Dissemination of Information by the Federal Reserve System: An Overview and Benchmark

Araujo, Luiz Nelson

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Luiz Nelson Porto Araujo*

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* Economist. Partner at Delta Economics & Finance. Former professor of Economics and Finance at Department of Planning and Economic Analysis at EAESP-FGV, and Department of Economics at Mackenzie University. This paper was motivated by a conversation, in July 2016, with Alicia Shroff, Digital Content Coordinator, St. Louis Federal Reserve Bank. Claudia Regina Belucio Araujo, Denis Roberto Castro, and Jairo Saddi made helpful comments. Maria Paula Porto and Valeria Porto did excellent research assistance. Email: lnelson@deltaef.com.

Contents

Abstract

This paper examines the Federal Reserve System's dissemination of information strategy to see how well it has worked and how it can be improved. The System provides information to a broad spectrum of individuals and organizations (such as, but not limited to, the Congress, other federal agencies, state and local governments, consumer and community groups, analysts, bankers, investors, researchers and academics, financial institutions regulated by the System, the media, and the general public), referred to as "stakeholders". This information covers an array of subjects with varying degrees of importance and impact on monetary and public policy and economic conditions.

Social media is a relatively recent innovation that allows for corporate communications opportunities that a decade ago would not have been plausible. In particular, social media allows companies to communicate directly and instantly with their stakeholders, marking a shift from the traditional one-way to two-way communication. Engaging in social media has not been as straight forward for central banks.

With approximately two billion people using social media around the world, central banks must seriously consider how to engage with stakeholders through alternative channels. And simply establishing a presence on social media is not enough – stakeholders will increasingly expect banks to use social channels to deliver faster and more effective information about monetary policy and financial stabilization; share upcoming events; offer knowledge about regulations; and provide a feedback mechanism about the accomplishment of their policy objectives. Most central banks are not delivering such services today.

The evidence collected, for the first time, shows a high level of discrepancy in relation to the use of social media channels to disseminate information among Banks in the Federal Reserve System. First, the overall quality, and frequency of information available to their stakeholders in their websites varies. Second, the use of social media channels in terms of content, quality, and frequency is also distinct. Third, the use of channels is highly concentrated: (i) in the case of Facebook, The New York Bank represents 35.3% of total followers, with St. Louis and San Francisco with nearly 17.0% each; (ii) for YouTube, The Board of Governors accounts for 65.5% of total followers; (iii) for Twitter, The Board represents 39.5% of total followers; and (iv) in the case of LinkedIn, The Board represents 31.4% of total followers, with Atlanta, Chicago, and San Francisco with nearly 10.0% each.

Overall, the Federal Reserve System adopts and makes available to stakeholders the same platforms for the dissemination of information. They use the same general structure of alternatives, but with significant differences in accessibility, availability, and quality. There are many options to improve the current offerings in these three attributes when one takes into account not only the best practice within the System but also that adopt by central banks in other jurisdictions, and even organizations in the private sector. The social media channels should be considered by central banks not as an instrument for better transparency but, instead, as an up-to-date communication instrument. An even more restricted environment is observed for the Banks' presidents, with only three of them present on social medias (two on Facebook and two on Twitter). The president of the Dallas Bank communicates using both channels.

JEL Codes: E58, E59

Keywords: Federal Reserve System, Federal Reserve Banks, Fed, Central Bank Communication, Central Bank Dissemination of Information, Social Media Channels

1 Introduction

In most countries, the formation of economic policy is a balancing act between achieving high economic growth and financial stability, while targeting low inflation. The relative importance of these objectives is dynamic, and varies depending on the prevailing local and external conditions. In general, these conditions comprise not only economic but also political and economic issues and directives. The role of the central bank in policy formulation and implementation is undisputed.[1]

In order to delivery on its mission a central bank is accountable for its actions to a great variety of stakeholders (individuals and organizations), which include, but are not limited to, the Congress, other federal agencies, state and local governments, consumer and community groups, analysts, bankers, investors, researchers and academics, financial institutions regulated by the bank, the media, and the general public.[2] The dissemination of information to these stakeholders is a major action performed by central banks, especially when one takes into account the immense resources necessary to respond to the varied demand presented by these stakeholders in terms of the attributes of the information provided to them. In general, central banks do a lot of communication, but how well are they doing it? Are they engaging effectively with their stakeholders?

Most studies of central banks communication focus on speeches, press releases, minutes, and transcripts, especially within the context of monetary policy conduct. These are the "traditional" platforms. And, even though many of those attributes are thoroughly discussed no detailed analyses have been done about the platforms of communication, and social media channels used by central banks in different jurisdictions. The term "social media" refers to online instruments of communication, which are used to create, share and exchange information and ideas. The eight main social media channels currently in use are: Facebook, Twitter, YouTube, LinkedIn, Flickr, Pinterest, Google+, and Slideshare. In most cases, central banks use social media to communicate and inform stakeholders of their role and ongoing work.

The Federal Reserve System disseminates information to a broad spectrum of stakeholders. This information covers an array of subjects with varying degrees of importance and impact on monetary and public policy and economic conditions. In most cases the use of social media channels by the Board of Governors and the Reserve Banks is simply a complement to the more traditional forms of communication. More than that, the usual website design currently and independently used by almost the entire Federal Reserve System indicates an immense gap compared to the best practices or even that adopted by central banks which have a more profound preoccupation not only about content but also form in the communications' platform.

The remainder of the paper is organized as follows. Section 2 gives and overview of the Federal Reserve System, focusing on responsibilities, decentralized structure, Board of Governors, and organizational structure. Section 3 presents general information data about the 12 regional Federal Reserve Banks. Section 4 summarizes some of the issues related to corporate communication and, in particular, social media. Section 5, the core of the paper, evaluates the dissemination of information by the Federal Reserve System and the role of transparency, reputational risk, and communication of monetary policy to its stakeholders. Section 6 evaluates the two main forms of communication used, websites and social media channels. Finally, Section 7 concludes and provides some suggestions for future research.

1. For a discussion of the role of central banks see, e.g., Blinder (1998), Bank of England (2013), and Reis (2013).
2. In most organizations stakeholders also overlap.

2 The Federal Reserve System

The Federal Reserve System is the central bank of the United States. It was created on December 23, 1913, when President Woodrow Wilson signed the Federal Reserve Act into law.[3] The system is composed of a central, independent government agency – the Board of Governors – in Washington, D.C., and 12 regional Federal Reserve Banks, located in major cities throughout the country. This structure is unique among central centrals in developed and developing regions.[4]

The Federal Reserve Banks are not a part of the federal government, but they exist because of an act of Congress. Their purpose is to serve the public. In this sense, the Federal Reserve System is both private and public. While the Board of Governors is an independent government agency, the Federal Reserve Banks are set up like private corporations.[5]

The Federal Reserve does not receive funding through the congressional budgetary process. The Fed's income comes primarily from: (i) interest on government securities that it has acquired through open market operations; (ii) interest on foreign currency investments held by the Federal Reserve System; (iii) fees received for services provided to depository institutions; and (iv) interest on loans to depository institutions. After paying its expenses, the Federal Reserve turns the rest of its earnings over to the U.S. Treasury.

The Federal Reserve System as it exists today is somewhat different than its original form, due to substantial – but rare – overhauls over the years. The three most important changes occurred in response to the Great Depression, during the 1930's, the mini-crisis of the late 1970's, and the subprime crisis of 2007, which developed into a full global financial (banking and sovereign) crisis in the following years.

2.1 Responsibilities

The Federal Reserve System conducts the nation's monetary policy and maintains the stability of the financial system,[6] through the interactions of three key entities: The Federal Reserve Board of Governors (Board of Governors), the Federal Reserve Banks (Reserve Banks), and the Federal Open Market Committee (FOMC). Its current mandate of maximum employment, stable prices, and moderate long-term interest rates was established by an amendment to the Federal Reserve Act in 1977.

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3. Federal Reserve Act: Public Law 63-43, 63d Congress, H.R. 7837: An Act to Provide for the Establishment of Federal Reserve Banks, to Furnish an Elastic Currency, to Afford Means of Rediscounting Commercial Paper, to Establish a More Effective Supervision of Banking in the United States, and for Other Purposes. The Act was also known at the time as the Currency Bill, or the Owen-Glass Act. The House of Representatives passed the Federal Reserve Act by a vote of 298 to 60, and the Senate by 43 votes to 25. In both chambers of Congress, it was the anti-banker Democrats that overwhelmingly supported the Act, while for the most part the pro-banker Republicans opposed it. Bankers largely opposed the Act because of the presence of the Federal Reserve Board in the legislation and because only one of its seven members could represent the banking community. Currently, the Act is organized in 31 Sections, with some Sections having subsections (2A, 2B, 9A, 9B, 10A, 10B, 11A, 11B, 12A, 13A, 23A, 23B, 24A, 25A, 25B, and 25C).
4. For a history of the evolution of the Federal Reserve System see, e.g., Timberlake Jr. (1978), Board of Governors of the Federal Reserve System (2005), Hoenig (2006), Johnson (2010), Meltzer (2010), DiLorenzo (2011), Federal Reserve Bank of Kansas City (2012), and Binder and Spindel (2013). For an introductory presentation in the form of a timeline see https://www.federalreserveeducation.org/ about-the-fed/history. Also, a presentation "in plain English" about the System organized by the Federal Reserve Bank of St. Louis is available at https://www.stlouisfed.org/in-plain-english/introduction. Similar (introductory) presentations are also available at the websites of the other Federal Reserve Banks.
5. Member banks hold stock in the Federal Reserve Banks and earn dividends. Holding this stock does not carry with it the control and financial interest given to holders of common stock in for-profit organizations, and the stock may not be sold or pledged as collateral for loans.
6. Besides, it supervises and regulates banking institutions, and provides financial services to depository institutions, the U.S. government, and foreign official institutions.

2.2 Decentralized Structure

The Federal Reserve Act rejects the concept of a single central bank, providing for a central banking "system" with three features: (i) a central Board of Governors, a governing body that provides general guidance for the System and oversees the Reserve Banks; (ii) a decentralized operating structure of 12 Reserve Banks, and (iii) a combination of public and private characteristics.[7] Within the System, certain responsibilities are shared between the Board of Governors and the Federal Reserve Banks (and their branches). While the Federal Reserve has frequent communication with the Executive branch and congressional officials, its decisions are made independently.[8]

2.3 Board of Governors

The Board of Governors is an agency of the federal government that reports to and is directly accountable to Congress. It is run by seven members, or "governors", who are nominated by the President of the United States and confirmed in their positions by the U.S. Senate. The Board of Governors guides the operation of the System to promote the goals and fulfill the responsibilities given to the Federal Reserve by the Federal Reserve Act. All of the members of the Board serve on the FOMC, which is the body that sets monetary policy.

Each member of the Board is appointed for a 14-year term; the terms are staggered so that one term expires on January 31 of each even-numbered year. After serving a full 14-year term, a Board member may not be reappointed.[9] The Chair and Vice Chair of the Board are also appointed by the President and confirmed by the Senate, but serve only four-year terms. They may be reappointed to additional four-year terms.[10]

The Board: (i) oversees the operations of the 12 Reserve Banks and shares with them the responsibility for supervising and regulating certain financial institutions and activities; (ii) provides general guidance, direction, and oversight when the Reserve Banks lend to depository institutions and others and when the Reserve Banks provide financial services to depository institutions and the federal government; and (iii) has broad oversight responsibility for the operations and activities of the Federal Reserve Banks.[11]

2.4 Organizational Structure

The Federal Reserve Act provides that the president of a Federal Reserve Bank shall be the chief executive officer of the Bank, appointed by the board of directors of the Bank, with the approval of the Board of Governors, for a term of five years.[12] Each of the 12 Reserve Banks is subject to the supervision of a

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7. Although parts of the Federal Reserve System share some characteristics with private-sector organizations, the Federal Reserve was established to serve the public interest.

8. The modern academic literature on central bank independence developed largely in the late 1980s and the first half of the 1990s. By 1994, both theory and evidence suggested that more independent central banks deliver better outcomes, particularly lower and more stable inflation. Cukierman (2008), in his review of central bank independence, observed that "the evidence is consistent with the conclusion that inflation and actual [independence] are negatively related in both developed and developing countries."

9. If a Board member leaves the Board before his or her term expires, however, the person nominated and confirmed to serve the remainder of the term may later be appointed to a full 14-year term.

10. The nominees to these posts must already be members of the Board or must be simultaneously appointed to the Board.

11. This authority includes oversight of the Reserve Banks' services to depository institutions, and to the U.S. Treasury, and of the Reserve Banks' examination and supervision of various financial institutions. As part of this oversight, the Board reviews and approves the budgets of each of the Reserve Banks.

12. The terms of all the presidents of the 12 District Banks run concurrently, ending on the last day of February of years numbered 6 and 1 (e.g., 2001, 2006, and 2011). The appointment of a president who takes office after a term has begun ends upon the completion of that term. A president of a Reserve Bank may be reappointed after serving a full term or an incomplete

nine-member board of directors (Board). Six of the directors are elected by the member banks of the respective Federal Reserve District (District), and three of the directors are appointed by the Board of Governors.[13] Table 1 presents some key attributes of the presidents of the Board of Governors and Districts.

Table 1. Board of Governors and District Presidents (1)

Board and District	Name	Took office	President	Ph.D. economics
Board	Janet L. Yellen	February 3, 2014	- 15th	Yes
1 - Boston	Eric S. Rosengren	July 23, 2007	- 13th; currently serving a full term that began March 1, 2011	Yes
2 - New York	William C. Dudley	January 27, 2009	- 10th	Yes
3 - Philadelphia	Patrick T. Harker	July 1, 2015	- 11th	No - Ph.D. civil and urban engineering
4 - Cleveland	Loretta J. Mester	June 1, 2014	- 11th	Yes
5 - Richmond	Jeffrey M. Lacker	August 1, 2004	- 7th; currently serving a full term that began March 1, 2011	Yes
6 - Atlanta	Dennis P. Lockhart	March 1, 2007	- 14th	No - MA economics
7 - Chicago	Charles L. Evans	September 1, 2007	- 9th	Yes
8 - St. Louis	James Bullard	April 1, 2008	- 12th; currently serving a full term that began March 1, 2011	Yes
9 - Minneapolis	Neel Kashkari	January 1, 2016	- 13th	No - M.A. mechanical engineering and MBA
10 - Kansas City	Esther L. George	October 1, 2011	- 9th	No - MBA
11 - Dallas	Robert S. Kaplan	September 8, 2015	- 13th	No - MBA
12 - San Francisco	John C. Williams	March 1, 2011	- 12th	Yes

(1) As of July 31, 2016.
Source: http://www.federalreserve.gov/aboutthefed/bios/banks/pres03.htm.

3 The Federal Reserve Districts

The Federal Reserve Act appointed a Reserve Bank Organization Committee (RBOC) to determine the number of Federal Reserve Districts (at least eight, but no more than twelve) and the location for a separately incorporated Reserve Bank in each District.[14] After evaluating requests for Reserve Banks from 37 cities, the RBOC announced on April 2, 1914, the 12 Districts.[15] District boundaries were based on prevailing trade regions that existed in 1913 and related economic considerations, so they do not necessarily coincide with state lines. No Reserve Bank has ever been relocated to another city, and except for a few minor adjustments, District boundaries remain essentially as the RBOC specified them in 1914.[16] The Federal Reserve officially identifies Districts by number and Reserve Bank city.

term. Reserve Bank presidents are subject to mandatory retirement upon becoming 65 years of age. However, presidents initially appointed after age 55 can, at the option of the board of directors, be permitted to serve until attaining ten years of service in the office or age 75, whichever comes first.

13. Directors have an important role in the effective functioning of the Federal Reserve. All directors are expected to participate in the formulation of monetary policy and to act as a link between the System and the public. In addition, head-office directors are responsible for supervising the administration of their Reserve Bank's operations, overseeing the Reserve Bank's corporate governance function, and maintaining an effective system of internal auditing procedures and controls. Directors are not involved, however, in any matters related to banking supervision, including specific supervisory decisions.

14. The System also serves commonwealths and territories.

15. Wheelock (2015) is a detailed analysis of the Reserve Bank Organization Committee (RBOC) decision, and the reason why Missouri has two Reserve Banks.

16. The Board of Governors revised the branch boundaries of the System in February 1996.

The Federal Reserve System has adapted to changing population patterns by adding branch offices in the Districts. Most Reserve Banks have at least one Branch, and each Branch has its own board of directors. A majority of the directors on a Branch board are appointed by the Reserve Bank, and the remaining Branch directors are appointed by the Board of Governors. Finally, Reserve Banks conduct research on the regional, national, and international economies;[17] prepare Reserve Bank presidents for their participation on the FOMC; and distribute information about the economy through publications, speeches, educational workshops, and websites and social media. Reserve Bank activities serve primarily three audiences: bankers, the U.S. Treasury, and the public in general. The main characteristics of the 12Districts are presented in Table 2.

Table 2. Federal Reserve Districts and Branches (1)

District	State	Boundaries	Head office	Branch
1 - Boston	Massachusetts	- Connecticut (excluding Fairfield County), Massachusetts, Maine, New Hampshire, Rhode Island, and Vermont	Boston	No
2 - New York	New York	- New York State, twelve counties in northern New Jersey, Fairfield County in Connecticut, Puerto Rico, and the Virgin Islands	New York	No
3 - Philadelphia	Pennsylvania	- Eastern Pennsylvania, southern New Jersey, and all of Delaware	Philadelphia	No
4 - Cleveland	Ohio	- Ohio, western Pennsylvania, eastern Kentucky, and the northern panhandle of West Virginia	Cleveland	- Cincinnati and Pittsburgh
5 - Richmond	Virginia	- Maryland, Virginia, North Carolina, South Carolina, and most of West Virginia	Richmond	- Baltimore and Charlotte
6 - Atlanta	Georgia	- Alabama, Florida, Georgia, and parts of Louisiana, Mississippi, and Tennessee	Atlanta	- Birmingham, Jacksonville, Miami, Nashville, and New Orleans
7 - Chicago	Illinois	- Iowa and most of Illinois, Indiana, Michigan, and Wisconsin	Chicago	- Detroit
8 - St. Louis	Missouri	- Arkansas and portions of six other states: Missouri, Mississippi, Tennessee, Kentucky, Indiana, and Illinois	St. Louis	- Little Rock, Louisville, and Memphis
9 - Minneapolis	Minnesota	- Minnesota, Montana, North Dakota, South Dakota, twenty-six counties in northwestern Wisconsin, and the Upper Peninsula of Michigan	Minneapolis	- Helena
10 - Kansas City	Missouri	- Colorado, Kansas, Nebraska, Oklahoma, Wyoming, northern New Mexico, and Western Missouri	Kansas City	- Denver, Oklahoma City, and Omaha
11 - Dallas	Texas	- Texas, northern Louisiana, and southern New Mexico	Dallas	- El Paso, Houston, and San Antonio
12 - San Francisco	California	- Nine western states--Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon, Utah, and Washington--and American Samoa, Guam, and the Northern Mariana Islands	San Francisco	- Los Angeles, Portland, Salt Lake City, and Seattle

17. The economists and other employees in each of the Districts work together to provide a regional perspective and expert knowledge about their local economies.

(1) As of July 31, 2016. The New York Federal Reserve district is the largest by asset value. San Francisco, followed by Kansas City and Minneapolis, represent the largest geographical districts. Missouri is the only state to have two Federal Reserve Banks. California, Florida, Missouri, Ohio, Pennsylvania, Tennessee, and Texas are the only states which have two or more Federal Reserve Bank branches seated within their states, with Missouri, Pennsylvania, and Tennessee having branches of two different districts within the same state. In the 12th District, the Seattle Branch serves Alaska, and the San Francisco Bank serves Hawaii. New York, Richmond, and San Francisco are the only banks that oversee non-U.S. state territories. The System serves these territories as follows: The New York Bank serves the Commonwealth of Puerto Rico and the U.S. Virgin Islands; the Richmond Bank serves the District of Columbia; the San Francisco Bank serves American Sa-moa, Guam, and the Commonwealth of the Northern Mariana Islands.

Source: http://www.federalreserve.gov/aboutthefed/directors/about.htm; https://www.richmondfed.org/faqs/frb.

As originally envisioned, each of the Reserve Banks was intended to operate independently from the other Reserve Banks, and variation was expected in discount rates.[18] The setting of a separately determined discount rate appropriate to each District was considered the most important tool of monetary policy at that time. The concept of economic policymaking was not well developed, and the impact of open market operations on policymaking was less significant.[19]

As the U.S. economy became more integrated and complex the effective conduct of monetary policy began to require increased collaboration and coordination throughout the System. This was accomplished in part through revisions to the Federal Reserve Act in 1933 and 1935 that together created the modern-day FOMC.[20] The Depository Institutions Deregulation and Monetary Control Act of 1980 (Monetary Control Act) introduced an even greater degree of coordination among Reserve Banks with respect to the pricing of financial services offered to depository institutions.[21] There has also been a trend among Reserve Banks to centralize or consolidate many of their financial services and support functions and to standardize others. Reserve Banks have become more efficient by entering into intra-System service agreements that allocate responsibilities for services and functions that are national in scope among each of the Reserve Banks.

More recently, a major change in the operation of the Federal Reserve was proposed in the form of H.R. 3189 - Fed Oversight Reform and Modernization Act of 2015.[22] The new legislation would: (i) establish requirements for policy rules, (ii) codify blackout periods of the FOMC, (iii) establish a cost-benefit requirement for other rulemakings by the Federal Reserve Board, and (iv) establish numerous reporting requirements for the Federal Reserve Board and its members. One of the most revolutionary provisions in the bill would require the Comptroller General to audit the conduct of monetary policy by the Federal Reserve Board and the FOMC. In a Statement of Administration Policy, dated November

18. The interest rate that commercial banks were charged for borrowing funds from a Reserve Bank.
19. This operation involves purchases and sales of U.S. government securities.
20. The Banking Act of 1933, commonly called Glass-Steagall, was signed President Roosevelt on June 16. Among other things, the Act created the FDIC and separated deposit and investment banks. For the Federal Reserve, the Act reined in the New York Federal Reserve Bank, which had made a concerted effort to position itself as the leader of the entire Federal Reserve System, especially in the area of international financial dealings. The Act also created the Federal Open Market Committee (FOMC) (see, e.g., http://www.federalreservehistory.org/Events/DetailView/25).

The Banking Act of 1935, signed by President Roosevelt on August 23, completed the restructuring of the Federal Reserve and financial system. The Act centralized control over the Federal Reserve System at the Board, taking away much of the autonomy of the regional Reserve Banks. Among other things, the Act also removed the Treasury secretary and the comptroller of the currency from the Board, and created the modern structure for the FOMC (see, e.g., http://www.federalreservehistory.org/Events/DetailView/26). For details about the FOMC, including: (i) meeting calendars and information, (ii) transcripts and other historical materials, and (iii) FAQs, see https://www.federalreserve.gov/monetarypolicy/fomc.htm.

21. It was signed into law by President Jimmy Carter on March 31, 1980, as Public Law 96-221. The act has nine titles covering a wide range of subjects, including reserve requirements, access to and pricing of Federal Reserve services, a phase out of Regulation Q and new powers for thrift institutions. The two major areas of concern that the legislation addressed were: (i) the deregulation of institutions that accept deposits and (ii) the improvement of the control of monetary policy by the Federal Reserve. For details see, e.g., http://www.federalreservehistory.org/Events/DetailView/43, and https://www.bostonfed.org/about/pubs/deposito.pdf.
22. 114th Congress (2015-2016). It passed the House. For details see https://www.congress.gov/bill/114th-congress/house-bill/3189.

17, 2015, issued by the Executive Office of the President, the executive branch manifested its strongly opposition against H.R. 3189: "Subjecting the Federal Reserve's exercise of monetary policy authority to audits based on political whims of members of the Congress – of either party – threatens one of the central pillars of the Nation's financial system and economy, and would almost certainly have negative impacts on the Federal Reserve's work to promote price stability and full employment." The conclusion of the Statement was very clear: "If the President were presented with H.R. 3189, his senior advisors would recommend that he veto the bill".

4 Corporate Communication

Every organization – public or private – has a corporate identity, usually understood as the core of its existence, made up of its history, beliefs, philosophy, technology, people, its ethical and cultural values and strategies.[23] A clearly defined and positive corporate identity is of vital importance for success, growth and reputation, as the success or failure of any organization hinges on public perception. In order to attain that, organizations need to successfully establish good relationships with its stakeholders, which requires that they carefully build clear values and purposes, strategy, culture, and structure. The opinions of key stakeholders, such as shareholders, investors, consumers, employees, government or members of the community in which the organization is based, are all crucial to the long-term success of the company, and are usually viewed as such by executives.[24]

Corporate communication can be defined as the integrated approach to all communication produced by an organization, directed at relevant target groups, both internal and external. Its relevance was summarized, for e.g., by Brønn (2002) in the following way: "the basic message here is that everything about an organization communicates. Everything. Failure to recognize this can result in serious headaches for organizations if they concentrate on their customer-related communications while ignoring the many other contact points that are not part of planned communication."

In today's world of instant information access, communication must be dynamic. Using digital media channels for corporate communications increases the flexibility, scalability, and general retention of messages (and its content). Having the ability to add and change channels gives an organization the ability to focus its digital media where it will do the best. Digital platforms have functions that differentiate them from offline platforms, in particular they are: (i) persistent, even if posts are rarely written with long-term archiving in mind; (ii) searchable by anyone at any time; and (iii) replicable and remixable with other content on other platforms.

As Mangini *et al*. (2011) observed, "the shift to digital communication has changed the way that people expect to find, share, and discuss information, and has opened whole new models for engagement and participation. People now expect to be able to receive and discover up-to-date information instantly online, and expect information to be live and fresh. People also expect to be able to share, rate and discuss content, as opposed to simply consuming it. Static websites with information that rarely changes are rapidly being replaced by dynamic blogging platforms where new and interesting content is added daily, and where social sharing and commenting is integral."

4.1 Social Media

Social media is a relatively recent innovation that allows for corporate communications opportunities that a decade ago would not have been plausible.[25] For Matthews (2010), "social media is a revolutionary

23. Although corporate identity was originally defined in terms of the visual representation of an organization, more recent and broader definitions have highlighted the importance of the various forms of communication in corporate identity management.
24. See, e.g., Brønn (2002).
25. For a detailed discussion about the role of social media in corporate communication see, e.g., Matthews (2010).

communications tool that has quickly changed the ways in which public relations is practiced, becoming an integral part of corporate communications for many companies and offering public relations practitioners new options for every aspect of the corporate communications process."

In particular, social media allows companies to communicate directly and instantly with their stakeholders, marking a shift from the traditional one-way to two-way communication.[26] In other words, social media is rapidly changing the way that information is disseminated: rather than the traditional method of pure output – completely company-controlled messages being broadcast to the stakeholders – social media has forced corporate communications to shift to a dialogue in which the stakeholders, and not just the companies, have power over the message. Social media allows stakeholders to ask questions and have those questions answered directly by corporate executives, and for corporate executives to receive important feedback and even ideas from their stakeholders.

Social media consists of online technologies, practices or communities that individuals use to generate content and share opinions, insights, experiences and perspectives with each other, which can be grouped as follows: (i) the eight main social media channels (Facebook, Twitter, YouTube, LinkedIn, Flickr, Pinterest, Google+, and Slideshare),[27] and (ii) blogs, intranets, podcasts, wikis (e.g. Wikipedia), videoconferencing, instant message chats, and news aggregation sites, among others. Platforms like Facebook, RSS, e-mail newsletters, blogs, Twitter, YouTube, and Google+ make it very easy for individuals to register, connect, share, collaborate, and create with unprecedented power & reach. These platforms have built the new tools for engagement, posing both challenges & incredible opportunities for organizations. In the last decade these technologies have risen in popularity among social and economic classes, demographic segments, and are being utilized by different organizations, in both the public and the private sector, to redefine the way they communicate.

Research conducted are revealing some interesting correlations between levels of activity in social media channels, among others: (i) companies engaging with social media are gaining more views and social interaction; (ii) on Facebook alone, companies who respond to wall posts are seeing more "Likes" than those who do not acknowledge; and (iii) companies tweeting 30x or more each month, averaged 21,000 followers compared to 2,500 from those who were tweeting less.

Carim and Warwick (2013) analyzed the adoption of social media channels for corporate communications by UK-based research-funding organizations, and concluded that: (i) those who have adopted social media draw chiefly on microblogging, video-sharing and social networking sites; (ii) building a dialogue with stakeholders is a prime reason for using social channels, yet one-way "broadcasting" of information is widespread; (iii) web, media or communications/marketing teams generally manage social media channels; (iv) a minority of organizations have policies governing social media use by staff; and (v) social media performance is mainly measured using quantitative metrics.

In its review about the use of social media for corporate communications by U.S. and U.K firms, which is of particular interest due to its extensive coverage and as an important reference for the Federal Reserve System, Investis (2015) observed that: (i) an increasingly connected world and the smartphone revolution has meant that social media is impossible to ignore for any entity;[28] (ii) the growth of social media over the past decade has created many new opportunities for companies; (iii) fear of negative commentary is one of the most commonly voiced concerns for companies hesitant about social media; (iv) success on one channel is not dependent on the successful use of another channel. However, engaging on multiple channels increases the likelihood of content being found; and (v) inking from social

26. A parallel can be made with one-way and two-way networks.

27. They can be categorized as follows: social networks (e.g. Facebook, Google+), micro-blogging (e.g. Twitter), video sharing (e.g. YouTube), networking sharing (e.g. LinkedIn), photo sharing (e.g. Flickr, Instagram), visual bookmarking sharing (e.g. Pinterest), and document sharing (e.g. Slideshare). Another typology is: (i) social network platforms (Facebook, Twitter, LinkedIn, Google+), (ii) content publishing platforms (YouTube, Flickr, Instagram, Pinterest, Slideshare).

28. On every channel covered by the review, a higher percentage of US companies have an account than do the UK companies.

media channels to corporate websites is good. Table 3 reports some of main conclusions of the review for the main channels analyzed.

Table 3. Use of social media for corporate communications

Social media	Findings
Facebook	- On average, media content is the most popular type of content on corporate Facebook accounts. IR (Institutional Repository) content is the least popular corporate content to post on Facebook - Facebook has the largest audience of any social network, and is an excellent place for targeted content thanks to its apps, particularly for CSR and careers content - Encouraging engagement will increase a company's reach. Emotive posts resonate particularly well on Facebook, as do those which seek involvement from their audience. Keep posts short, and use plenty of images and video - By replying to wall posts, even when they are negative or aggressive, it is possible both to mediate issues as they arise and engage followers in a meaningful dialogue. A clear commenting policy is also helpful. Companies that respond to Facebook wall posts receive 17x more likes than companies that don't
YouTube	- Video is an ideal format to communicate complex ideas, enabling companies to show, rather than tell, their ideas, stories and more - Users search for content as they would on a regular search engine, so proper tagging, descriptions and links are vital for ensuring maximum reach. Understanding how your audience discusses a given topic is as important as creating the video content in the first place - On average, media content is the most popular type of content on corporate YouTube channels with IR the least popular - Cross-population of content is a must. Sharing YouTube videos to other social channels, using segments of videos and integrating other channels into YouTube channels drives engagement
Twitter	- Companies that post IR content on Twitter have 60% more followers than companies that don't - IR content is the most popular type of content on corporate Twitter accounts - Twitter is the most commonly linked-to social media channel from corporate websites - SEC and FCA guidance has had an impact on Twitter use while the influence of financial journalists, analysts and high-profile shareholders should not be underestimated - Twitter's immediacy and its transient nature; posts are soon lost in the noise of a user's home feed. - Varied and plentiful content which makes good use of images, videos and infographics helps cut through this
LinkedIn	- It the most commonly used channel - Careers content is far and away the most popular type of corporate content on LinkedIn accounts - It is the biggest social referrer to corporate websites
Flickr	- Images and video can be shared on Flickr but it is not a true social channel as there is little sense of its being a community or network - Flickr's main use for corporate communications is as a repository for images, primarily designed for media use, or for populating websites through dynamic tagging – while Facebook is the obvious choice if the concern is merely to share images widely. However, other image repositories such as Pinterest and Instagram are now challenging Flickr - Media content is the most popular type of Flickr content
Pinterest	- Pinterest is the least used social platform for corporate communications and is currently used primarily by the bigger B2C companies - However, Pinterest has a notably engaged and loyal following and other companies should consider using it for targeted campaigns and messaging - The platform is one of the fastest-growing, is popular amongst an affluent and digitally savvy demographic – and may yet replace Flickr as the image repository of choice
Google+	- Google+ is one of the big four networks in terms of membership and active user base. However, it has struggled to prove its relevance to corporate communications. Genuine engagement by corporates on Google+ is rare and average follower numbers are negligible - Media content is the most popular type of corporate content on Google+ accounts and IR the least popular. CSR and careers content is the most common content combination
SlideShare	- For best results, SlideShare presentations need to be embedded on the corporate site: promoting your SlideShare account there massively increases views and encourages exploration of your other presentations - IR and media content is the most popular type of SlideShare content although over a quarter of companies do post CSR content

Source: Investis (2015).

4.2 Role of Social Media

Any discussion of social media must deal with one initial, and fundamental, question: what's its role in the globalization process. More specifically, (i) how do new communication technologies (in particular, new media channels) change societies, organizations, economies? and (ii) what is the dynamic framework between traditional media, new media, organizations, their stakeholders and legitimacy? To answer that it is necessary to take into account the general insights provided by many communication studies: (i) all individuals live in a "symbolic universe", (ii) organizations constitute in communication, (iii) all individuals live in a "media society", and (iv) all individuals live in a "networked society". As a consequence, it is possible to conclude that new communication technologies change societies, drive globalization and change the responsibilities of organizations.

In fact, it is fair to say that individuals live in a "new media society", with some specific attributes: (i) new communication technologies, uses and more complex communication environments influence the social and communicative character of stakeholders; (ii) new media channels play a crucial role for the (de)construction of reputation; and (iii) the internet offers other channels of communication. But, it is of utterly importance to notice that: (i) media do not determine effects and interpretations, and (ii) internet as technical institution does not determine how data is decoded in systems of signs and used, which information people derive from it, and how it is organized and institutionalized. Also, it is important to realize that empirical studies have a lot to say about the influence of traditional and new media channels on organizations and their stakeholders: even though social media influences traditional media, power relations are partially reproduced in new media, and social media content is taken over from traditional media.

5 Dissemination of Information by the Federal Reserve System

Savage (2011) called attention to the fact that despite their importance to economic stability, central banks did not historically communicate with most of its stakeholders: it wasn't seen as necessary or even desirable, and those who needed were informed.[29] This was not a matter of being deliberately secretive, but of being mindful of the central bank's position. This environment changed significantly by the end of the 20th century due to the innovations in communications technology, the emergence of a more critical media, and more demanding stakeholders. While initial efforts at greater visibility started during the 1980s, it was only in the 1990s that the FOMC, started issuing carefully-crafted press releases following its meetings, at first only when the federal funds rate changed and, since 2000, after every meeting. The demand for good (availability, quality, frequency) information with has grown since then. The manner in which stakeholders consume information is undergoing a vast transformation, and central banks, like organizations everywhere, must now recognize that even its immediate publics – policymakers, public officials, economists, bankers, CEOs, community leaders, and so forth – are not limited to traditional media but are increasingly likely to be getting their information via social media channels (in particular, Twitter, Facebook or LinkedIn).

Communication is critical to the success of any central bank, because it supports the bank's policy objectives of maintaining price, financial stability, and full employment.[30] Central banks around the world publish a wealth of information – economic projections, assessments of the financial system, and

29. See, e.g., Hanke and Morgenstern (2002), Hanke and Sekerke (2002), and Yellen (2012).
30. The objectives vary among central banks but, in general, they have to do with protecting the value of money and promoting employment. In the particular case of the Federal Reserve, the goals of monetary policy are spelled out in the Federal Reserve Act, which specifies that the Board of Governors and the Federal Open Market Committee should seek "to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates."

statistics, via website, social media channels, and publications. To communicate this information – i.e. to not only convey it, but to impart understanding – they engage with a wide range of stakeholders, through formal and informal forums.[31]

The attributes of information disseminated by central banks are the same as those of any piece of information, conditioned only on its degree:[32] (i) quality is an encompassing term comprising utility, objectivity, and integrity;[33] (ii) objectivity involves two distinct elements of disseminated information: (a) presentation, that the information is presented in an accurate, clear, complete, and unbiased manner, and (b) substance, that the information itself is accurate, reliable, and unbiased; (iii) utility refers to the usefulness of the information to its intended users, including the public; (iv) integrity refers to the security of the information – protection of the information from unauthorized access or revision – to ensure that the information has not been compromised through corruption or falsification; (v) reproducibility means that the information is capable of being substantially reproduced, subject to an acceptable degree of imprecision;[34] (vi) influenceability, means that the sender of the information can reasonably determine that its dissemination does have or will have a clear and substantial impact on important public policies or important private-sector decisions; and (vii) transparency requires to disclose specific data sources that have been used and the specific quantitative methods and assumptions that have been employed in order for an independent re-analysis to be undertaken. Besides these, two other attributes are also very significant: (i) frequency refers to the number of occurrences of a repeating event, in this case, the dissemination of information, per unit time; and (ii) availability is the proportion of time a particular information is in a functioning condition, that is, is easily retrievable.

Central banks and monetary authorities use a range of approaches to communicate, from quite minimal and closed, through to publishing minutes that contain dissenting views, and they achieve a range of differing results. For example, during periods of the global financial crisis dissenting voices from the United States' FOMC, the Bank of England's Monetary Policy Committee, the Executive Board of the Riksbank, the Monetary Policy Committee of the Central Bank of Brazil, and the Monetary Policy Meeting of the Reserve Bank of Australia Board, created some confusion in financial markets and some investors suggested it undermined credibility.

The Federal Reserve System plays a significant role in the public dissemination of economic and financial information to its stakeholders. This information covers an array of subjects with varying degrees of importance and impact on monetary and public policy and economic conditions. Different communication platforms are used to accomplish the dissemination strategy, but the Federal Reserve Board relies exclusively on electronic means (mostly the internet) to disseminate regularly released statistical data.[35] One of the most important source of data is the Federal Reserve Economic Data (FRED) system developed by the Federal Reserve Bank of St. Louis, which contains 390,685 U.S. and international time series, from 79 sources.[36]

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31. For technical discussions about communication of monetary policy see, e.g., Issing (2005), Woodford (2005), Blinder *et al*. (2008), Kedan e Stuart (2014), and Hansen and McMahon (2016a, 2016b).
32. These definitions are taken directly from the OMB guidelines, published in the Federal Register on February 22, 2002 (67 FR 8451-8460).
33. Therefore, the guidelines sometimes refer to these terms collectively as "quality".
34. For data deemed to be "influential" (as defined above), the degree of imprecision is lower than for data deemed non-influential.
35. Paper copies of the Statistical Supplement to the Federal Reserve Bulletin and the standard statistical releases were discontinued entirely several years ago.
36. FRED is much more than a plotting and downloading tool. For example, its application programming interface (API) has been made widely available and there are now specific applications to interface with it from statistical software such as R, STATA, MatLab, and Eviews as well as applications for Apple and Android based smartphones. Importantly, FRED's cataloguing structure has moved from being just "category based" to including "tags". This makes it much easier to find series that are related along several dimensions. See, https://fred.stlouisfed.org. Number of time series and sources as of July 31, 2016.

5.1 Guidelines

On February 22, 2002, the Office of Management and Budget (OMB) issued guidelines requiring federal agencies to develop procedures for reviewing and substantiating the quality of their information before it is disseminated to its stakeholders.[37] These quality guidelines become effective October 1, 2002, and cover information disseminated on or after that date, regardless of when the information was first disseminated.[38] The guidelines also require that each agency create a mechanism by which affected persons may seek, and when appropriate obtain, correction of information that the agency disseminates and that does not comply with agency and OMB guidelines.[39]

Some examples of information disseminated by the Board covered by the guidelines are: (i) statistical releases; (ii) testimonies, speeches, and reports on various economic and banking topics, by staff designated to communicate official Board positions, simultaneously disseminated to the public; (iii) periodicals and journal articles on various economic and banking topics; (iv) research and staff studies initiated and sponsored by the Board; (v) educational consumer brochures, booklets, and pamphlets. Some examples of information disseminated by the Board not covered by the guidelines are: (i) press releases (if the attached information was previously released to the public); (ii) Federal Reserve procedural manuals; (iii) research and staff studies not initiated and sponsored by the Board.

The Federal Reserve Board announced the availability of guidelines for the public entitled "Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Federal Reserve".[40] The Board has created these guidelines to present its standards and to formalize its correction mechanism, and it is the Board's intent to meet the information-quality standards set forth in these guidelines.[41] According to the Board, it takes pride in the quality, objectivity, utility, and integrity of the information that it disseminates to the public, and as a consequence, before any information is released, it is thoroughly edited and reviewed.[42]

It is an undisputable fact that the Board will continue to disseminate information that meets the agency's already highly rigorous internal review and approval process. The Board's current policies and procedures ensure that, to the best of its ability, it releases to its stakeholders information (including data) that is accurate and timely, appropriate for external consumption, uncompromised, and useful.

5.2 Transparency

Transparency is the foundation upon which both accountability and participation are built. Transparency and access to information is the first step to allow stakeholders to engage in dialogue, independent monitoring, and public oversight.[43] In particular, transparency is the watchword for monetary policy, and

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37. The OMB guidelines were issued pursuant to the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554, section 515).

38. Some previously disseminated information which continues to be used for decision making or is relied upon by the agency and the public as official, authoritative government data is, in effect, constantly being re-disseminated and is thus subject to the guidelines. Previously released information that does not meet these criteria is considered archived information and thus is not subject to these guidelines.

39. For details see https://www.federalreserve.gov/iq_guidelines.htm.

40. The guidelines can be found on the Federal Reserve Board's web site. According to the Board the document is intended to provide guidance to the public on the procedures the agency has in place for reviewing and substantiating the quality of the information that is disseminated. The guidelines also provide a mechanism for affected individuals to provide complaints to the agency. The Federal Reserve's guidelines are being issued pursuant to the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554, Section 515).

41. While covering a broad range of information, these guidelines focus mainly on the statistical and financial data and information that the Board disseminates.

42. Federal Reserve Bank (2011) sets the framework on external communications of Federal Reserve System Staff for the FOMC.

43. For the World Bank, for e.g., "[…] transparency requires that the state is willing and able to share information with the public. This information should be presented in a manner that allows citizens to engage. A country's existing legal framework

greater openness the hallmark of the modern central bank.[44] Any central bank – independently of jurisdiction, geographic location, size, and policy objectives – should consider three rationales for transparency in its communication, especially in relation to price and financial stability: (i) to demonstrate accountability for its significant autonomy or independence in pursuing policy objectives; (ii) to promote understanding, so as to enhance the credibility and effectiveness of policy; and (iii) to use communication to signal its intended action, so informing and shaping expectations of policy actions.

Transparency of monetary policy can be defined as the extent to which central banks disclose information that is related to the policymaking process.[45] It is a multifaceted concept that could pertain to any aspect of economic policy-making. Thus, it seems natural to use a conceptual framework for transparency that reflects the different stages of the decision-making process. Following Geraats (2000), one can distinguish five aspects of transparency: political, economic, procedural, policy and operational transparency. Each of these aspects may give rise to different motives for transparency. Eijffinger and Geraats (2006) concluded that central bank transparency has become the topic of a lively public and academic debate on monetary policy. However, this has been complicated by the fact that transparency is a qualitative concept that is hard to measure. They propose an index for the transparency of monetary policy that comprises the political, economic, procedural, policy and operational aspects of central banking. The index is compiled for nine major central banks, and is based on a detailed analysis of actual information disclosure and reveals a rich variety in the degree and dynamics of central bank transparency.

Nevertheless, as observed by Hannah (2015),[46] there is an apparent paradox related to the dissemination of information by a central bank: the more the bank exposes to stakeholders the details of complex issues, and on the internal discussions on risks and uncertainties, the more the bank opens itself up to the risk of perceptions that the management of the issue by the bank is not as solid as stakeholders assumed. Credibility and effectiveness of policy may appear at risk. Increasingly, however, central banks throughout the world have come to appreciate the value of transparency, as a way of increasing the effectiveness of policy. The more stakeholders understand their policy choices, the more likely they are to anticipate the banks' decisions, minimizing the chances of poor economic and financial decisions.

Different degrees of transparency are appropriate for different stakeholders – and every central bank need to seek to strike the right balance between transparency, stability, and continuity in its engagement with stakeholders. Improving the understanding of their stakeholders and specific behaviors helps the bank to better gauge what level of transparency best supports credibility and achieves the policy objectives that they seek. While there are reasons for differing levels of transparency stakeholders, the central bank should always look for opportunities to educate audiences to enhance their understanding of policy, including the inherent uncertainties in its conduct.

(such as an Access to Information Law) can provide crucial support for transparency. After the information is disclosed and demystified, it should be widely disseminated and made accessible. Citizens and other key stakeholders can then use this information to engage in a dialogue with the government, service providers, and other national and international entities. […]. The four dimensions of promoting transparency & information are as follows: (1) Disclosure of information: the act of disclosing information and the level of government transparency regarding public budgets, expenditures, programs, and so forth; (2) Demystification of information: raising awareness and understanding of citizens by simplifying information – for example, about laws, rights, budgets, and policies; (3) Dissemination of information: publicizing information related to, for example, governance issues, processes, finances, and laws; (4) Discussion of information and feedback: engaging in discussion of information and providing feedback to government." For more details, see https://saeguide.worldbank.org/transparency-information-information-disclosure-dissemination-and-demystification.

44. The Bank of England was an early pioneer in the pursuit of transparency. In 1993, the institution became the first among its peers to publish an inflation report. The Bank renewed its transparency efforts after it was granted operational independence from Her Majesty's Government in 1997. The newly created Monetary Policy Committee (MPC) is determined to build a strong public constituency in support of its price stability mandate and for that transparency is a key issue. The same applies for other central banks, in particular, those who have adopted and inflation targeting regime, such as Australia, Brazil, Canada, Chile, Iceland, Israel, Mexico, New Zealand, Norway, Peru, Sweden, and the United Kingdom.

45 For a discussion on the role of transparency see, e.g., Demertzis and Hallett (2007), Ehrmann and Fratzscher (2007), Nishkin (2007), and Dincer and Eichengreen (2009, 2014).

46. The case, per se, concerns the Reserve Bank of New Zealand. Nevertheless, its conclusions are easily generalized.

McGregor (2007) argued that the calculus of electoral politics and the central bank's bureaucratic objectives can explain the recent trend toward greater Federal Reserve System transparency and can shed light on the likelihood that this trend will continue. If incumbent politicians see no electoral advantage in pressuring the System to become still more transparent, and if the System sees no benefit to greater transparency, then further changes in current practice are unlikely. Private sector agents will continue to face a significant degree of uncertainty about the System's policy objectives and about the information that policymakers consider in the monetary policy decision process.

The Federal Reserve considers transparency about the goals, conduct, and stance of monetary policy to be fundamental to the effectiveness of monetary policy. The Federal Reserve Act sets forth the goals of monetary policy, specifically "to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates." Financial stability is an important prerequisite for achieving these goals. Transparency about monetary policy also helps promote the accountability of the Federal Reserve to the Congress and the public. Such accountability is especially critical when nontraditional policy tools – which are less familiar to the public than traditional policy tools – are employed.

The Federal Reserve System has taken a series of efforts in recent years to enhance transparency of monetary policy.[47] Some of the initiatives include:[48] (i) the issuance by the FOMC of a statement announcing and explaining its monetary policy decision immediately after each of its meetings, as well as periodic additional statements on its longer-run policy goals and strategies and policy normalization principles and plans;[49] (ii) the FOMC's release of detailed minutes of its meetings three weeks after each meeting, which provide a timely summary of significant policy issues addressed by meeting participants;[50] (iii) the FOMC's publication of quarterly summaries of policymakers' economic forecasts; (iv) the quarterly press conference by the Chair following certain FOMC meetings; (v) pursuant to the Emergency Economic Stabilization Act of 2008, the issuance of regular reports to the Congress on each of its lending programs that relied on its authorities under section 13(3) of the Federal Reserve Act; (vi) the publication of a periodic report on Credit and Liquidity Programs and the Balance Sheet; and (vii) the implementation of new disclosure requirements pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010.

Savage (2011) discussed "[…] a series of steps to break down the barriers to transparency […]".[51] First, he notices that "[…] each Reserve Bank […] has, by design, its own communications approach that reflects the geographical regions of the United States as well as the independent perspectives contributed by this uniquely "decentralized central bank"." Second, Savage points some of the initiatives undertaken by the Bank: (i) adapting the Bank's research into everyday language and accessible terms;

47. In addition, the Federal Reserve System – as an agency of the United States Government, operates under the terms of The Freedom of Information Act, 5 U.S.C. § 552, as amended by Public Law n° 110-175, 121 Stat. 2524, and Public Law n° 111-83, § 564, 123 Stat. 2142, 2184. The Electronic Freedom of Information Act Amendments of 1996 (E-FOIA) stated that all agencies are required by statute to make certain types of records, created by the agency on or after November 1, 1996, available electronically. Agencies must also provide electronic reading rooms for citizens to use to have access to records. Given the large volume of records and limited resources, the amendment also extended the agencies' required response time to FOIA requests. For more detail see http://www.federalreserve.gov/foia/about_foia.htm.

48. See https://www.federalreserve.gov/monetarypolicy/bst.htm.

49. The FOMC first announced the outcome of a meeting in February 1994. After making several further post-meeting statements in 1994, the Committee formally announced in February 1995 that all changes in the stance of monetary policy would be immediately communicated to the public. In January 2000, the Committee announced that it would issue a statement following each regularly scheduled meeting, regardless of whether there had been a change in monetary policy (See https://www.federalreserve.gov/monetarypolicy/fomc_historical.htm).

50. The minutes record all decisions taken by the Committee with respect to these policy issues and explain the reasoning behind these decisions. From their emergence in their present form in February 1993 until December 2004, the minutes were published approximately three days after the Committee's subsequent meeting. In December 2004, the Committee decided to expedite the release of its minutes. Since then, the minutes have been made available to the public three weeks after the date of the policy decision, thus reducing the lag in their release by an average of about three weeks (See https://www.federalreserve.gov/monetarypolicy/fomc_historical.htm).

51. The discussion focused the Federal Reserve Bank of Cleveland, but are easily generalized.

(ii) putting videos on YouTube as an important part of the Bank's educational and financial literacy outreach program; (iii) introducing a new print and online multimedia policy journal (Forefront); and (iv) migrating the website from a "traditional" (the 1990s) to a versatile modern-day platform. His conclusion is that "this three-pronged communications strategy – general public, informed public, knowledgeable stakeholders/experts – ensures that the FRBC will be able address today's communications challenges and the growing expectations of what has come to be called an era of "radical transparency"."

5.3 Reputational Risk

Corporate reputation is one of the most valuable asset of any organization. Although an intangible asset it is broadly publicized and protected. Any central bank has an interest in maintaining a high reputation – not a self-serving, "public relations" reputation, but a reputation for certain qualities, for example credibility, consistency and clarity in its communications.[52] This is needed to build understanding of its policy measures and signals, and help deliver its policy objectives.

In his analysis Vardy (2015) concluded that reputation management has become increasingly important for central banks for a number of reasons: (i) around the world, they have taken on greater policy roles since the global financial crisis; (ii) in many countries, the burden to stimulate economic growth has largely fallen on the monetary authority; and (iii) some central banks have assumed new or expanded mandates to regulate financial institutions and engage in macro prudential regulation. As a consequence, "these more visible, wide-ranging and critical roles for central banks have raised their profile and placed them under intense scrutiny, with particular focus on their transparency and accountability".

According to Warrin *et al*. (2013), social media is a formidable platform to publicize a firm's brand and improve its reputation. Nevertheless, there are risks, in particular, the spread at an unprecedented speed and scale of information, independently of being true or false. They propose a game theoretic model, with finite and infinite horizon, to evaluate the impact of social media on a firm's reputation. The model also highlights the important parameters of a firm's reputation in the digital era.

5.4 Communication

Historically central banks have been given more autonomy. They were, and still are, trusted to do the right thing. Yet today, it is more important than ever they understand how they are perceived by their stakeholders, how their "brand" can be a driver of behaviour, and how to influence that perception. Central banks are, in this regard, increasingly behaving like commercial entity, as they strive to project one coherent identity across their public interaction.

There was a time in the not too distant past when central banks, and central bankers, prided themselves on their "constructive ambiguity". Should that fail, there was always impenetrable jargon, the old standby, to fall back on. No longer. Central banks today have to make themselves easier to understand. But turning technical terms into "plain" language is far from straight-forward and the risk of confusion must be weighed against the risk of oversimplification.

From managing the public's expectations to influencing financial markets, what central banks say and how they say it have rarely mattered more. As a result, communications professionals face a number of seemingly incompatible goals. They must be seen to be forwarding thinking yet maintain a sense of responsibility for the present. They must be seen to be open yet protect sensitive information. They must have complete faith in their decisions yet accept they will subject to intense scrutiny, well after the fact.

Communication is an essential element of central bank policy making, for which financial stability and inflation reports are key tools. As central banks are handed more responsibilities,[53] especially after

52. For a detailed analysis of reputational risk management in central banks see, e.g., Vardi (2015).

53. One of the key realizations after the financial crisis was that public authorities should do more to promote financial inclusion and education. Today, central banks realize they have a key role to play in developing a new culture on broad financial

the financial crisis started in 2007, they must learn to communicate effectively about new targets, tools and decision-making processes. How can internal communication departments convey both simultaneously – ensuring one does not conflict with the other? Also, with greater demands for transparency, how do they ensure the release of the right information, at the right time, and to right stakeholder?

Central bank communication has increased significantly over the past two decades. For Vayid (2013), financial markets scrutinize central bank communications for "clues and shades of meaning about its assessment of the economy and the direction of where economic policy may be heading".

Central banks regularly communicate about financial stability issues, by publishing Financial Stability Reports (FSRs) and through press releases, speeches, interviews and research. Born *et al*. (2011), building upon a unique dataset of more than 1000 releases of FSRs and speeches by 37 central banks over the past 14 years, concluded that "the findings suggest that financial stability communication by central banks are perceived by markets to contain relevant information, and they underline the importance of differentiating between communication tools, their content and the environment in which they are employed."

Effective communications enhance a central bank's public transparency, accountability and credibility (Carney (2010)), which in turn aids its ability to implement economic policies. Fay and Gravelle (2010) analyzed the impact of different types of communications (press releases, speeches, interviews, and news conferences) to determine which media sources impact interest rate expectations.[54]

In 2014, the Reserve Bank of New Zealand conducted an External Stakeholder Engagement Survey to assess the levels of engagement with stakeholders and to help identify how to improve its communications.[55] The survey applied a framework to assess the Bank's reputation across each of its key stakeholder groups,[56] based on: (i) familiarity, the extent to which the Reserve Bank is familiar to stakeholders in terms of activities, benefits, values, mission; (ii) favorability, the extent to which the Reserve Bank is viewed positively; (iii) trust, ultimately trust underpins reputation; without trust, messages are rejected. build trust and you build support, your messages are better received, and ultimately you create advocates; and (iv) advocacy, the extent to which stakeholders will actively speak highly or critically of the Reserve Bank.

6 Forms of Dissemination

As any other entity the Federal Reserve System uses alternative forms to disseminate information to its stakeholders. More than that, there is a wide spectrum of social media channels used by the Board of Governors and the Federal Reserve Banks. To make effective use of social media, central banks need to not only understand the best way of using the different channels within their wider communications framework to harness interaction, but also consider how they can best use the information gathered from social media posts by stakeholders to monitor reactions and reception to policies. It is also important for central banks to understand the image they portray both from the followers they have, but also who they are following.[57]

and economic matters.

54. To date, there has been little research into text mining of central bank communications.

55. The report is available as an annex to Hannah (2015), entitled "Reserve Bank of New Zealand External Stakeholder Engagement - Key Findings Report".

56. The stakeholders considered were: (i) public, (ii) media, (iii) business, (iv) regulated industries, (v) markets, (vi) educators/researchers, and (vii) government.

57. Yet social media are resource and time intensive, and demand skills which may be in short supply in central banks.

6.1 Website

Websites act as a vital information hub where stakeholders, the general public and banking professionals, in particular, can find out about their central bank.[58] They create a window into the central bank and in recent times have adapted to allow easy reading and navigation across different viewing platforms, including smartphone and tablet screens. As depositaries of works over the years, they contain announcements, speeches, data and research. The best provide a wealth of information covering the central bank's past decisions, present conflicts and future expectations, striking a good balance between providing detailed and digestible content.

The website is the usual form of information dissemination used by the Federal Reserve System, with a great variety of quality.[59] Worldwide, there is a noticeable trend in the use of websites by central banks. In fact, when the Bank for International Settlements (BIS) launched its site in September 1996, its list of "Central Banks on the World Wide Web" contained only 10 names: Austria, Brazil,[60] Canada, Estonia, Hong Kong, India, Mexico, New Zealand, the United Kingdom, and the United States. Currently, the site references 178 central banks.[61] Courtis (1998), in his analysis of central banks on the internet observed that: (i) since 1996 over 80 of the world's 172 (at that time) central banks have established websites on the Internet; (ii) many central bank sites look outdated and dog-eared; and (iii) many central bankers are missing an opportunity.

Website design is about both "form and content", and to excel it is necessary to understand what the stakeholders think.[62] Friedman (2008) summarized, very clearly what is fundamental:[63] (i) they appreciate quality and credibility, (ii) they don't read, they scan, (iii) they are impatient and insist on instant gratification, (iv) they don't make optimal choices, (v) they follow their intuition, (vi) they want to have control. His conclusion? "Usability and the utility, not the visual design, determine the success or failure of a web-site. Since the visitor of the page is the only person who clicks the mouse and therefore decides everything, user-centric design has become a standard approach for successful and profit-oriented web design. After all, if users can't use a feature, it might as well not exist." Table 4 presents a sample of guidelines and/or principles for best website design which can be used to rank the websites of the Federal Reserve System.[64]

58. For a general discussion about information dissemination through official websites see, e.g., Bhattacharya (2010). He argues that with the proliferation of official websites worldwide, data dissemination concepts as developed by the IMF need to be generalized towards information dissemination, with special reference to web-based dissemination. His analysis reveals that some degree of convergence has taken place among all official websites in: (i) structuring the contents, and in (ii) providing a few basic facilities to the users. Nevertheless, Bhattacharya notices that none of the sites are fully compliant with respect to the criteria specified in the paper. For a general analysis of websites used by central banks see Courtis (1998); for the particular case of the Bank of Canada, see Eades (2001).

59. In this case, quality defined in terms of the following attributes: (i) simplicity, (ii) visual hierarchy, (iii) navigability, (iv) accessibility, (v) spacing, (vi) typography, (vii) alignment, and (viii) clarity.

60. Even though it was one of the pioneers, the website of the Central Bank of Brazil currently is one of the most outdated in a sample of major central banks' websites.

61. See https://www.bis.org/cbanks.htm. There is another list available at http://www.theibns.org/joomla/index.php?option=com_content&view=article&id=139&Itemid=139.

62. The construction of websites has been extensively discussed, from both a theoretical and practical point of view. There are many references about website design in the web itself (see e.g., http://www.webstyleguide.com, by Patrick J. Lynch and Sarah Horton). In general, it is difficult to characterize a "good" website, and most characterization can be debated. Never the less the two fundamental criteria for evaluation involve form and content.

63. See https://www.smashingmagazine.com/2008/01/10-principles-of-effective-web-design/.

64. The list is not exhaustive. There are hundreds of references to best practices in website design but the ones cited are very much representative of the major issues.

Table 4. Guideline and/or principles for website design

Author	Guideline and/or principles
Hubspot - Erik Devaney (1)	- 1) simplicity, 2) visual hierarchy, 3) navigability, 4) consistency, 5) accessibility, 6) conventionality, 7) credibility, 8) user centricity
Envatotuts+ - Collis Ta'eed (2)	- 1) precedence (guide the eye), 2) spacing, 3) navigation, 4) design to build, 5) typography, 6) usability, 7) alignment, 8) clarity (sharpness), 9) consistency
Smashing Maganize - Vitaly Friedman (3)	- 1) don't make users think, 2) don't squander users' patience, 3) manage to focus users' attention, 4) strive for feature exposure, 5) make use of effective writing, 6) strive for simplicity, 7) don't be afraid of the white space, 8) communicate effectively with a "visible language", 9) conventions are our friends, 10) test early, test often

Source: (1) http://blog.hubspot.com/blog/tabid/6307/bid/30557/6-Guidelines-for-Exceptional-Website-Design-and-Usability.aspx#sm.000145u6xtmf5e6trce2lyh1frqtz; (2) http://design.tutsplus.com/tutorials/9-essential-principles-for-good-web-design--psd-56; (3) https://www.smashingmagazine.com/2008/01/10-principles-of-effective-web-design.

Table 5 summarizes the main content of each website of the Federal Reserve System.[65]

Table 5. Website content (1)

Board and District	Head	Content	Search
Board	- what's new, what is next, site map, A-Z index, careers, RSS, all videos, current FAQs, contact us	- about the Fed, news & events, monetary policy, banking information & regulation, payment systems, economic research & data, consumer information, community development, reporting forms, publications	Yes
1 - Boston (2)	- publications & data, news & events, careers, about us	- monetary policy & economic research, supervision & credit, payments studies & strategy, community development, in the region	Yes
2 - New York	- museum & gold tour, data & statistics, careers, blog, press center	- about the New York Fed, markets & policy implementation, economic research, financial institution supervision, financial services & infrastructure, outreach & education	Yes
3 - Philadelphia	- home, about the Fed, contact, FAQs, site map, follow the Fed	- research & data, education, consumer credit & payments, bank resources, community development, newsroom, careers, publications	Yes
4 - Cleveland	- contact us, careers, FAQs, links to social media	- our research, community development, banking oversight, newsroom and events, about us, learning center and money museum	Yes
5 - Richmond	- conferences & events, careers	- research, banking, education, community development, press room, publications, about us	Yes
6 - Atlanta	- careers, contact us, A to Z index, follow the Fed, publications, home	- research and data, economy matters, banking, news and events, education, community development, about the Fed	Yes
7 - Chicago	- about us, contact us, newsroom, museum, subscribe, careers	- banking, research, markets, publications, events, education, region, people	Yes
8 - St. Louis	No	- featured topic, research and data, from the president, blogs, publications, economic education, community development, bank supervision, about us	Yes
9 - Minneapolis	- home, careers, contact	- about the Fed, banking supervision, economic research, regional economy, community & education, news & events, publications	Yes

65. For educational purposes, most central banks host visits, and publish educational information for students and the general public with different levels of proficiency in economics and finance. This is a major topic in all websites of the Federal Reserve System.

10 - Kansas City	No	- banking, research & data, community development, newsroom, publications, education, about us, links to social media	Yes
11 - Dallas	- about the Fed, contact us, FAQs, careers, news, events	- research & data, banking, community development, economic education, globalization institute, publications, follow the Fed	Yes
12 - San Francisco (3)	No	- home, research, banking, education, community development, cash, our district, the Fed System	Yes

(1) As of July 31, 2016; (2) On July 30, 2016, the Bank introduced a new design for its website. This website and the one for the San Francisco Bank are the best in the Federal Reserve System; (3) This website is equal to none of the others in terms of form. It has only a "menu" with links to content.
Source: Federal Reserve Banks' websites: Board (federalreserve.org), 1 - Boston (bostonfed.org), 2 - New York (newyorkfed.org), 3 - Philadelphia (philadelphiafed.org), 4 - Cleveland (clevelandfed.org), 5 - Richmond (richmondfed.org), 6 - Atlanta (frbatlanta.org), 7 - Chicago (chicagofed.org), 8 - St. Louis (stlouisfed.org), 9 - Minneapolis (minneapolisfed.org), 10 - Kansas City (kansascityfed.org), 11 - Dallas (dallasfed.org), 12 - San Francisco (frbsf.org).

A qualitative assessment of some major central banks throughout the world, based on the above guidelines and/or principles for website design, results in the following ranking:[66] (i) European Central Bank (ECB), (ii) The Central Bank of Iceland, (iii) Norges Bank, (iv) De Nederlandsche Bank (DNB), (v) Bank of Canada, (vi) Bank for International Settlements (BIS), (vii) International Monetary Fund (IMF), (viii) The World Bank (WB), (ix) Banque de France, and (x) Deutsche Bundesbank. The first three are outstanding websites, following the best practices. In the Federal Reserve System, the only Banks which would rank on the top two are the San Francisco Bank, and the Boston Bank (followed by the Richmond Bank and New York Bank). The Boston Bank drastically improved its website on July 30, 2016, introducing an extremely "clean and modern look". There is an immense gap in website form and content among Banks in the Federal Reserve System, especially in terms of form, which is essential to the visiting stakeholder. Table 6 summarizes the evaluation.

Table 6 - Ranking of websites (1)

Board and District	**(A)**	**(B)**	**(C)**	**(D)**	**(E)**	**(F)**	**(G)**	**(H)**	**Total**
Board	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Poor
1 - Boston	Good+	Good+	Good+	Good+	Good+	Good+	Good+	Good+	Good+
2 - New York	Good	Fair	Good	Good	Fair	Fair	Fair	Good	Good
3 - Philadelphia	Fair	Poor	Fair	Good	Poor	Poor	Fair	Good	Fair
4 - Cleveland	Good	Fair	Fair	Good	Good	Poor	Poor	Good	Fair
5 - Richmond	Good	Good	Good	Good	Good	Fair	Good	Good	Good
6 - Atlanta	Fair	Poor	Fair	Good	Poor	Poor	Poor	Good	Fair
7 - Chicago	Fair	Poor	Fair	Good	Poor	Poor	Fair	Good	Fair
8 - St. Louis	Fair	Poor	Fair	Good	Poor	Poor	Fair	Good	Fair
9 - Minneapolis	Fair	Poor	Fair	Good	Poor	Poor	Fair	Good	Fair
10 - Kansas City	Fair	Poor	Fair	Good	Poor	Poor	Fair	Good	Fair
11 - Dallas	Fair	Poor	Fair	Good	Poor	Poor	Poor	Good	Poor
12 - San Francisco	Good+	Good+	Good+	Good+	Good+	Good+	Good+	Good+	Good+

(1) As of July 31, 2016. (A) Simplicity; (B) Visual hierarchy; (C) Navigability; (D) Accessibility; (E) Spacing; (F) Typography; (G) Alignment; and (H) Clarity.
Source: Federal Reserve Banks' websites.

Table 7 details the availability of platforms for dissemination of information by the Federal Reserve System. They all adopt the same general structure of alternatives, but with significant differences in accessibility, availability, and quality. There are many options to improve the current offerings in these

66. See: (i) https://www.ecb.europa.eu, (ii) http://www.cb.is, (iii) http://www.norges-bank.no (iv) http://www.dnb.nl, (v) http://www.bankofcanada.ca, (vi) http://www.bis.org, (vii) http://www.imf.org, (viii) http://www.worldbank.org, (ix) https://www.banque-france.fr, and (x) https://www.bundesbank.de. A significant change in both form and content of the ECB, BIS and IMF websites was completed very recently (actually, in the case of the IMF the change is still under way).

three attributes when one takes into account not only the best practice within the System but also that adopt by central banks in other jurisdictions, and even organizations in the private sector.

Table 6. Website content and dissemination of information (1)

Board and District	RSS	Email	Podcasts	Blog	Social media (2)	Videos (3)	Speeches (4)
Board	Yes	Yes	No	No	Yes - 4	Yes	Yes
1 - Boston	Yes	No	Yes (5)	No	Yes - 3	Yes	Yes
2 - New York	Yes	Yes	No	Yes (6)	Yes - 4	No	Yes
3 - Philadelphia	Yes	Yes	No	No	Yes - 4	Yes (7)	Yes
4 - Cleveland	No	Yes (8)	No	No	Yes - 6	Yes	Yes
5 - Richmond	No	No	Yes (9)	No (10)	Yes - 3	Yes (11)	Yes
6 - Atlanta	Yes	Yes	Yes	Yes (12)	Yes - 4	Yes (13)	Yes
7 - Chicago	Yes	Yes (14)	No	Yes (15)	Yes - 3	Yes	Yes
8 - St. Louis	Yes (16)	Yes (17)	No	Yes (18)	Yes - 7	Yes	Yes
9 - Minneapolis	Yes	No	No	Yes (19)	Yes - 3	Yes	Yes
10 - Kansas City	Yes	Yes	Yes (20)	No	Yes - 4	Yes (21)	Yes
11 - Dallas	Yes	Yes	No	No	Yes - 4	Yes (22)	Yes
12 - San Francisco	Yes (23)	Yes (24)	No	Yes (25)	Yes - 3 (26)	Yes (27)	Yes

(1) As of July 31, 2016; (2) The number indicates the links to social media; (3) Videos are, in general, about the speeches in events; (4) It also includes testimonies; (5) Boston has a link to other Fed's podcasts. Actually, there are broken links to the New York Bank, the Dallas Bank and the Minneapolis Bank, which have no podcast; (6) Liberty Street Economics is available on the iPad and can be customized by economic research topic or economist; (7) Only two, educational; (8) Not on the front page; difficult to locate in website; (9) Need to search; difficult to locate in website; (10) Economic Brief are web-exclusive essays on current economic issues and trends based on staff economists' ongoing research and published work. The search for "blog" returns links to this page, but actually it is not a blog in the strict sense of the term; (11) The best content, also in terms of organization by type; (12) Located under "research & data"; not on front page; (13) Located under "conference & events", under "news & events"; not on front page; (14) Located under "contact us"; not on front page; (15) Located under "education" on a sidebar named "resources"; very difficult to locate; not on front page; (16) Located under "contact us"; on front page it is necessary to "expand footer" to see the links; (17) Located under "contact us"; on front page it is necessary to "expand footer" to see the links; (18) There are actually two blogs: "On the Economy" and "FRED"; (19) There is a blog under the "Center for Indian Country Development"; not on front page; (20) Need to "search" the site; not on front page; (21) Need to "search" the site; not on front page; (22) Need to "search" the site; not on front page; very poor quality; (23) Under "subscriptions"; not on front page; (24) Under "subscriptions"; not on front page; (25) Under "subscriptions" there is a broken link to "community development blog"; (26) Under "contact us"; not on front page; (27) Need to "search" the site; not on front page; excellent quality.
Source: Federal Reserve Banks' websites.

In general, the Reserve Banks offer a "full package " of dissemination channels, which includes RSS,[67] email, podcasts, blogs, social media, videos, and speeches. In each case RSS offers a rich portfolio of information to the stakeholders in a very simple format, and allow the users to choose from it. In the case of email most Banks also allow the choice of information to be received, such as news releases, research publications, speeches, videos, events, and community development. The use of podcasts and blogs are less usual: only four Banks communicate via podcasts, and six use blogs.

All of the Reserve Banks use social media channels, usually three or four, with the Cleveland Bank as an exception with six channels. In general, the channels are listed on the front page of the website, but usually with very little emphasis; in some cases, the user needs to "scroll down" a page to locate the channels, and in others it is necessary to link to another page. Also, some websites show inconsistency when referencing the social media options among webpages.

67. RSS, or "Really Simple Syndication" is an XML-based format for distributing web content. Users can subscribe to RSS feeds using software such as readers, or aggregators, which display the links, headlines, and a brief summary of the feed. The reader automatically incorporates changes for RSS subscribers when content in the feed has been updated or changed.

In the case of videos there is a significant discrepancy among Federal Reserve Banks concerning availability, quality (a major problem in most Banks), and topics presented. All, except the San Francisco Bank have direct links to YouTube and usually there is a difference between the content in the website and in YouTube. Most videos are speeches by senior officers and presentations made in events.

Finally, all Reserve Banks make available speeches by senior officers, usually within the United States. A minority are delivered on-the-record to enable the bank to publicly convey specific policy messages to its stakeholders. The remainder are delivered in off-the record environments to enable the bank not only to convey information (mostly analysis and outlook on economic and financial developments), but also to enhance an audience's understanding, without risk of less formal language being misinterpreted by financial markets and in the news media.

6.2 Social Media

With approximately two billion people using social media around the world, central banks must seriously consider how to engage with stakeholders through alternative channels.[68] And simply establishing a presence on social media is not enough – stakeholders will increasingly expect banks to use social channels to deliver faster and more effective information about monetary policy and financial stabilization; share upcoming events; offer knowledge about regulations; and provide a feedback mechanism about the accomplishment of their policy objectives. Most central banks are not delivering such services today.

To sharpen their communication and dissemination of information capabilities central banks must continuously improve their communication platforms capabilities by offering better response times and response rates through social media channels, as well as personalized services to stakeholders by interpreting the data that is continuously generated on social media. Since social media is all about the stakeholders' experience, central banks need to build their social media strategies around them.

In the near future social media will dramatically impact communication by central banks, as most banks have established a presence on various social sites. But followers and interactions are only as good as the meaning that can be distilled from them. As stakeholders increasingly use social media to share opinions on central banks' information, banks must listen, learn and respond, as well as incorporate their social activities into their overall strategies, in order to fully attain its policy objectives. In most cases, this will require central banks to rethink their communication and dissemination of information strategies to make them more stakeholder-centric.

Central banks can benefit in several functional areas by overcoming the risks and leveraging the advantages that social media provides. Social media should be embedded into a bank's entire ecosystem because it impacts numerous areas, such as transparency, accountability, reputational risk management, customer education, etc. Central banks can reassess their communication and dissemination of information processes once they receive feedback from stakeholders and can make changes based on inferences drawn from social data. Intelligent use of social data can generate enormous value for central banks. Applying social analytics to the rich data sets present in tweets, blogs, posts, etc. enables them to derive stakeholder intelligence, understand the need for particular information in specific segments, develop new dissemination strategies and manage risks, all within the limits of their policy objectives and strategies.

Table 8 presents the website links to social media channels for each Federal Reserve Bank.

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68. The frame of reference for the following analysis are: KPMG (2012), Hazarika and Nag (2014), and Investis (2015).

Table 8. Website links to social media channels (1)

Board and District	Facebook	YouTube	Twitter	LinkedIn	Flickr	Pinterest	Google+	Slideshare
Board		Yes	Yes	Yes	Yes			
1 - Boston		Yes	Yes	Yes				
2 - New York	Yes	Yes	Yes					Yes
3 - Philadelphia	Yes	Yes	Yes	Yes				
4 - Cleveland	Yes	Yes	Yes	Yes		Yes	Yes	
5 - Richmond	Yes	Yes	Yes					
6 - Atlanta	Yes	Yes	Yes	Yes				
7 - Chicago	Yes	Yes	Yes					
8 - St. Louis	Yes	Yes	Yes	Yes	Yes		Yes	
9 - Minneapolis	Yes	Yes	Yes					
10 - Kansas City		Yes	Yes	Yes		Yes		
11 - Dallas		Yes	Yes	Yes				
12 - San Francisco	Yes		Yes	Yes				

(1) As of July 31, 2016.
Source: Federal Reserve Banks' websites.

The Dallas Federal Reserve is also the only District on Instagram (6 publications, 14 followers, 0 following). Also, even though it is not on Facebook, its website has links to: (i) Economy in Action, and (ii) Fed careers on Facebook. The St. Louis is also on Scribd (169 publications, 5,4k views). Table 9 details the use of social media channels by the Federal Reserve System, including the Bank´s presidents.

Table 9. Use of social media channels by the Federal Reserve System

Facebook (1)

Board and District	Joined	Photos	Videos	Followers	Likes
2 - New York	May 13, 2014	818	92	NA	12,638
3 - Philadelphia	February 18, 2011	206	No	NA	1,619
4 - Cleveland	April 06, 2012	61	No	NA	1,915
5 - Richmond	May 17, 2013	352	No	NA	593
6 - Atlanta	June 23, 2010	590	No	NA	2,589
7 - Chicago	August 10, 2007	903	5	4.1	3,155
8 - St. Louis	May 06, 2010	380	245	NA	6,107
9 - Minneapolis	April 15, 2011	56	9	NA	954
12 - San Francisco	February 24, 2010	532	24	4.0	6,194

(1) As of July 31, 2016. NA: not available.
Source: Federal Reserve Banks' websites.

Board and District	President	Joined	Likes
7 - Chicago	Charles L. Evans	October 26, 2011	281
11 - Dallas	Robert S. Kaplan	2006	145

(1) As of July 31, 2016.
Source: Facebook.

Twitter (1)

Board and District	Joined	Tweets	Following	Followers	Likes	Photos/Videos
Board	March 25, 2009	2,875	25	360,437	NA	199
1 - Boston	February 4, 2009	2,799	735	40,255	115	128
2 - New York	June 10, 2008	3,455	25	108,255	2	557
3 - Philadelphia	June 11, 2009	6,150	444	43,421	68	253
4 - Cleveland	April 1, 2009	2,765	78	34,334	8	258
5 - Richmond	September 30, 2008	11,567	158	26,632	19	1,100

6 - Atlanta	April 13, 2009	7,663	12	44,783	17	502
7 - Chicago	Jun2 12, 2009	6,792	439	56,959	896	471
8 - St. Louis	September 4, 2009	18,703	25	63,006	1	3,858
9 - Minneapolis	February 6, 2009	2,444	17	37,477	NA	372
10 - Kansas City	April 18, 2011	2,773	137	19,493	41	182
11 - Dallas	May 13, 2010	3,006	38	40,602	NA	675
12 - San Francisco	February 24, 2010	7,882	1,509	37,506	240	864

(1) As of July 31, 2016. NA: not available.
Source: Federal Reserve Banks' websites.

Board and District	President	Joined	Tweets	Following	Followers	Likes
9 - Minneapolis	Neel Kashkari	January 30, 2013	6,479	621	11,518	480
11 - Dallas	Robert S. Kaplan	May 8, 2011	487	314	5,730	17

(1) As of July 31, 2016.
Source: Twitter.

LinkedIn (1)

Board and District	Joined	Followers
Board	NA	20,488
2 - New York	NA	5,780
3 - Philadelphia	NA	3,427
4 - Cleveland	NA	4,167
6 - Atlanta	NA	6,807
8 - St. Louis	NA	6,752
10 - Kansas City	NA	5,686
11 – Dallas	NA	5,280
12 - San Francisco	NA	6,792

(1) As of July 31, 2016. NA: not available.
Source: Federal Reserve Banks' websites.

YouTube (1)

Board and District	Joined	Videos	Views	Followers	Channels
Board	January 4, 2010	120	634,909	10,143	No
1 - Boston	November 10, 2009	51	5,963	NA	1; Board
2 - New York	November 23, 2010	233	37,076	789	No
3 - Philadelphia	April 3, 2009	243	52,262	253	No
4 - Cleveland	May 29, 2009	237	128,852	337	No
5 - Richmond	August 31, 2011	51	29,244	219	10; Board, New York, Boston, St. Louis, Dallas, Minneapolis, Philadelphia, Atlanta, Cleveland, Chicago
6 - Atlanta	February 17, 2011	246	237,419	688	No
7 - Chicago	October 1, 2008	118	43,964	334	21; Board, San Francisco, Boston, Richmond, Atlanta, Cleveland, Dallas, St. Louis, Minneapolis, Philadelphia
8 - St. Louis	September 8, 2009	334	365,528	2.001	No
9 - Minneapolis	October 13, 2010	272	53,309	200	No
10 - Kansas City	June 30, 2011	73	14,929	132	6; Board; New York, Dallas, Chicago, Cleveland, St. Louis
11 - Dallas	November 7, 2007	41	114,587	385	No

(1) As of July 31, 2016. NA: not available.
Source: Federal Reserve Banks' websites.

Flickr (1)

Board and District	Joined	Photos	Albums	Followers	Favorites
Board	January, 2013	209	8	166	No
8 - St. Louis	September, 2009	44	No	9	No

(1) As of July 31, 2016.
Source: Federal Reserve Banks' websites.

Pinterest (1)

Board and District	Joined	Pins	Following	Followers	Folders	Likes
4 - Cleveland	NA	31	5	172	2	0
10 - Kansas City	NA	1,148	42	409	12	15

(1) As of July 31, 2016. NA: not available.
Source: Federal Reserve Banks' websites.

Google+ (1)

Board and District	Joined	Followers
4 - Cleveland	June 19, 2013	121
8 - St. Louis	June, 27, 2013	649

(1) As of July 31, 2016. NA: not available.
Source: Federal Reserve Banks' websites.

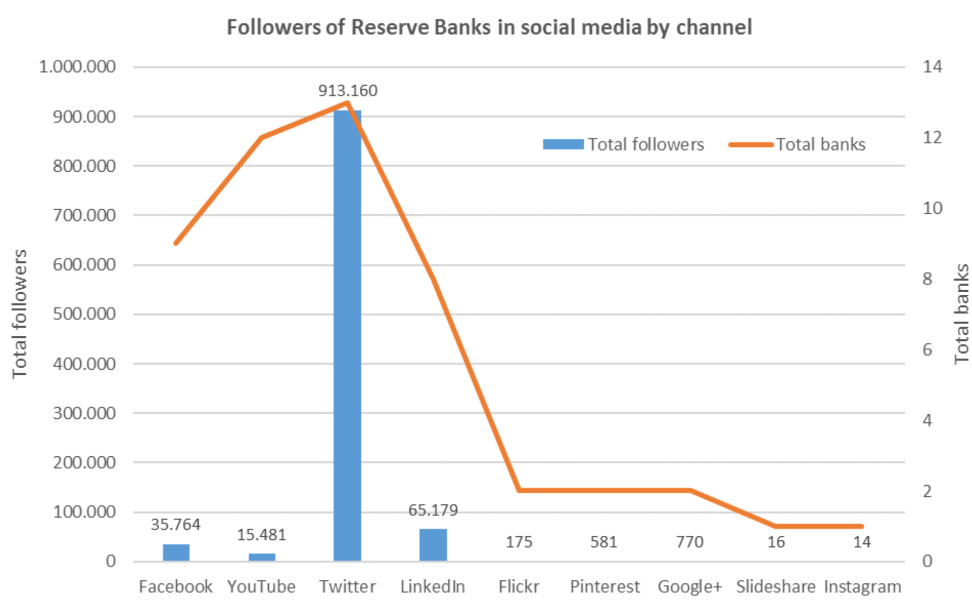
Slideshare (1)

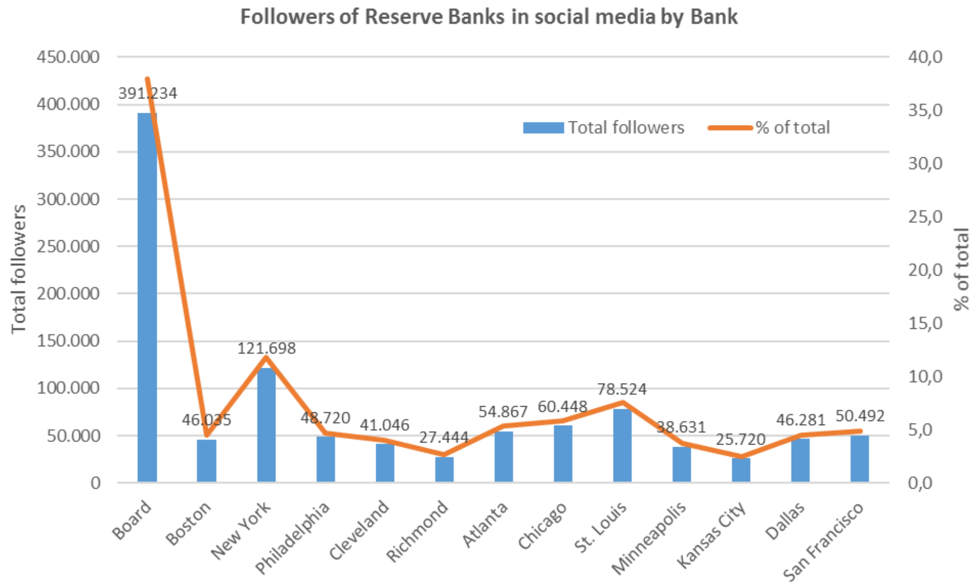
Board and District	Joined	Presentations	Documents	Followers	Following	Clipboards
2 - New York	NA	3	30	16	0	0

(1) As of July 31, 2016. NA: not available.
Source: Federal Reserve Bank of New York website.

Figure 1 bellow consolidates the use of social media by the Federal Reserve System.

Figure 1. Consolidated information of the use of social media





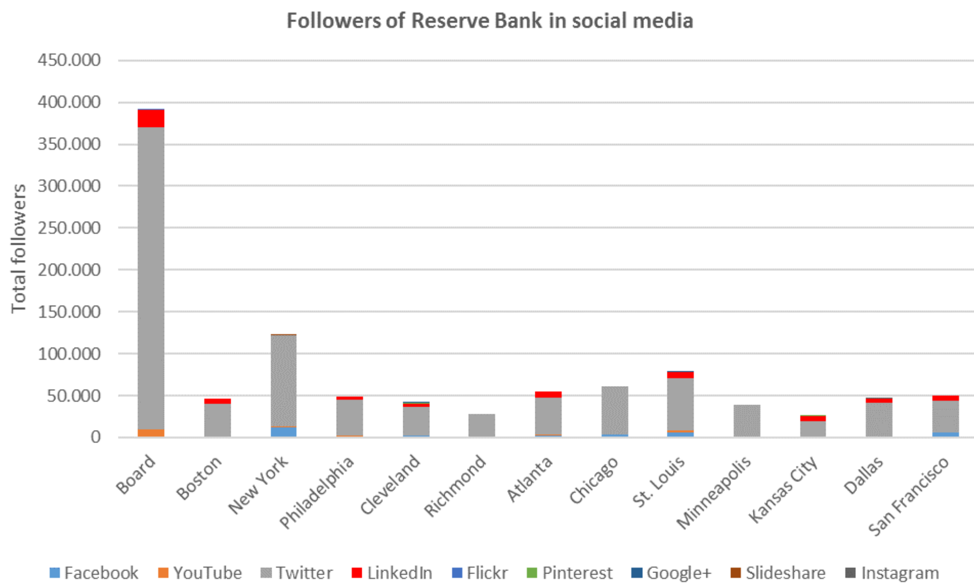


Table 10 summarizes the number of followers of all social media channels used by the Federal Reserve System. Even though it is no possible to be precise it is expected to exist an overlapping of followers within the System.

Table 10. Social media channels – total followers (1)

Board and District	Channels	Followers	% of total
Board	4	391,234	37.9
1 – Boston (2)	3	46,035	4.5
2 - New York	4	121,698	11.8
3 - Philadelphia	4	48,720	4.7

4 - Cleveland	6	41,046	4.0
5 - Richmond	3	27,444	2.7
6 - Atlanta	4	54,867	5.3
7 - Chicago	3	60,448	5.9
8 - St. Louis (3)	7	78,524	7.6
9 - Minneapolis	3	38,631	3.7
10 - Kansas City	4	25,720	2.5
11 - Dallas	4	46,281	4.5
12 - San Francisco	3	50,492	4.9
Total		**1,031,140**	

(1) As of July 31, 2016. (2) The number of followers of the Boston Bank in YouTube is not available. (3) Scrib, used by the St. Louis Bank was not considered (number of followers is also not available).
Source: Federal Reserve Banks' websites.

Table 11 gives the percentage of followers of all social media channels used by the Federal Reserve System.

Table 11. Social media channels – % of total followers (1)

Board and District	**Facebook**	**YouTube**	**Twitter**	**LinkedIn**	**Flickr**	**Pinterest**	**Google+**	**Slideshare**
Board		65.5	39.5	31.4	94.9			
1 – Boston (2)		NA	4.4	8.9				
2 - New York	35.3	5.1	11.9					100.0
3 - Philadelphia	4.5	1.6	4.8	5.3				
4 - Cleveland	5.4	2.2	3.8	6.4		29.6	15.7	
5 - Richmond	1.7	1.4	2.9					
6 - Atlanta	7.2	4.4	4.9	10.4				
7 - Chicago	8.8	2.2	6.2					
8 - St. Louis (3)	17.1	12.9	6.9	10.4	5.1		84.3	
9 - Minneapolis	2.7	1.3	4.1					
10 - Kansas City		0.9	2.1	8.7		70.4		
11 - Dallas		2.5	4.4	8.1				
12 - San Francisco	17.3		4.1	10.4				

(1) As of July 31, 2016. (2) The number of followers of the Boston Bank in YouTube is not available. (3) Scrib, used by the St. Louis Bank was not considered (number of followers is also not available).
Source: Federal Reserve Banks' websites.

In summary, the evidence shows a high level of discrepancy in relation to the use of social media channels to disseminate information among Banks in the Federal Reserve System. First, the overall quality (considering the attributes mentioned), and frequency of information available to their stakeholders in their websites varies. Second, the use of these channels in terms of content, quality, and frequency is also distinct. Third, the use of channels is highly concentrated: (i) in the case of Facebook, The New York Bank represents 35.3% of total followers, with St. Louis and San Francisco with nearly 17.0% each; (ii) for YouTube, The Board of Governors accounts for 65.5% of total followers; (iii) for Twitter, The Board represents 39.5% of total followers; and (iv) in the case of LinkedIn, The Board represents 31.4% of total followers, with Atlanta, Chicago, and San Francisco with nearly 10.0% each.

6.3 New Vision

Central banks currently use social media channels as a "second class" platform of communication; however, they can scale their use of social media far beyond this by choosing the right social media channel and analytics tools, and making other internal changes, including the following:
- investing in new tools: before selecting a tool or platform, central banks need to have a vision of their social media objectives, evaluate the tendencies in channels used by stakeholders, and what other central banks are doing (benchmarking);

- establishing new metrics: central banks need metrics to measure the effectiveness of their social strategy, and these metrics will probably differ from bank to bank, based on their objectives. Once the metrics are established, banks need to analyze the data, identify their most important stakeholders, pinpoint where they are talking about, and discover what is being said. These insights will be invaluable for improving the dissemination of information;
- redesigning the IT infrastructure: social media success requires a robust IT architecture that can harness stakeholders' formation in the context of burgeoning social data to deepen relationships. As such, it is very important to put technology at the forefront of planning and execution;[69]
- designing internal processes: central banks will need to evaluate processes to encourage collaboration across dispersed teams, with different levels of expertise (for e.g., researchers and staff involved in education for the general public). Doing so will enable them to arm the right individual(s) with the right information, at the right time, in the right format needed to address stakeholders' preferences at every stage of their relationship;
- establishing new policies: central banks have to exercise discretion when collecting, processing and sharing policy information and consider privacy issues. This is a fundamental constraint on the dissemination of information to stakeholders, especially because of its impact in financial markets.

An approximate blueprint for a successful social media strategy can be summed up in the following steps: (i) develop a vision and gather needed organizational support for embracing social media strategy; (ii) define the scope and objectives for the social media strategy; (iii) determine the right metrics for measuring the effectiveness of the strategy; (iv) draft a robust risk mitigation plan before engaging in social platforms; (v) understand the regulatory and compliance requirements to be observed on the dissemination of information through social media channels; (vi) integrate the technology infrastructure to advance the social strategy and achieve the policy objectives; (vii) ensure organization-wide cultural assimilation of the social strategy; (viii) achieve stakeholder centricity through the social strategy.

6.4 Challenges

Social media has irrevocably changed the way organizations interact with their stakeholders. For central banks, in particular, the continuing rise of social media channels signals a new dawn; an evolution that offers significant opportunities and challenges. These channels are a rapidly and constantly evolving environment and, as a result, central banks will need to ensure that they are staying on top of the latest trends and taking advantage of the greatest opportunities to disseminate information to its stakeholders.[70] Taking into account the challenges faced by other organizations the main issues for which central banks need to devise a strategy are the following:
- management of risk: likely the biggest challenge facing banks as they consider their social media strategy is risk. It is usually accepted that social media represents a clear and present danger where the actions of both customers and employees pose a reputational risk for banks;
- integrating IT: getting the most out of social media requires central banks to rethink the way they integrate their technology platforms. Creating the optimal IT environment for social media requires more than simply opening up an account in a particular channel;[71]

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69. To reap the rewards of a social strategy, many central banks will need to redesign their traditional IT infrastructure. Technology must be consolidated to deliver a unified, consistent and fully integrated experience regardless of the channel of engagement. The IT infrastructure must be rewired to transcend inter-departmental barriers, divisional boundaries and isolated groups to provide a smooth and seamless experience. This will allow central banks to present a single face to stakeholders. An integrated IT architecture that employs social media needs to encompass the entire content of information, segmented by stakeholder and social media channel. This will allow central banks to communicate effectively, and reduce costs of non-value-added information (besides that demanded by regulatory compliance).
70. For a detailed analysis of challenges faced by banks in general concerning the use of social media see, e.g., KPMG (2012).
71. Indeed, central banks must carefully consider how they can bring information (press releases, speeches, events, research, data, etc.) together into a single IT platform to make it more accessible, and responsive to their stakeholders.

- creating a social culture: central banks are taking divergent paths to social media channels, in particular, opting for some of the available alternatives (in particular, Twitter, YouTube, Facebook, and LinkedIn). Some are embedding social media into segments of their information dissemination to take advantage of innovation in the emerging social media market;
- gaining management support: given the ubiquitous and transformative impact of social media, it is critical that senior management of central banks fully engage in the development of the banks' strategy to properly manage risk and ensure that initiatives are internally aligned. With management support it is the responsibility of the internal communications team to establish a framework to support that – ensuring that information is accessible, easily digestible, and relayed in a timely fashion to the bank's stakeholders;
- the demands of data: one of the greatest opportunities for central banks is to leverage the data that can be gleaned from social media channels to improve the process of information dissemination. But managing the avalanche of social media channels creates a number of unique challenges and consideration for central banks;
- building a single customer view: dealing with stakeholders over social media channels requires central banks to achieve a holistic view of them across all of their various interactions. Central banks will need to put themselves in the stakeholders' shoes if they hope to develop valuable relationships, in particular, with the general public. They will need to work across multiple social media channels to deliver more responsive and valuable information and truly engage with their stakeholders;
- the compliance challenge: regulation and compliance influences the business and operating model of all central banks, regardless of their size or geographic scope. This, in turn puts additional constrains on the quality, objectivity, utility, integrity, reproducibility, influence, and transparency of the information made available through social media channels.

7 Conclusion

With approximately two billion people using social media around the world, central banks must seriously consider how to engage with stakeholders through alternative channels. And simply establishing a presence on social media is not enough – stakeholders will increasingly expect banks to use social channels to deliver faster and more effective information about monetary policy and financial stabilization; share upcoming events; offer knowledge about regulations; and provide a feedback mechanism about the accomplishment of their policy objectives. Most central banks are not delivering such services today.

Social media is a relatively recent innovation that allows for corporate communications opportunities that a decade ago would not have been plausible. In particular, social media allows companies to communicate directly and instantly with their stakeholders, marking a shift from the traditional one-way to two-way communication. Engaging in social media has not been as straight forward for central banks as for private banks (and the private sector in general). Even more challenging for them it is to build, and crucially maintain, a successful presence in that online environment they neither own nor control. As a consequence of its function in the institutional environment a central bank usually sees the control of information in a different level compared to a private entity. This, in turn, might explain the uneasiness of central banks with most channels of social media.[72]

The social media channels should be considered by central banks not as an instrument for better transparency but, instead, as an up-to-date communication instrument. Since transparency is a key attribute of communication, the more advanced central banks in terms of communication are, in general,

72. The seminar, "Communications and External Relations for Central Banks" in Windsor, United Kingdom, April 19-22, 2016, was about central bank transparency and communication issues and the challenges central banks face nowadays in embarking on the strategy of openness and proactive communications with the public.

those which have begun routinely using social media channels as one of their communication instruments. If a central bank is less transparent about policy, it has little information to disseminate, and as a result it makes no sense to open a Facebook, Twitter or YouTube account.

For more than 20 years central banks' websites, in the United States and abroad, have been transforming into digital news and information hubs. Due to a necessity of overall consistency in the dissemination of information it is expected that the content made available to stakeholders in the website at a given time will, over time, be reflected in the social media channels used. But for that to really accommodate both the interests of the different stakeholders and the segmentation of the channels it is necessary that the content (both text and image) that describe what central banks do will need to vary across channels, and be tailored to the needs of each individual stakeholder of a given channel.

In summary, the evidence shows a high level of discrepancy in relation to the use of social media channels to disseminate information among Banks in the Federal Reserve System. First, the overall quality (considering the attributes mentioned), and frequency of information available to their stakeholders in their websites varies. Second, the use of social media channels in terms of content, quality, and frequency is also distinct. Third, the use of channels is highly concentrated: (i) in the case of Facebook, The New York Bank represents 35.3% of total followers, with St. Louis and San Francisco with nearly 17.0% each; (ii) for YouTube, The Board of Governors accounts for 65.5% of total followers; (iii) for Twitter, The Board represents 39.5% of total followers; and (iv) in the case of LinkedIn, The Board represents 31.4% of total followers, with Atlanta, Chicago, and San Francisco with nearly 10.0% each.

Overall, the Federal Reserve System adopts and makes available to stakeholders the same platforms for the dissemination of information. They use the same general structure of alternatives, but with significant differences in accessibility, availability, and quality. There are many options to improve the current offerings in these three attributes when one takes into account not only the best practice within the System but also that adopt by central banks in other jurisdictions, and even organizations in the private sector.

An even more restricted environment is observed for the Banks' presidents, with only three of them present on social medias (two on Facebook and two on Twitter). The president of the Dallas Bank communicates using both channels.

In the near future it is expected that the websites of central banks will mostly evolve to include a variety of more attractive content, including, for e.g.: (i) live webcast of a press releases and conferences, (ii) presentations by economists about some research topic, and (iii) speeches by the governor, president or another senior policymaker. These broadcasts, made available by the central bank should be non-discriminatory (available not only to subscribers of, say, Reuters or Bloomberg) and give the stakeholders an opportunity to interact.

As central banks focus on efficiency of their operations, often through attention to and specialization in core functions, budgets tighten and areas are downsized or outsourced. Communication departments are not exempt from this. And this raises some key questions: How can communication departments ensure that they have the right skills or access to skills to send out the right information that fits with the central bank policy objectives? How can they demonstrate value to senior management? How can they keep pace with the outside world, yet not lose sense of the identity and values of the institution, and the constraints under which it operates?

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