetary policy and a policy tool in its own right (Blinder (2018), Siklos (2018)).

EME have generally become more transparent and implemented communications strategies comparable to ones observed in AE, including the adoption of inflation targeting (hereafter IT), albeit with a lag. The provision of transparency also implies that central banks have shied away from attempting to surprise financial markets especially. Nevertheless, the degree to which EME are predisposed to surprise markets is higher than in AE (Siklos (2013); see the appendix). This might reflect the fragility of credibility in many EME relative to AE which, on average, possess a greater reservoir of trust. More generally, all central banks are apt to view the necessity to surprise markets differently in crisis versus non-crisis conditions.

Institutional developments such as improved central bank independence and transparency in EME did trigger some convergence of the group towards the experience of AE from the 1990s to the Great Financial Crisis (GFC) of 2007-2008. However, Bordo and Siklos (2019) provide evidence that EME appear to have more fragile central bank credibility, less institutional resilience (measured using an index which combines information about institutional quality and political-economic characteristics), and relatively poorer governance to withstand a shock such as the GFC.

In an important survey paper published a decade ago, Blinder *et al.* (2008) observed that the rapidly growing literature on CBC consisted mainly of empirical research, with a limited theoretical component. Just over a decade later, a former member of the Board of Governors of the U.S. Federal Reserve System captured the unease of many policy makers and academics alike with his observation that 'the concept of inflation expectations is quite undertheorised' (Tarullo, 2017: 13).

To fix ideas, we begin with the simple model that Blinder *et al.* (2008) used to motivate why CBC matters. Thereafter, we will rely on the empirical literature to fill in some of the pieces of the puzzle that will hopefully strengthen the theory in the future. The model includes a

Phillips curve, a monetary policy rule, while expectations explain the slope of the yield curve. The resulting model incorporates the following elements:

- A *stationary* economic environment and a central bank that is credibly committed to an unchanging policy rule;
- *Rational* inflation expectations;
- Given the first two conditions, there is *no learning necessary* on the part of either the central bank or the public;
- No *asymmetric information* exists between the central bank and the public.

Of course, several of these conditions will almost certainly never hold. Hence, at least in theory, there is a role for communication. Indeed, theorists argue that the expectations channel of the monetary policy transmission mechanism is the most important channel though which price stability can be achieved (Blinder *et al.* (2008), Woodford (2005)) Bernanke (2015)).

A role for communication is underscored by the empirical failure of many economists' more cherished theoretical models. For example, the expectations theory of the term structure with rational expectations has not performed well (Blinder (2018)). Various versions of the Phillips Curve (Mankiw (2001), Coibion, Gorodnichenko and Kamdar (2017)), and the Taylor rule[8] ((Svensson (2003) and Goodhart (1999)), have fared little better. However, opinions on the subject remain divided.[9] A complicating factor is that the academic literature does not adhere to a unique specification for either the Phillips Curve or the Taylor rule.

There is some evidence that using survey data from different groups may explain some macroeconomic relationships. However, at present, we know very little about *how* expectations are formed by these groups. Therefore, the theoretical literature's position is that expectations and, therefore, communication are crucial to monetary policy, despite our limited understanding of how they are formed.

[8] Svensson (2003) argues that using simple rules such as the Taylor rule to describe or prescribe the policy setting behaviour of central banks is inconsistent with the idea of rational expectations typically used to describe the private sector. He argues that these simple rules are an incomplete description of what policy makers do in practice and they are too vague to be used as a guideline..

[9] Gordon (2013) is an example in the vein of the view that the Phillips Curve is 'alive and well'. Yet, both the Phillips Curve and the Taylor rule remain useful 'stories' relied upon by central bankers around the world to communicate what monetary policy does. The extent to which these narratives impact policy decisions, in the manner discussed by Shiller (2019), is a question outside the scope of this paper.

Communication implies transparency which ought to be socially beneficial. However, too much transparency could mean that the private sector will not try as hard to evaluate the state of the economy (Morris and Shin (2002; 2005)).[10] This would be sub-optimal as less information would be rigorously processed not to mention an important avenue of accountability. Considering evidence from a sample of AE and EME, Crowe (2010) finds mixed support for the Morris and Shin argument

The empirical literature that evaluates whether communication has had an effect on asset prices and the economy has found ample evidence that communication impacts inflation expectations and the economy. Blinder *et al.* (2008) argue that there is abundant evidence that CBC 'creates news' and, as such, impact financial markets (Kohn and Sack, 2004 amongst others), and 'reduces noise' by moving the public's expectations in the direction intended by the central banks (Jansen and De Haan (2005), Ehrmann and Fratzscher (2007)). Furthermore, there is evidence that prioritizing communication, as is the case under IT, has facilitated the anchoring of inflation expectations more successfully relative to monetary policy frameworks that do not (Gürkaynak, Levin and Swanson (2010)), even in some EME IT countries such as South Africa (Reid, 2009), and Chile (Larrain, 2005), although what it means to be anchored is not always clearly defined.[11]

As noted previously, theory (e.g., Eggertsson and Woodford 2003) suggests that communication can move expectations. However, this assumes that expectations are primarily forward-looking. The Bank of Japan (2016), for example, concludes that changing inflation expectations is difficult when they are strongly backward-looking. Now, it may very well be the case that Japan is a special case due to its long experience with low inflation and deflation, together with what some outside observers (e.g., Romer, 2014; and reference therein) consider timid policy responses. However, as the results in Table 1 suggest, Japan's record need not be unique to AE. Two simple specifications are estimated for a range of countries, similar to the ones used by the Bank of Japan (2016) to investigate whether, in spite of the 'regime shift' called Abenomics, expectations are backward-looking.

[10] Svensson (2005) counters that Morris and Shin's result holds only under extreme conditions (i.e., perfect credibility) and is therefore not a serious concern for central banks.

[11] Kumar et. al. (2015, Figure 1) define five types of anchoring along a scale that ranges from "weak" to "ideally anchored". Many of the definitions overlap, unsurprisingly, whereas the empirical literature is much less clear about varieties of anchoring.

$$\pi^e_{t+1} = \lambda\pi_{t-1} + (1-\lambda)\pi^e_{t+l} \qquad (1)$$
$$\pi^e_{t+l} = \lambda\pi_{t-1} + (1-\lambda)\pi^T_t \qquad (2)$$

Equation (1) expresses the one year ahead inflation expectations (π^e_{t+1}) as a function of last year's observed inflation rate (π_{t-1}), the backward-looking component, and expectations of inflation *l* years ahead (π^e_{t+l}). Although there is no consensus on how far ahead the horizon should be to determine whether expectations are anchored or not, we set *l=5* in part because the relevant horizon is likely to be shorter in EME than in AE where *l* is more likely to be set at 10. Of course, we cannot be sure whether the five year horizon is too long given that IT is a monetary policy strategy only relatively recently introduced in EME.[12] Instead, some may treat the 5-year ahead horizon as combining some elements of a forecast and an assessment of the overall credibility and durability of the IT regime. Nevertheless, despite the fact that there is relatively little medium to long-term survey data on expectations of inflation there is some evidence that the five year ahead horizon may not be far-fetched. For example, South Africa's Bureau of Economic Research has surveyed firms and financial analysts in South Africa since the second half of 2011 about their 2 and 5 year ahead inflation expectations (see Reid and Siklos 2020). Figure 1 displays the available data. Given how closely the 2 sets of expectations mirror each other there is some justification for the credibility view of medium-term expectations, at least for South Africa. More generally, as detailed below, there is also support for the potential of an IT regime in EME to anchor expectations.

The second equation asks whether the same one year ahead inflation expectations are driven, again by last year's outturn in inflation, or an inflation objective that may or may not be explicitly announced (π^T_t). Hence, we permit the target to be time-varying since even IT central banks typically target inflation within a band so that any announced inflation objective is effectively a medium-term goal. The larger the weight of past inflation on inflation expectations (i.e., λ) the more adaptive they are and the more difficult it is, for example, to use communication to influence medium-term expectations or via a change or an emphasis on the primacy of the inflation target.[13] While the two equations may be suggestive it is possible

[12] In AE long-term expectations are often measured using 10-year ahead forecasts, as in the Consensus and Survey of Professional Forecasters projections.

[13] A referee suggests that the value of λ could also reflect the relative importance of food and energy prices. Both of these prices are likely to play a larger role in EME than in AE. Hence, there may be less inflation persistence in EME compared to estimates in AE. This interpretation is not inconsistent with our interpretation of the evidence

that other factors may also produce shifts in these expectations. To account for breaks in both equations we use Bai and Perron's (1998, 2003a, 2003b) testing methodology.

Table 1 lists the year when the relevant country introduced IT, the sample over which the estimates are generated using quarterly data, estimates of λ in each equations and the timing of breaks. Evidence is marshalled for 29 countries, 18 of which are EME, and 23 having adopted IT at some point during the sample.

There are at least three main take-aways from the results shown. First, based on equation (1), there is considerable scope to influence expectations since the weight of past inflation on one year ahead expectations is modest in the vast majority of cases. Hence, estimates of λ are 0.25 or smaller in 21 of 29 countries. While the results do not constitute proof that IT explains these findings the accumulated evidence from AE make it difficult to reach a different conclusion (e.g., Vega and Winkelried 2005) especially since the dispersion of inflation has declined globally and not only in AE with IT (e.g., see Bordo and Siklos 2019). The results are comparable when estimates for equation (2) are considered with 16 of 29 countries suggestive of relatively modest degree of anchoring to an IT. Third, medium-term inflation expectations (i.e., π^e_{t+l}) are subject to more frequent breaks than short-term expectations (i.e., π^e_{t+1}). This result is just as likely to hold for AE than in EME. Hence, there is some international evidence for communication to potentially influence short and medium-term inflation expectations.

We consider these against the shift in the role of communication after the crisis from being viewed as a complement to a substitute (Siklos (2017), and references therein). We will argue that the pendulum may have swung too far. Bernanke's (2015) quip that 'monetary policy is 98% talk and 2% action' is perhaps true at a point in time, but it is conditional on *consistency* between the words and deeds[14] (a track record), which fosters credibility and trust. Over a

nor with the proposition about the difficulties central banks in EME face in communicating monetary policy. Unfortunately, we are only beginning to understand, for example, how households form expectations and their reactions to food and energy prices. See, for example, Coibion et. al. (2020). Ball and Mankiw (1995) argue that large relative price changes can have inflationary consequences (e.g., oil price shocks of the 1970s) although this appears to have been contradicted by similarly large oil price changes in 2011. More generally, there is no reason for relative price changes (e.g. due to globalization) to impact inflation (Rogoff 2006).

[14] Various studies of the consistency of the communication (in the sense that actions are consistent with communication) of several central banks (led by Rosa and Verga, 2007) have followed. While such an evaluation would be time and country specific, it is interesting to note that the South African Reserve Bank, as a central bank in an emerging market economy performed favourably along this dimension (Reid and Du Plessis, 2010). Using a numerical index to reflect the monetary policy inclination communicated by the SARB's MPC statements, data analysis, formal econometric tests and regression analyses revealed commendable consistency between the

longer-term horizon communication can only ever be a complement to policy action (a credible commitment; inter alia, see Trichet (2008), Blinder (2009), Yellen (2012))).

While most studies that quantify CBC focus on some primary forms of communication, we need to acknowledge this choice. Reliance on a specific communication strategy may change over time and may be best suited to a particular audience.

3. Forms of Central Bank Communication

Internationally, there exist a wide range of communication tools used by central banks and there is no consensus about the optimal use of these tools. In table 2 we consider what we believe are 8 representative cases. Half are from AE and the other half are from central banks in EME. All central banks in EME target inflation and 3 of 4 AE central banks also have an IT mandate.[15] The traditional communication tools are generally widely used by many central banks, although the exact characteristics of each (such as the length and complexity) can differ across countries.

For example, the South African Reserve Bank (SARB) publishes statements and holds a press conference after the meeting of the monetary policy committee that sets the policy rate, monetary policy forums which are open to the general public, the publication of the Monetary Policy Reviews and Quarterly Bulletins (formal reports about the state of the economy and the response of monetary policy), press releases and speeches, as well as presentations to the parliamentary committee of finance (maintaining accountability to government; South African Reserve Bank, 2011). Indeed, other than the SARB, many central banks publish minutes of their meetings. This is likely due to the governance structure of the central banks as opposed to reflecting a distinction between AE and EME.[16] This mirrors practice in the remaining EME

communication contained in the MPC statements and its subsequent actions over the period Jan 2000 to Sept 2009.

[15] The U.S. Federal Reserve has, since 2012, a medium-term objective for inflation but it has insisted that it is not an IT central bank given the dual mandate enshrined in legislation.

[16] Although most central banks render decisions in a committee like structure (i.e., a Monetary Policy Committee or MPC) the legislation governing their operations may not always reflect it. For example, the Bank of Canada has an MPC, but the legislation gives responsibility to the Governor to deliver monetary policy decisions. There exist varieties of structures around the world when it comes to how voting is organized. Votes are not recorded by the European Central Bank (ECB) while the FOMC (i.e., the Fed) records a voting tally. Space limitations prevent a fuller discussion here. Similarly, some comments recorded in minutes are attributed to individuals while other central banks do not identify comments by name. However, see Maier (2010), Moessner and Jansen (2016), and references therein for studies of the pros and cons of publishing MPC meeting minutes. Siklos (2020) concludes, at least for the US, that minutes can have macroeconomic consequences but not necessarily because they are published.

and in AE. Nevertheless, there are potentially two important differences between AE and EME in terms of central bank communication. First, fewer EME typically publish a communications strategy or policy than their counterparts in AE. Second, the volume of statistical information, and details about models that inform policy making, is smaller in EME central banks.[17]

However, as CBC has become more widely recognised as a distinct monetary policy tool, research has focused on developing a more comprehensive understanding of central banks' audiences, and the channels of communication available for central banks to reach them. In response to what Haldane, Macaulay, and McMahon (2019) describe as two waves of the revolution in CBC, central banks have generally become more transparent and to consider non-traditional channels of communication to reach their audiences. The first wave consists of a substantial increase in transparency and communication, and the second wave of a far greater focus on communicating with the general public in addition to the traditional audiences of central banks. While volume of communication is typically the first feature considered when evaluating increased transparency, the focus on the public elevated the concern about whether and how the central banks' audience *receives* its communication, as well as whether the recipients trust the central bank (credibility) and understand the communication (Haldane, Macaulay and McMahon, 2019).

As central banks embrace the need to communicate with the public, they are considering communicating more directly with their audiences, using channels such as television, school outreach programmes and social media (Stankova, 2019). The traditional approaches to communication implicitly relied on the assumption that if the central bank communicates with the financial experts and the markets, the media disseminates this to the public. Figure 2 illustrates how central banks have branched out from communicating primarily via experts to reaching directly the broadest possible segment of the public and by-passing the experts when necessary. Reid *et. al.* (2020), using the case of the SARB, is one of the small number of studies that illustrates why central banks have gone 'over the heads' of the media to communicate more directly to the public as well as the challenges this raises. The media do not always transmit the central banks' preferred message. Nevertheless, communicating monetary policy is inherently challenging, the public has a limited attention span, journalists are pressed for

[17] This is not to say that no modeling information is made public. For example, working papers in all central banks are another vehicle for providing the public with information of a more technical nature. However, detailed modeling information (e.g., as in the Federal Reserve Board (FRB) model) is less frequently encountered at EME central banks.

time and not necessarily equipped to communicate subtle and technically demanding concepts. Therefore clearly there is a risk that the central bank's message will be lost in translation. Binder (2017b), who examines the U.S. Fed's experience, is a reminder that media attention can also be a sign of crisis conditions or unwanted attention about the work of the central bank. Therefore, more diverse forms of communication, and on a more regular basis, may be a vehicle for central banks to deflect biases and potential misinformation about the conduct of monetary policy. This goes some way to explain the routine uses of press and other public briefings by central banks in AE. This remains relatively less common among central banks in EME. Indeed, briefings of this kind are used on all four of the AE shown in Table 1 but only 2 of 4 EME central banks.

Many central banks are also attempting to communicate more directly in response to the increasing use of the internet and social media in society. These online sources do pose some potential challenges. They include: that they rely less on formal journalism and, due to the participatory nature (Nielsen and Schrøder, 2014 and sources therein), that they are more likely to result in the existence of eco chambers or the creation of false news.

To determine the best channels for a central bank to reach its heterogeneous audiences, greater understanding of the media usage patterns is required. Crucially, central banks need to ask what sources of information about inflation and monetary policy these audiences rely on. Studies in the fields of journalism and communication are important resources. For example, using data from the 2013 Reuters Institute Digital News Report (Newman et. al. 2019), Nielsen and Schrøder (2014) compare the relative importance of social media with regard to collecting information, across 8 advanced economies with high levels of internet usage. While the authors caution that media usage can differ quite substantially across countries, they identify some similarities. They confirm that the use of social media is growing in importance, especially amongst young people. However, they also argue that it plays a relatively limited role as a source of news information (even for younger people) but does offer one 'gateway to finding online news'.[18]

We also collected data, using the marketing research firm AC Nielsen, about the sources of information South African households use to form their (self-reported) views about inflation.

[18] Since the information collected is not specifically targeted to the tasks of central banks, we do not present the results here. However, some key summary statistics are in an accompanying appendix.

As shown in Figure 3, our data suggests that, in line with international trends, television is still a dominant source of information for the public in South Africa. While online sources feature almost as prominently as newspapers, we did not distinguish between social media and the use of the internet simply to access online news, which is likely to be underemphasising the impact of formal news media. Suggestive international evidence from both AE and EME also exists and is shown in Figures 4 and 5. Cross-region differences are noticeable as is the fact that four quite varied sources of information about news are simultaneously relied upon by a majority in the public. Interestingly, the demise of print as an important source of information seems premature though there are vast cross-country differences and there is a tendency for this source of news to be less important than in the recent past. Notice also that, to date, social media is less important than many other sources of news, though cross-regional differences are also sizeable. Obtaining news is one side of the coin, but trust in news content is surely vital to central banks. The second part of Figure 4 reveals that social media is relatively untrustworthy on a global scale. Interestingly, the respondents' own confidence to discern what is or what is not trustworthy appears to be high. This brings to mind Tversky and Kahneman's anchoring hypothesis wherein individuals are overconfident in the accuracy of uncertain quantities. In the present case, this may translate into excessive confidence in the accuracy of their own opinions.

Equally interesting, as shown in Figure 5, are sources that members of the public never rely on to get news.[19] Here a digital divide between AE and EME is notable especially in the case where the internet is concerned. Doubtless this will change over time. However, it is this kind of data that central banks need to examine when devising a communications strategy intended to inform as many in the public as possible and with the least amount of delay.

In summary, central banks around the globe are already paying attention to central bank communication, both with the markets and to an increasing extent with the public. The use of traditional forms of communication is widespread and the quantity of communication through these channels is now high across most countries. There remains much to be learned about the comparative effectiveness of individual forms of traditional communication, as well as the use of non-traditional forms of communication such as television and social media. Many central banks are already experimenting with these, but there has been very limited evaluation of the

[19] Country level data, similar to what is shown in Figure 4, for the 2009-214 period, reveals broadly similar trends. However, 'friends' as a source of information is also considered and over half obtain information in this manner across 20 countries examined.

success of these attempts. Indeed, the evidence shown here only refers to news and is silent about central banks as a source of information.[20] Given that there is evidence in studies that evaluate the traditional forms of communicating that it is the clarity of communication that is really essential (quality versus quantity), there appear to be risks involved in using non-traditional channels without understanding these channels well.

In the following section, we consider some of the substantial uncertainty and challenges that face central banks in their attempts to reach a broader audience.

4. The Principal Challenges Facing Policy Makers in Using Central Bank Communication

Early empirical studies of communication tended to assume a very simple communication 'channel', where a well-designed message is sent by the sender, directly to the audience. The focus was on the message from the central bank as the sender, and the reaction of the financial markets as the recipient. In essence, researchers investigate who was communicating from the central bank, what this sender communicated, and whether this was effective in terms of influencing asset prices and the economy in a manner that assisted the central bank to achieve its objectives. However, as illustrated by Filardo and Guinigundo (2008) who draw inspiration from Shannon (1948), the road from sender to audiences is potentially varied and complex and cannot be reduced to a single signal.

By the time Blinder *et al.* (2008) reviewed the literature, the profession had some understanding of the complexities of CBC, such as the impact of the character of the sender (usually a committee of decision makers) and the conduct around communication of the committee's decision (Blinder (2007), Fratzscher and Ehrmann (2007)).

The literature that followed has increasingly acknowledged that reducing communication to a simple signal from a single sender (central bank) to a homogenous audience (the public), via a one way 'channel', offers little insight into the process or guidance to the application of communication tools in practice (Reid *et al.*, forthcoming). There is also recognition that central bank communication is intermediated by the media before reaching the majority of the

[20] Japan is an exception. The Cabinet office extensively surveys the public about the BoJ and monetary policy. See https://www.esri.cao.go.jp/index-e.html. The European Commission also has broad surveys of the general opinion of the ECB but neither Japan nor the ECB provide information about sources of information about news from central banks.

public (Berger, Ehrmann and Fratzscher, 2011). In this section of the paper, we explore some of the primary challenges in the practice of using communication in monetary policy and how the literature is expanding our understanding in these directions.

4.1 The kind of message (signal) a central bank should send – clarity over quantity

While it is generally acknowledged that transparency has its limits (Cukierman, 2009), and there are disagreements about the net benefits of central bank transparency, research emphasizes that *clarity* of communication outweighs the mere achievement of transparency (Winkler (2002), Siklos (2003), and Bulir, Cihak and Šmidkova (2013)). Bulir, Cihak and Šmidkova (2013), for example, evaluate the clarity of the communication by the European Central Bank (ECB) by assessing the extent to which the measures of risk to the inflation outlook (projection risk) are coordinated across a set of prominent documents that communicate monetary policy.

A common way of measuring the clarity of communication is to consider the linguistic complexity of the communication, given the audience at which it is directed (how understandable the audience finds the language in the text). Davis and Wynne (2019), for example, rely on the Flesch-Kincaid index, which is converted into the Flesch-Kincaid Grade Level (an equivalent U.S. grade level), to measure how difficult a piece of text (written in English) is to read and understand. They show that the post-meeting statement of the Federal Open Market Committee has become more detailed and more difficult to understand, increasing the size of the reactions of financial market data to this communication. Haldane *et al.* (2017) show that the average reading grade score of Bank of England publications is a little lower than those of the Federal Reserve Bank. However, in both cases, the communications of these central banks would be accessible to audiences about 5 years older than mainstream newspapers and 8 years older than political speeches. The implication is that, given the literacy rates in the UK and the US, the Bank of England publications would be understood by less than 10% of the adult population (Haldane, 2017).

There are studies that evaluate the readability of central bank communication in emerging markets, where the risk is that complex language may be difficult for a large portion of the population to digest. Bulíř, Čihák and Jansen (2013) evaluate the readability of 7 central banks, 4 of which are in large EME. They warn that it is difficult to compare the levels linguistic complexity across countries due to issues such as translation into English. However, using

boxplots to capture the distribution of the data, it would appear that the language used by the central banks of Sweden (Riksbank) and the UK (Bank of England) is simpler than the others. Mathur and Sengupta (2019) use the Farr-Jenkins-Paterson index to examine the linguistic complexity of the Central Bank of India, and do not report a reading grade level comparable to that used for the AE mentioned above. They do, however, find that the complexity of language appears to vary with the Governor of the Bank of India in office. Bulíř, Čihák and Jansen (2013: 144), for a mix of AE and EME all of whom target inflation, conclude that there is substantial variation across time and country, and that 'a single model for clarity of central bank' does not exist.

Some central banks deliberately attempt to develop communication tailored for a non-specialist audience. For example, in November 2017, the Bank of England began publishing a broader-interest version of its quarterly Inflation Report (IR), with a Flesch-Kincaid Grade Level of 7.8 (eighth grade level), rather than 13.4 of the Monetary Policy Summary (Haldane and McMahon, 2016). In South Africa, the Monetary Policy Forums, which are conducted at major centres around the country, represent an attempt to communicate directly with the public. While the aim of reaching a wider audience with the forums is admirable, the reach is still limited since at least a portion of the audience that attends the forums consists of the same financial experts and journalists that study other SARB communication.[21]

Siklos, et.al. (2018) examine the speeches of the Governor of the Bank of Canada and the Chair of the U.S. Federal Reserve over the 1997-2017 period and construct a readability score by averaging three indexes. They find that speeches have become slightly less readable over time in the U.S. and more readable in Canada, at least since the financial crisis of 2008-9. The former results echo those reported in Davis and Wynne (2019). This result is unsurprising when one considers that the financial crisis impacted the U.S. far more than in Canada requiring more frequent explanations of how the Federal Reserve maintains financial stability. The latter is a concept that is not well understood even in economics where theory is only now catching up to policy makers' concerns in this area (e.g., see Dincer et. al. 2019, and Honohan et. al. 2019).[22]

[21] To the extent that the Forums enhance the clarity of the SARB's message, as interpreted by journalists, this can serve as an effective device to mitigate some of the communication problems raised earlier (viz., see Figure 2).

[22] The index used averages the scores from the Flesch-Kincaid, Gunning, Fog, Coleman-Liau SMOG and readability indexes. It should also be noted that while the variance of the index scores is high in both countries, it has been stable in the U.S. but rising in Canada.

Besides linguistic complexity, some studies consider the length of a piece of communication, where shorter communication is judged to aid clarity. Studies in South Africa that have quantified the South African Reserve Bank's (SARB) communication have focused exclusively (to the best of the authors' knowledge) on the Monetary Policy Statements (MPS; Reid and Du Plessis (2010), Kabundi and Tsokodibane (2016) and Coco and Viegi (2019)). SARB statements are approximately 5 pages long (it was previously longer) and it constitutes the first announcement of the policy rate decision. Monetary Policy Statements also summarise the reasons given by the monetary policy committee for that decision. Therefore, the committee's views of the state of the economy are incorporated as well as the appropriateness of the response of monetary policy to the state of the economy. This statement is attentively examined by both the financial experts as well as journalists who report on the statement extensively in the media. The latter then take some of this information to the public.

Given that the conduct of monetary policy involves digesting a considerable amount of quantitative information, it is natural to examine the impact of communication, in the first instance, by asking about the frequency of certain words used in policy statements. Figure 6 considers the SARB's MPS since inflation targeting was introduced. Six different categories are shown to illustrate how the evolution of content, based on word counts, is sensitive to the words the researcher believes characterizes the salient elements of the document. Figure 6a shows the total word count of MPSs. Others (e.g., Siklos (2014, 2020), and references therein) have already noted how the total word count can, at times, be linked to underlying economic conditions (e.g., whether there is a financial crisis or not). Care must also be taken to occasionally combine words that may convey similar information. For example, even though the SARB is tasked to control inflation, South Africa is an open economy and economic performance, including inflation, is likely to be influenced by the exchange rate. However, whether the researcher used 'rand' or combines this word with 'exchange rate', may impact the word count, as shown in Figures 6b and 6c. The same argument holds when one combines 'inflation' and 'inflation expectations', as shown in Figure 6d, and 6e. In case the investigator is interested in specific episodes the word combinations that are appropriate are different, as seen in Figure 6e which highlights instances when the SARB identifies inflation rates considered high.[23]

[23] The appendix contains the list of word combinations examined. Only a few are shown here.

While all of the foregoing examples illustrate the usefulness of word counts, they cannot substitute for the context or tone of the document. Hence, the expression 'high inflation' lacks context because it does not convey information about whether inflation is too high relative to the inflation target agreed to with the government, based on the SARB's own inflation forecasts, or in historical terms. In the case of tone, interpretation is in the eye of the beholder or, rather, dependent on the algorithm(s) used to extract this kind of information. Several algorithms are available (see the Appendix for a partial list) with many consisting of black boxes as they are only commercially available. One such algorithm, DICTION (Hart et. al., 2016), has in common with most algorithms that a collection of words, or dictionary, is used to quantify the tone of a document. As Loghran and MacDonald (20111, 2016) point out, the construction of such a dictionary is not innocuous since terms used in Finance differ from, say, ones used to interpret political documents. Hence, reliance on such algorithms requires that the underlying dictionary be modified for the type of document being examined. Indeed, as a result, it is conceivable that, even if done properly, two different algorithms can lead to different interpretations of the tone of a document (e.g., see Siklos (2020), and Lombardi et. al. (2019)).

Figure 7 illustrates the content of the SARB's MPS along four dimensions. They are: optimism, uncertainty, commonality (i.e., reflecting the consensus inside the SARB's monetary policy committee), and complexity. If tone reflects views along these dimensions, then they ought to be correlated with indicators such as asset prices. Indeed, as illustrated in Table 3, changes in the SARB's policy rate (the repo rate) are sensitive to the tone of the MPS as, word counts, more so than the usual 'surprise' or news variables that reflect unexpected changes in regular macroeconomic announcements. Hence, data permitting, the kind of analysis routinely done on financial data from AE carries over to data from EME.

More recently, the evaluation of the content of central bank documents have turned to machine learning tools. One especially popular one is Latent Dirichlet Allocation (LDA). The methodology relies on probabilistic measures linking words to topics and then from topics to documents. Hansen, McMahon and Prat (2018), Oshima and Matsubyashi (2018), Jegadeesh and Wu (2017), and Siklos et. al. (2018) use this approach to interpret the content of Fed, Bank of Japan, and Bank of Canada documents. Potential drawbacks of the approach are the investigator must pre-specify the number and type of topic considered, and somewhat arbitrary thresholds must be set to remove words that appear too infrequently or too often. Nevertheless, the methodology has the potential to provide new insights about the content of central bank

documents by highlighting changing concerns over certain issues by policy committees over time or the extent to which central bank governors stray to discuss topics perceived to be outside their remit. As far as we are aware we have not come across a study for an EME that relies on this methodology.

Other studies in this literature have indirectly highlighted the importance of clarity in CBC. Blinder (2007), and Fratzscher and Ehrmann's (2007), focus on the structure of the committees (the senders) and these authors acknowledge that this can impact the clarity of the message. Fratzscher and Ehrmann (2007) argue that one size does not fit all in the sense that the differing committee structures (individualistic versus genuinely collegial) and communication approaches of the ECB and the Fed appeared to be equally successful. But there has also been some evidence that too many differing voices may cause a counter-productive cacophony (Lustenberger and Rossi, 2020).

In line with an emphasis on the clarity of the message sent, the degree to which central bank communication improves the predictability (the signal to noise ratio) of monetary policy is considered by evaluating the consistency of its communication (the degree to which its actions matched its words; Rosa and Verga (2007), Reid and Du Plessis (2010)). We argue that consistency is important because this has implications for central bank credibility which is maintained or enhanced only when its actions match its words.

While the clarity of communication is important, a second challenge to which we will now turn is that researchers are increasingly realizing that its success partly depends on the character of the recipients - the audience of the central bank is not homogenous. If the message sent is not received because the recipients are not listening (Blinder, 2018), then it is unlikely to make much difference. van der Cruijsen and Eijffinger (2010: 293) recommend that the "best communication strategy is likely to depend on the recipient."

4.2 *Audience Heterogeneity*

4.2.1. Identifying separate audiences

The recipient of the central bank's message (the audience) comprises a heterogeneous group of people, who are unlikely to respond to the central bank's message in the same way. While capturing the full heterogeneity of the audience is unlikely to ever be possible, there has been increasing effort to divide the audience into a few smaller groups from society, the behavior of

which would be more homogenous within group, potentially enabling a better tailoring of the communication directed at this group. Typically, countries survey a group of financial analysts (professional forecasters) and perhaps households. South Africa also conducts separate surveys of the business sector and the trade unions, collected by the Bureau of Economic Research (BER) since 2000.

In their review paper, Blinder et al (2008) highlighted that all the progress within academic research up until that point was focused on financial markets as recipients of the central bank's message. The authors encouraged the academic community to explore the general public as well. This group is more likely to reflect the views of the price (and wage) setters in the economy. 'In the end, it is the general public that gives the central bank their legitimacy, and hence their independence.' (Blinder et al, 2008:47). The motivation for studying the expectations of households separately from financial experts begins with the need to build institutional credibility in order to secure public support for central bank independence and trust in the central bank's monetary policy decisions. Secondly, it is argued that the successful management of expectations would improve monetary policy effectiveness. There is evidence that the expectations of households differ from that of financial analysts and that this difference has economically important effects (Coibion and Gorodnichenko (2015), Binder (2017a)), so studying the expectations of households independently from those of financial analysts is important. This conclusion holds regardless whether the economy in question is an AE or EME.

Binder (2017a) surveys the strand of the literature focusing on central bank communication with households. The extent to which households are informed about monetary policy has been explored for some countries. For example, van der Cruijsen and Eijffinger (2010a) find that Dutch households are poorly informed.[24] One explanation for this is that households devote less attention to the topic, in line with the theory of rational inattention (Sims, 2010). We need to question how we can determine whether a central bank has achieved some degree of success in what is admittedly a difficult task, namely reaching the public and influencing their expectations. Blinder (2018) urges central bankers to keep trying to communicate with the public, even if he is not optimistic that they will be very successful, because the public is not likely to choose to listen. However, Haldane and McMahon (2018: 582) argue that 'success

[24] van der Cruisjien (2010a) look at Dutch households. In contrast by Blinder and Krueger (2004) find that the knowledge of the U.S. population about a broader set of economic policies was on average correct (although there was a large standard deviation).

should be measured, not by the ability to reach everyone, but rather to influence beyond the small minority of technical specialists and information intermediaries who currently form the core of central banks' audiences.'

More recently, a few researchers who study non-financial experts are making the distinction between the inflation expectations of households and those of firms.[25] While the theoretical support for this distinction is not difficult to justify, the lack of good quality data for the firms has limited evaluation of this group (Coibion *et al.*, 2020). This, despite the fact that central bankers (e.g., Bernanke (2007), and Yellen (2016)) have themselves repeatedly highlighted the scarcity of this kind of critical data.

Finally, another audience worth understanding more closely is the media, which is much more likely than a central bank itself to reach the public (and even the firms). Reid *et al.* (forthcoming) propose that the media should not be described as a 'channel' through which central bank communication is transmitted to the public. This is a misrepresentation of the media as a passive participant. Again, this audience has received limited attention, due primarily to a lack of data (they are not surveyed). However, the adoption of big data and data science techniques is likely to shortly fill this gap.

4.2.2 Some Challenges in Measuring Inflation Expectations

The primary data used to assess the success of central bank communication is inflation expectations data, either from asset prices or survey data. In the case of non-financial experts, surveys are our primary source of information. We argue that more deliberate attention typically needs to be devoted to the design of the survey questions before interpretation commences. For example, Bruine de Bruin *et al.* (2010) questioned the choice to use simplified wording (the term 'prices in general' instead of 'inflation') in the Michigan Survey of Consumers. They found that the inflation expectations of respondents were higher and more dispersed when the phrasing 'prices in general' was used rather than 'inflation', and that the use of the simplified wording focused respondents relatively more on their personal price experiences (relative prices). Similarly, Pienaar (2018) used a combination of qualitative and quantitative methods (mixed methods)[26] to examine how households in South Africa

[25] In South Africa, trade unions are surveyed as noted previously. To the best of our knowledge it is the only survey of its kind internationally.

[26] Pienaar collected the qualitative data and used this to design a large-scale survey questionnaire (sample size is about 2500). The survey was conducted by AC Nielsen as part of their omnibus survey. The survey data includes

understand the terms ‘inflation’ and ‘prices in general’. He found that although a large proportion of households do not understand the term inflation, using the phrase ‘prices in general’ (simplified wording) does not improve their understanding much.

Another consideration is the inclusion of additional information in the survey question, such as the historical inflation number. Coibion *et al.* (2020) list ‘priming’ of answers (either by providing a historical inflation number to the respondents or restricting their answers to bins) as one common error for surveys. They identify the Italian survey of firms as an example of where a historical inflation number is provided to respondents in the survey question; and the Business Outlook Survey of the Bank of Canada (https://www.bankofcanada.ca/publications/bos/) as an example of where a limited number of bins is presented to the respondents thereby limiting the range of acceptable figures. As an emerging market economy example, Reid *et al.* (2020) investigate the impact of including the historical inflation number in the survey question directed at South African households, arguing that it appears to provide an anchor in the manner hypothesized by Tversky and Kahneman (1974). They find that the inclusion of the historical inflation number in the survey question does have an impact on the survey responses and that the impact of the anchor number appears to be larger for the group of respondents that were originally less rational in the absence of the historical number.

Acknowledging the fact that the design of survey questions needs to be more carefully considered, existing household surveys have enabled research into expectations formation processes of the public and the effectiveness of central bank communication. Despite the fact that households seem relatively poorly informed about monetary policy, there is some evidence (Binder, 2017a) that inflation expectations of households in the US are slightly better anchored since the 2012 announcement of a 2% target, but that this change was mostly driven by a particular group - (male, college graduates, with stock market investments).[27] In other words, there remains notable heterogeneity amongst the responses of households that seem to be explainable along socio-economic lines. Similarly, using South African household data, Reid et. al. (2019) find behavioural biases in the reported inflation expectations of households. These

sample weights so that the data scaled to be representative of the South African population that lives in metropolitan areas.

[27] This is in line with Blinder and Krueger's (2004) findings about knowledge among the U.S. population concerning a broader set of economic policies.

socio-economic characteristics also appear to interact with the communication of the South African Reserve Bank, as well as whether inflation was rising or falling at the time.

4.2.3 How to communicate with non-financial experts

If an urgent policy question for policy makers is *how* to communicate with households, we need to think carefully about how to measure success in this regard. The reliance on market prices to influence and inform the public is insufficient (Haldane and McMahon, 2018), but it is very important not to overlook an important trade-off. If communication is simplified beyond some threshold there is a risk that the information provided may become meaningless and equivalent to a 'dumbing down of monetary policy'. The use of the phrase 'data dependent', favoured by many central banks, presents such a risk. In addition, a central bank must also consider financial stability, which is even less amenable to simple stories.

Early surveys indicate that there has been a degree of success. As discussed earlier, several central banks are attempting to engage more directly with the public by considering the complexity of the language used in their communications. For example, in November 2017, a broader-interest version of the quarterly Inflation Report (IR) of the Bank of England was published alongside the traditional, more technical IR. Haldane and McMahon (2018) conducted a controlled experiment to evaluate the extent to which this new layered communication improved the understanding of the survey participants, as well as influenced their views of inflation and their perceptions of the Bank of England. They found that the new, layered communication improved all three outcomes, even for more traditional audiences.

Using a randomized control trial, Coibion *et. al.* (2019) propose that simple messages about the objectives of the central bank are more effective than the usual reaction to monetary policy statements. However, when this message is received in the form of a media report, the response is more muted suggesting it is taken less seriously. This too suggests that, if a central bank has sufficient credibility, there may be a benefit to communicating more directly.

As soon as we contemplate CBC with the public, we need to reflect on the fact that the message this audience receives about monetary policy is predominantly intermediated at this point. Carroll (2003) suggests that the inflation expectations of price setters are influenced by those of financial experts because they are quoted in the media. The role of the media, while undisputed has not received a lot of academic attention yet, although textual analysis is likely to encourage more researchers to do so. Since Carroll (2003) there have been a few papers that

explored more directly the role of the media (Berger, Ehrmann and Fratzscher (2011), Reid and du Plessis (2011), Lamla and Lein (2015), and Reid *et. al.* (2020) reporting mixed results about how well the media performs this task.

(Reid *et al.*, forthcoming) conclude that it is crucial to recognise that the media does not provide a 'channel for communication' from the sender to the recipients. Using content configuration analysis on South African newspapers, they identify four actor groups involved in inflation narratives that appear in newspapers – the SARB, financial experts, consumers and the media itself. Each of these actors understands inflation and the role of the SARB differently, based on their different models of the economy, and crucially, the media is an active participant that attempts to gather and interpret information about the economy (which includes the communication of the SARB). They identify a set of challenges to the SARB's communication strategy, which predominantly relies on the media to reach the public. However, Binder (2015) argues that the ability of the media to improve 'informedness' is well established in the political communications literature and this has influenced some important institutions. Respecting the media as an independent, thinking participant is necessary, and communicating with the public directly is becoming far more common internationally (Haldane (2017) and Stankova (2019)). In addition to communicating optimally with the media, it is necessary to attempt to understand the characteristics, and challenges of the media in a particular country (Stankova, 2019), and to listen to the audience (two way communication).

4.3 The influence of the state of the economy

The third challenge we focus on in this paper is how CBC is influenced by the state of the economy. Central banks always face some degree of uncertainty while conducting monetary policy, but a distinction should be made between extreme conditions where conventional monetary policy becomes ineffective (which we will label *unconventional times*) and ordinary uncertainty about the state of the economy.[28] In unconventional times, the role of communication is elevated (may even act as a substitute for conventional monetary policy) because of high levels of uncertainty about the state of the economy, but also because of uncertainty about the effectiveness of traditional tools and the introduction of new tools may reduce the predictability of policy actions (Coenen *et al.*, 2017). Evaluating data from a set of

[28] Uncertainty comes in many forms and the topic has attracted increased interest in recent years. In principle, any kind of economic uncertainty, including policy uncertainty, may be linked to communication. The relevant literature has expanded rapidly. See Castelnuovo (2019), and references therein, for a survey.

advanced economies that have had recent experience with unconventional policies, Coenen *et al.*(2017) show that efforts to clarify new policy tools reduced market uncertainty, and that emphasising the state-contingent nature of the central bank's reaction function increased clarity when using forward guidance. Nevertheless, actions can and do speak louder than words because communication alone cannot replace actual policies when observed macroeconomic and financial outcomes leave no options available (e.g., as in when credit markets freeze, become dysfunctional, or liquidity dries up).

The choices in economies that are not facing unconventional circumstances may be less severe, but these periods are also crucial for building central bank credibility. There is always some degree of uncertainty and, generally, there is widespread agreement that policymakers should aim to reduce the uncertainty introduced by their own actions (Coenen *et al* (2017); Cecchetti and Schoenholtz (2019) and references therein). Moreover, since economies in the throes of introducing unconventional policies have been among the group of AE, while EME have managed to avoid them, at least until the covid-19 pandemic, the burden on the latter group may well become greater as the gap between them grows.[29]

Cecchetti and Schoenholtz (2019) interviewed 24 former officials, academics, and market economists in the US to identify ways to improve the communications framework of the Fed. They isolated 3 guiding objectives from these interviews – simplify public statements (without hiding the diversity of views within the committee); clarify how policy will react to changing conditions (the reaction function); and highlight policy uncertainty and risks. They concluded by proposing a simplified post-meeting statement and a more concise Report on Economic Projections. These suggestions aim to broaden access to this important communication, and to acknowledge in a precise and accessible manner the uncertainty involved and the Committee's commitment to correct any errors.

Communicating uncertainty about the evolution of the economy and the policy reactions that will be warranted under those circumstances is particularly difficult and it is therefore unsurprising that policy makers often attempt to preserve their discretion. Two ways in which they can preserve discretion is by writing very long statements or to emphasis 'data dependence'. Long statements tend to list many risks and uncertainties without offering insight

[29] The foregoing characterization is a bit of an exaggeration since gaps of this kind can well emerge among AE or EME. The example of Greece, during the Eurozone's sovereign debt crisis, is one example.

into the relative weights the committee members place on each. Data dependence is usually presented as a way of emphasizing that the reaction of the central bank will depend on the evolution of the economy. While this is a reasonable approach, it does present potential risks. It can be used excessively as a way to maintain discretion, and it focuses the attention of the public on the latest release of data, which is historical in nature and undermines the forward looking nature of monetary policy making (Reid *et al.*, forthcoming). Data dependence is also risky when history offers few examples central banks can learn from. The GFC is an example as is the evolving response to the ongoing covid-19 pandemic. In these circumstances, uncertainty ought to be acknowledged but communicating action, that is, doing "whatever it takes", takes precedence over caution, at least for a time.

5. Conclusions: The Future of Central Bank Communication

Inflation expectations and the use of central bank communication to build credibility and manage expectations remains a work in progress. This undermines the confidence with which policy makers rely on expectations data to guide policy and use communication as a policy tool. Despite this, central banking has undergone a 'quiet revolution' towards greater transparency, which is a 'one-way street'.

In this paper, we review the historical experience and the now large empirical literature, to provide perspective on our current state of knowledge. We pay particular attention to the experience of emerging markets, notably South Africa, comparing their experience with that of the advanced economies. We review the historical experience, discuss various forms of communication, and then consider a limited list of major challenges that face central banks who are attempting to use communication as a policy tool.

We conclude that the success of central bank communication should be evaluated against its goals – to build institutional credibility and to improve the effectiveness of monetary policy by managing expectations. We argue that these two goals are well supported by the principles of clarity, credibility and consistency (the 3 Cs).

Finally, except under crisis conditions where conventional monetary policy might become ineffective, central bank communication should remain a complement, rather than a substitute for conventional monetary policy. While communication can act as a substitute at a point in time, without a track record of matching words with actions (*consistency*), or at least the

institutional *credibility* to maintain the trust of the public when there is a deviation from a formal or informal target, communication is unlikely to be effective.

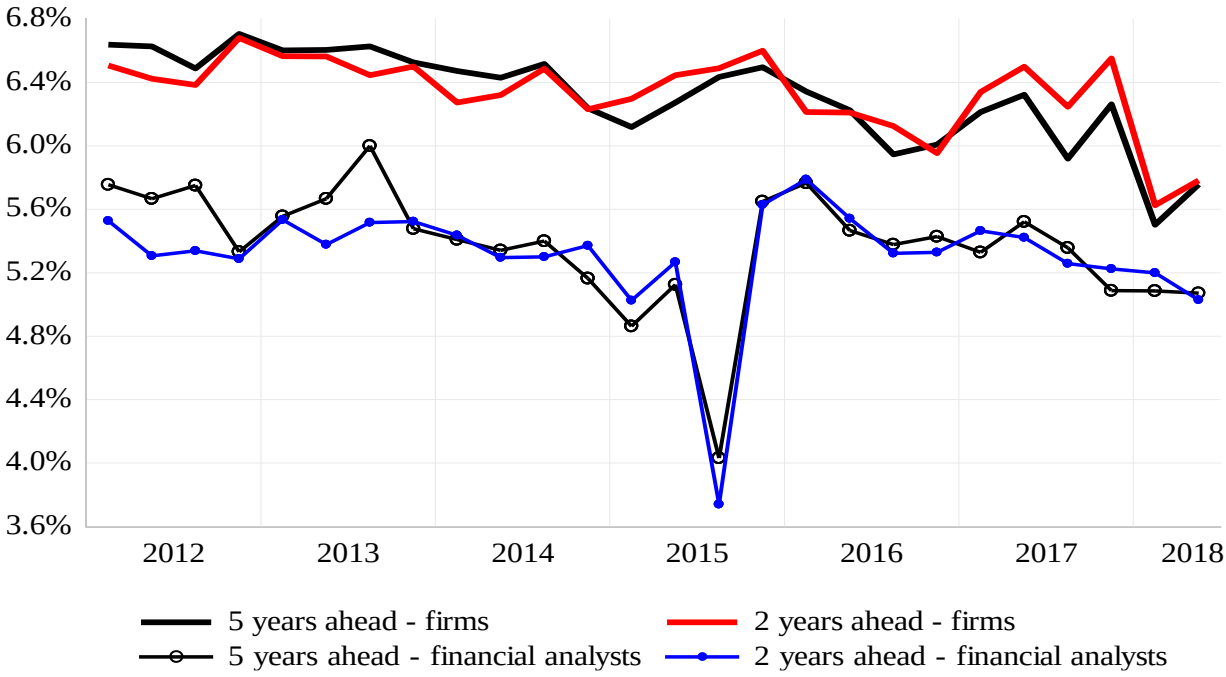
Mandates matter as a first way to communicate clearly and in a manner that is accountable. This allows the consistency and track record of the central bank to be evaluated, and therefore it may be prudent for a central bank to embrace a degree of humility and communicate mistakes. The early experience of the Bundesbank suggests that imperfect achievement of the target is in itself not enough to undermine credibility (Bernanke *et al.*, 1999).

Going forward, the task central banks have faced have been facilitated somewhat by the focus on inflation performance as more and more governments have mandated a price stability objective. However, the period since the GFC has been characterized by large interventions in financial markets that continue to this day. Moreover, at least in AE, the monetary authorities have been faced with inflation rates that under-perform relative to their mandate while EME continue to face the prospect of targeting inflation from above their stated targets (Ehrmann 2015, Bordo and Siklos 2019). In some AE, notably the U.S. and the Eurozone, these developments are contributing to revisit their policy strategies including how and what central banks communicate. Finally, after many years during which policy makers extoled the virtue of a domestically oriented monetary policy as best practice, doubts have resurfaced. The emergence of China, an EME that is also systemically important, together with the persistence of global spillover effects, signals renewed interest in policy cooperation, if not coordination, between nations as well as between central banks and their governments. This promises not only to potentially rewrite the 'contract' of central bankers but their hard-won autonomy. Clearly, how these changes are communicated will also play a critical role, in the not too distant future.

Finally, the arrival of the covid-19 pandemic is also likely to challenge how central banks communicate. First, central banks have to guard against panic as their interventions go beyond financial markets and the support of government debt, to potentially supporting the public directly. The 'whatever it takes' strategy may well appear to resemble an incoherent one that becomes increasingly difficult to communicate and severely tests the monetary authorities' credibility. Second, the distance between fiscal and monetary authorities will have narrowed considerably as central banks are called upon to engage in direct monetary financing with few indications about the likely timing and form of an exit strategy. Despite a decade of distance

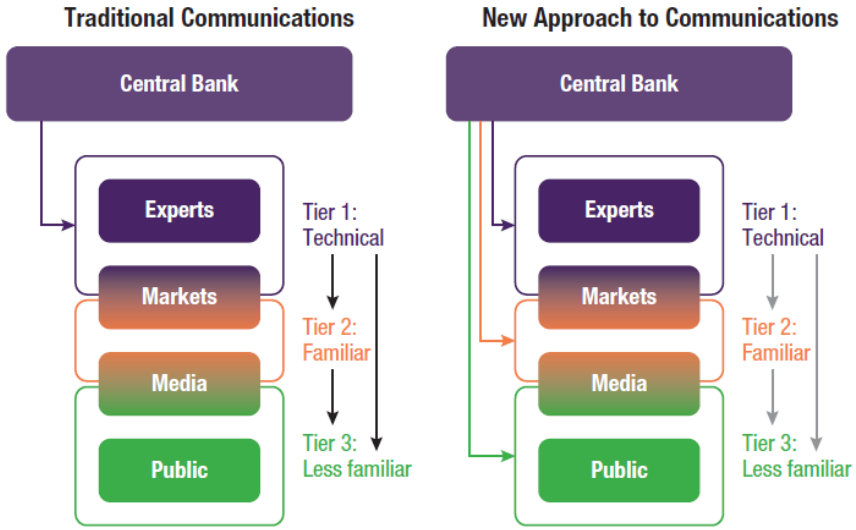
from the GFC several major central banks never really exited the extraordinary conditions faced in 2008-9. Communicating autonomy under the circumstances is likely to be challenging. Third, although reversals in the spread of central bank transparency since the late 1990s have been extremely rare, the current uncertainty over the ending and consequences of the pandemic may well result in reduced transparency among some central banks. Clearly, a new chapter in central bank communication and transparency is about to be written.

Figure 1 Long-term Expectations in an Emerging Market Economy: the Case of South Africa



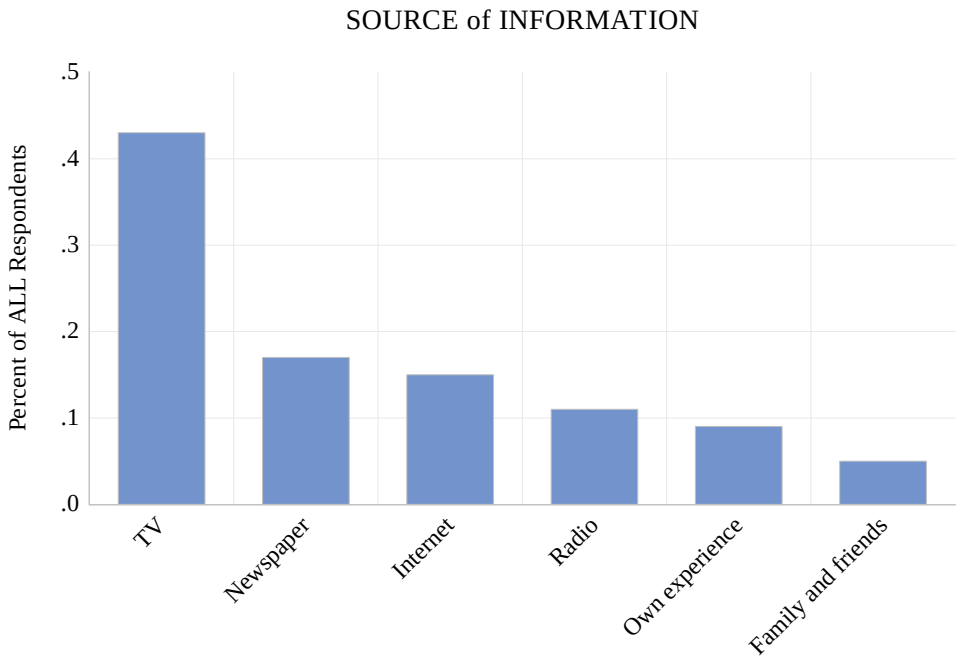
Source: Reid and Siklos (2020). The data refer to mean expectations for each calendar year from a quarterly survey of businesses and financial analysts in South Africa. Expectations for 2 and 5 years ahead are displayed. Five year ahead expectations were first surveyed beginning in the second half of 2011.

Figure 2: Direct versus indirect forms of central bank communication



Source: Stankova (2019)

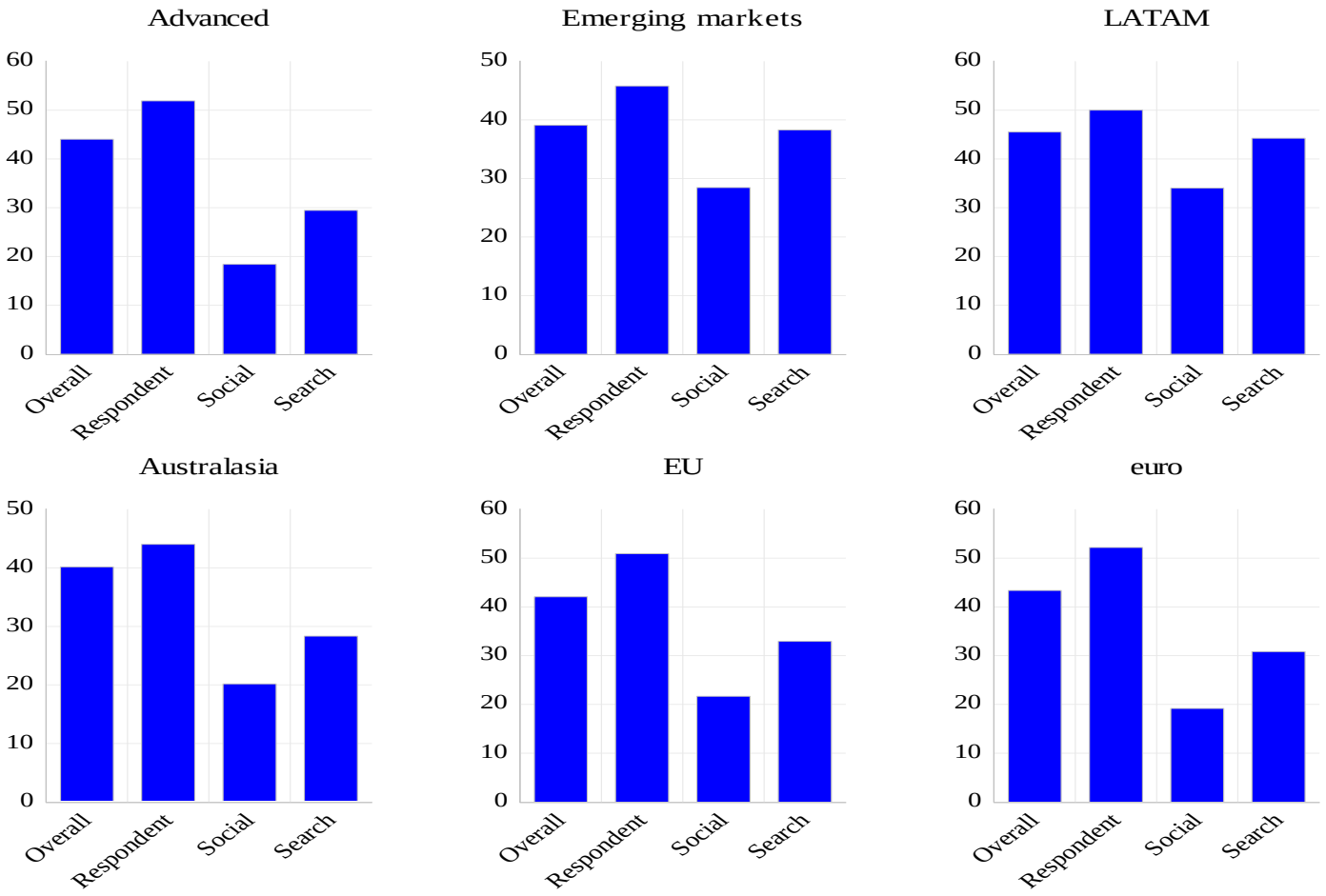
Figure 3 –Information Sources: The Experience from South Africa



SOURCE: Survey data collected by the authors (via AC Nielsen).

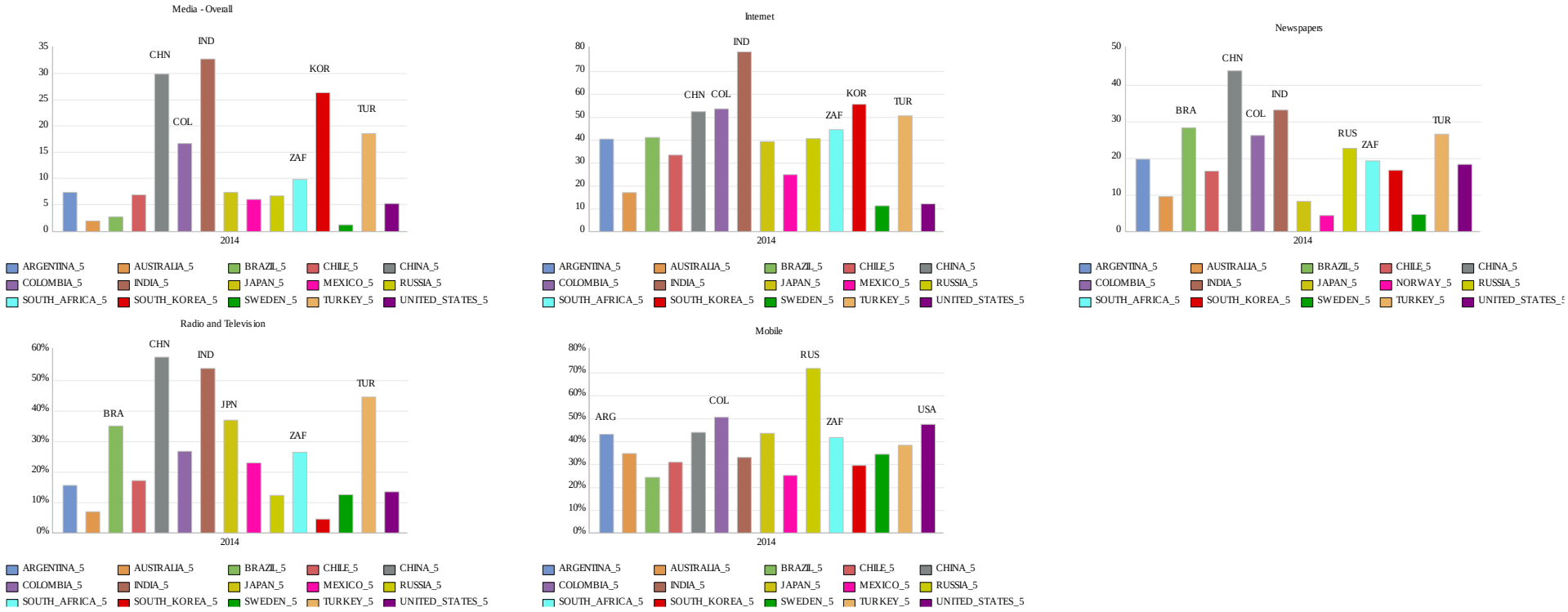
Figure 4 – Who Listens to What? Some International Evidence

Figure 4 (cont'd) Trust in Sources of News



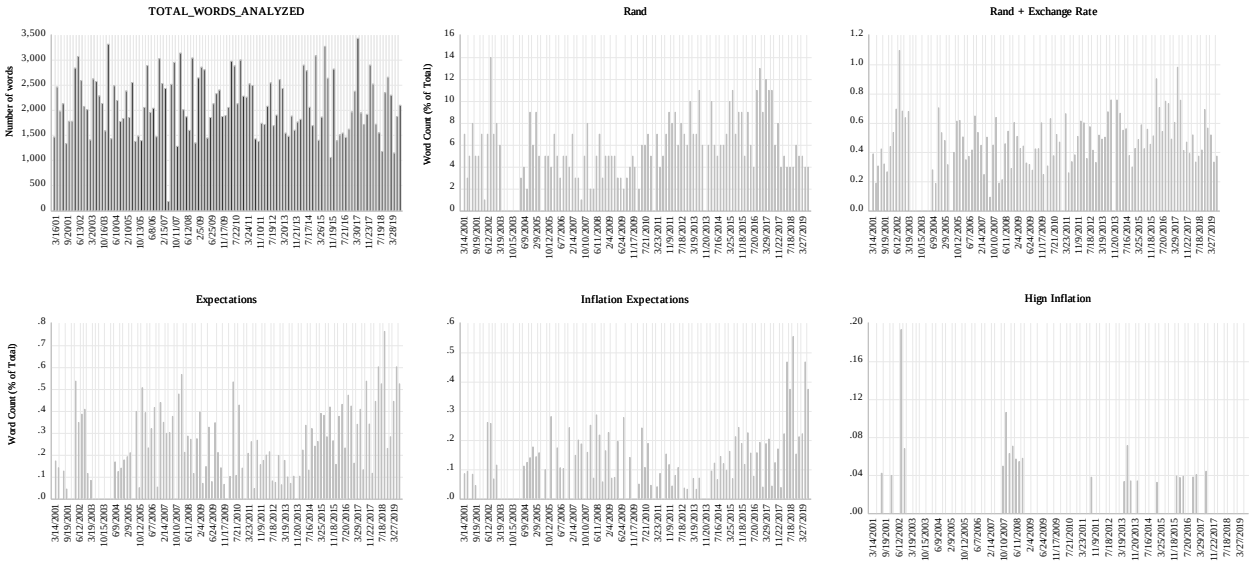
Note: Social = Social Media; Search = Search Engine; Respondent = trust in; 'own' ability to identify main information. **Q4.** You say you've used these sources of news in the last week, which would you say is your MAIN source of news?" Source: Reuters Institute Digital News Report 2019, Nic Newman with Richard Fletcher, Antonis Kalogeropoulos, and Rasmus Kleis Nielsen

Figure 5 Who Never Listens to News and Which Media?



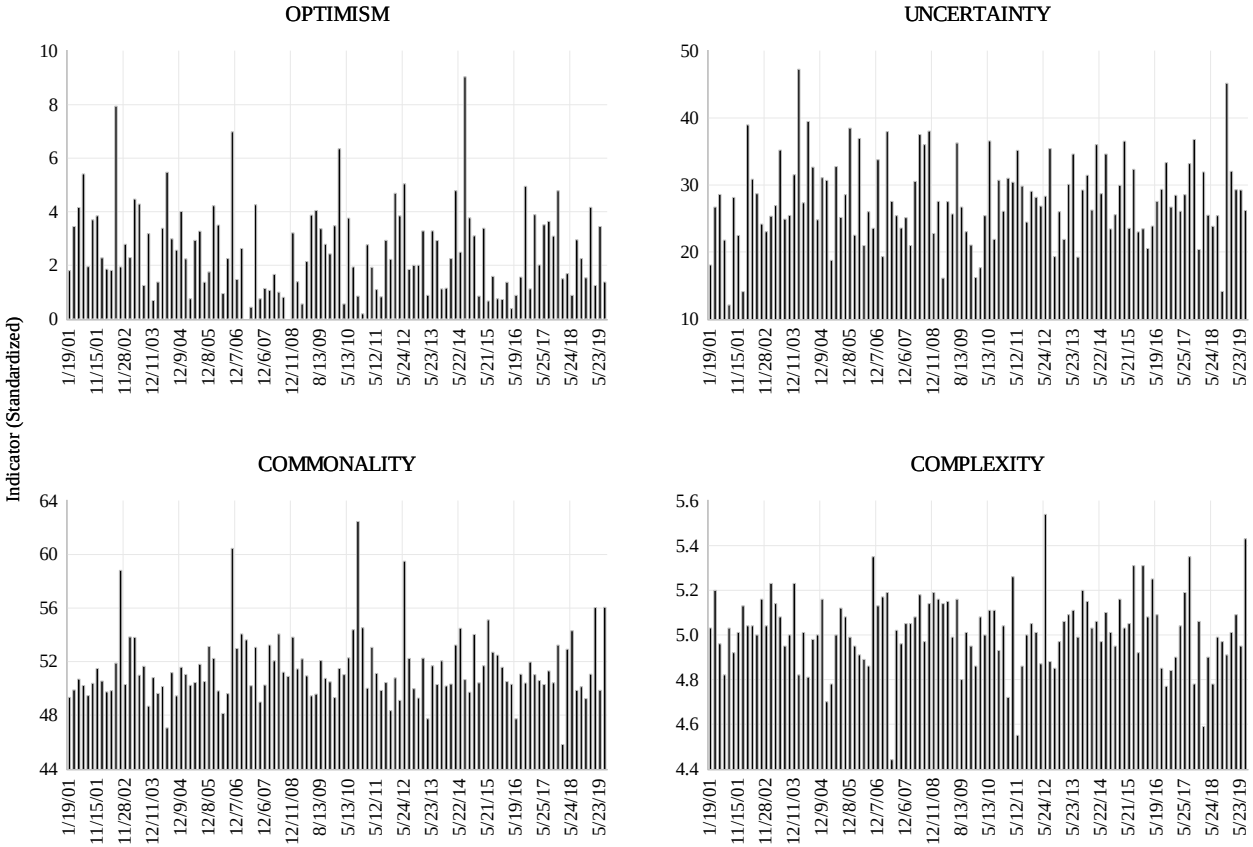
Note: Inglehart, R., C. Haerpfer, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin & B. Puranen et al. (eds.). 2014. World Values Survey: Round One - Country-Pooled Datafile.
Version: www.worldvaluessurvey.org/WVSDocumentationWV1.jsp. Madrid: JD Systems Institute.

Figure 6 Word Content of South African Reserve Bank's Monetary Policy Statements



Source: South African Reserve Bank, Monetary Policy Statements (MPS), since 2001. Dates are mm/dd/yy. The vertical bars show the number of total words in each MPS (TOTAL_WORDS_ANALYZED), and the words count as a percent of the total number of words in each MPS.

Figure 7 The Tone of MPS Statements



Source: See Figure 6 for the data source. DICTION (version 7) is used to quantify the content of MPSs using the dictionary of Lombardi et. al. (2019). Optimism, uncertainty, and complexity are as the terms are generally understood. Commonality refers to the extent to which the MPS reflects the consensus of views within the monetary policy committee

Table 1 How Backward-Looking Are Inflation Expectations: Some Suggestive Econometric

Country Date IT adopted	Sample (YR:Q)	$\hat{\lambda}$ - Equation (1)	$\hat{\lambda}$ - Equation (2)	Breaks - Equation (1)	Breaks - Equation (2)
ARG	98:2-17:3	0.19	0.43	03:1	02:3
AUS – 93:1	93:1-17:3	0.18	0.28	08:4	00:3/12:1
BRA – 99:2	97:4-17:3	0.07 (NS)	0.30	04:1	04:1
CAN – 91:1	92:4-17:3	0.27	0.38	NIL	NIL
CHL – 90:3	98:1-17:3	0.09	0.22	10:3	NIL
CHN	97:1-17:3	0.41	0.31	00:1/12:3	NIL
COL – 99:3	95:1-17:3	0.27	0.36/0.17	99:1/02:3/10:3	02:4/09:1
CZE – 98:1	97:1-17:3	-0.01 (NS)	0.28	NIL	NIL
EUR	00:1-17:3	0.35	0.26	NIL	13:1 (3 breaks if sample begins 1980: 96:3/00:2/13:2)
GBR – 92:4	93:1-17:3	0.19	0.52	NIL	05:2/12:2
HUN – 01:1	92:4-17:3	0.17	0.44	NIL	NIL
IDN – 00:1	93:1-17:3	0.39/0.36	0.03 (NS)/0.49	98:4/08:3	96:3/01:2/09:2
ISL – 92:1	02:1-17:2	0.14	0.16 (NS)	09:1	NIL
IND – 15:1	94:1-17:3	0.12	0.42	NIL	10:4
JPN	91:4-17:3	0.26	0.20	NIL	95:2
KOR – 98:2	93:1-17:3	0.47/0.39	0.23/0.17	97:4/10:3/01:4/05:1/10:3	96:3/12:4
MEX – 99:1	92:4-17:3	0.42/0.51	0.12/0.99	03:3/08:1	96:3/00:2/04:1/08:3

Country Date IT adopted	Sample (YR:Q)	$\hat{\lambda}$ - Equation (1)	$\hat{\lambda}$ - Equation (2)	Breaks - Equation (1)	Breaks - Equation (2)
MYS	93:1-17:3	0.11	0.29	98:4/08:1	96:3/04:2/10:4
NOR – 01:1	02:1-17:2	-0.04 (NS)	0.23	09:1	NIL
NZL – 90:1	98:1-17:3	0.13	0.30	NIL	12:1
PER – 02:1	98:1-17:3	0.02 (NS)	0.68	09:4	NIL
PHI – 02:1	06:1-17:2	0.11 (NS)	0.28	03:4/02:1/06:4/14:2	09:2
POL – 98:4	93:2-17:3	0.44/0.40	0.48/0.33	NIL	97:1/12:2
RUS – 14:1	07:1-17:3	0.58	0.45	NIL	15:1
SWE – 93:1	02:1-17:2	0.06 (NS)	0.23	NIL	NIL
THA – 00:2	06:1-17:2	-0.08 (NS)	0.30	NIL	NIL
TUR - 06	07:1-17:3	0.12	0.51	NIL	NIL
USA	91:4-17:3	0.31	0.33	NIL	02:4/12:3
ZAF	96:1-17:3	0.25	0.21	01:4/08:4	NIL

Note: 3 letter ISO codes. ARG (Argentina), AUS (Australia), BRA (Brazil), CAN (Canada), CHL (Chile), CHN (China), COL (Colombia), CZE (Czech R.), EUR (Euro Area), GBR (United Kingdom), HUN (Hungary), IDN (Indonesia), ISL (Israel), IND (India), JPN (Japan), KOR (Korea), MEX (Mexico), MYS (Malaysia), NOR (Norway), NZL (New Zealand), PER (Peru), PHI (Philippines), POL (Poland), RUS (Russia), SWE (Sweden), THA (Thailand), TUR (Turkey), ZAF (South Africa). Breaks associated with the GFC or IT are shaded in different colors. The breaks are estimated using Bai-Perron (1998, 2003a, 2003b) with the null of L+1 breaks versus L sequentially estimated. Only breaks significant at the 1% level are retained. π_{t-1} is the only breaking variable. A maximum of 3 breaks allowed. All estimates are significant at least at the 5% level. NS means the coefficient has a p-value that exceeds .05. When estimates are separated by a / this refers to pre and post-break values for λ.

Table 2: Traditional Forms of Central Bank Communication: Eight 'Representative' Cases

RIKSBANK	BANK OF CANADA	BOARD OF GOVERNORS	BANK OF ENGLAND	BANCO CENTRAL DE CHILE	BANCO DE MEXICO	BANCO DE LA REPUBLICA COLOMBIA	SOUTH AFRICAN RESERVE BANK
SURVEYS (1)	SURVEYS (2)	(18)	SURVEYS (3)	SURVEYS (4)			SURVEYS (12)
PRESS RELEASE	PRESS RELEASE	PRESS RELEASE	PRESS RELEASE	PRESS RELEASE	PRESS RELEASE	PRESS RELEASE	PRESS RELEASE
BRIEFING	BRIEFING	BRIEFING	BRIEFING	BRIEFING			BRIEFING
MINUTES (15)		MINUTES (15)	MINUTES (15)	MINUTES (15)	MINUTES (15)	MINUTES (15)	(16)
SPEECHES TESTIMONY	SPEECHES TESTIMONY	SPEECHES TESTIMONY	SPEECHES TESTIMONY	SPEECHES (17)	SPEECHES (17)	SPEECHES (17)	SPEECHES TESTIMONY
CONSULTATIONS(5)	CONSULTATIONS(5)	CONSULTATIONS(5)	CONSULTATIONS(5)		CONSULTATIONS(5)		(13)
ANNUAL REPORT	ANNUAL REPORT	ANNUAL REPORT	ANNUAL REPORT	ANNUAL REPORT	ANNUAL REPORT	ANNUAL REPORT(6)	ANNUAL REPORT
FINANCIAL STABILITY REPORT	FINANCIAL STABILITY REPORT	FINANCIAL STABILITY REPORT	FINANCIAL STABILITY REPORT	FINANCIAL STABILITY REPORT	FINANCIAL STABILITY REPORT	FINANCIAL STABILITY REPORT	FINANCIAL STABILITY REPORT
MPR(7)	MPR(7)	MPR(7)	MPR(7)	MPR(7)	MPR(7)	MPR(7)	MPR(7)
CONFERENCES CALENDAR WORKING PAPERS AWARDS	CONFERENCES CALENDAR WORKING PAPERS AWARDS	CONFERENCES CALENDAR WORKING PAPERS AWARDS	CONFERENCES CALENDAR WORKING PAPERS AWARDS	CONFERENCES CALENDAR WORKING PAPERS AWARDS	CONFERENCES CALENDAR WORKING PAPERS AWARDS	CALENDAR WORKING PAPERS	CONFERENCES CALENDAR WORKING PAPERS AWARD
ECONOMIC REVIEW(8)	ECONOMIC REVIEW(8)		ECONOMIC REVIEW(8)	ECONOMIC REVIEW(8)			ECONOMIC REVIEW(8)
(long-run) HISTORICAL STATISTICS (19)			(long-run) HISTORICAL STATTISTICS				
COMMUNICATIONS POLICY	COMMUNICATIONS POLICY	COMMUNICATIONS POLICY	COMMUNICATIONS POLICY		COMMUNICATIONS POLICY		
(9)	(9)	MODEL POLICY RULE (14)	(9)				
STRATEGIC PLAN	STRATEGIC PLAN (10)	(10)	STRATEGIC PLAN	STRATEGIC PLAN	STRATEGIC PLAN I11)		STRATEGIC PLAN I11)
GOVERNANCE DOCUMENTS	GOVERNANCE DOCUMENTS	GOVERNANCE DOCUMENTS	GOVERNANCE DOCUMENTS	GOVERNANCE DOCUMENTS	GOVERNANCE DOCUMENTS	GOVERNANCE DOCUMENTS	GOVERNANCE DOCUMENTS

Notes: 1. Business, risk, financial markets; 2. Business outlook; 3. Inflation attitudes, households, decision-maker panel; 4. Financial traders, economic expectations; 5. Riksbank: occasional external reviews; 6. Bank of Canada: (internal) review of the monetary policy framework; Bank of England: independent reviews of selected Bank operations; Mexico: article IV; 7. Colombia has a "Governor's Report"; 8. Bank of England and Colombia: Inflation Report; Mexico: Quarterly Report; South Africa: Quarterly Bulletin; 9. Riksbank: Economic Review; Bank of Canada: Bank of Canada Review; Bank of England: Quarterly Bulletin; Chile: Economia Chilena; South Africa: Monetary Policy Review; Board of Governors: FEDS notes comes closest; 10. Riksbank, Bank of Canada, and Bank of England: working papers and other document only; Bank of Canada and Board of Governors: augmented by separate strategies for different functions (e.g., digital currency, community reinvestment act); 11. Annual not medium-term. Not necessarily identified as such or incorporated into Annual Reports; 12. Reputational survey (not published); 13. Economic Roundtables; 14. Since July 2017, in Monetary Policy Report; 15. All CB, except Riksbank, do not name participants' views. Voting results are provided; 16. The SARB provides a policy statement that is much longer than any other CB. 17. Testimony to parliament (committee). Chile, Mexico, and Colombia provide reports to their legislatures; 18. Regional Fed's publish inflation expectations surveys (e.g., Philadelphia, Atlanta, Cleveland); (19) refers to the publication of macroeconomic and financial series that extend back to the creation of the central bank and/or before.

Surveys refers to surveys of inflation expectations; other surveys (e.g., consumer finances by the Fed) may be published.

Sources: Central bank websites. Information collected between June and December 2019.

Table 3 News, Policy Committee Meetings, and MPS Tone: Some Evidence for South Africa

Dependent Variable: change in the repo rate				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.0004	0.0005	-0.7777	0.4369
SARB_DAYS	0.0031	0.0021	1.4464	0.1483
FOMC_DAYS	0.0049	0.0017	2.9321	0.0034
PPISA_NEWS	0.0001	0.0006	0.1509	0.8801
TBALSA_NEWS	0.0001	0.0004	0.1667	0.8677
PMISA_NEWS	-0.0000	0.0005	-0.0448	0.9643
GDPSA_NEWS	-0.0000	0.0004	-0.0026	0.9980
PRIVCRSA_NEWS	0.0000	0.0005	0.0737	0.9413
TOTAL_WORDS_SARB_STATEMENT	0.0002	0.0000	23.1801	0.0000
EXCHANGERATE_PROP	0.2771	0.0198	14.0011	0.0000
IE_PROP	0.5255	0.0449	11.7106	0.0000
H_PROP	-1.4727	0.1609	-9.1505	0.0000
I_PROP	-0.8252	0.0722	-11.4316	0.0000
DD_PROP	1.5155	0.1407	10.7729	0.0000
M_PROP	-0.0945	0.0559	-1.6908	0.0911
NEGATIVE_SET_PROP	0.0162	0.0177	0.9159	0.3599
OPTIMISM_SARB	0.0101	0.0020	5.0462	0.0000
PESSIMISM_SARB	0.0176	0.0011	15.6447	0.0000
AGREEMENT_SARB	-0.0062	0.0009	-6.5215	0.0000
UNCERTAINTY_SARB	-0.0050	0.0006	-8.8139	0.0000
COMPLEXITY_SARB	-0.0500	0.0162	-3.0909	0.0020
COMMONALITY_SARB	-0.0053	0.0017	-3.1840	0.0015
R-squared	0.5402			
Adjusted R-squared	0.5335			
S.E. of regression	0.0173			
Sum squared resid	0.4301			
Log likelihood	3860.0253			
F-statistic	80.3875			
Prob(F-statistic)	0.0000			

Note: Least squares estimates. *_days refers to a dummy variable for the meeting days of the U.S. FOMC and the SARB's MPC. *_News refers to the standardized difference between actual and expected estimates for the following macroeconomic announcements: trade balance (TBALSA), PMI (PMISA), GDP (GDPSA), private credit growth (PRIVCRSA). TOTAL_WORDS is as defined in Figure 6. *_PROP is the proportion of the word count for Housing (H), Money growth (M), Deficit (DD), I (industrial production), and IE (employment). Optimism, Pessimism, Agreement, Uncertainty, Complexity, and Commonality (Tone as measured by DICTION). See Figure 7.

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