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## Bank of Canada communication, media coverage, and financial market reactions

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**No. 20-2010**

**Bernd Hayo and Matthias Neuenkirch**

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## **Bank of Canada Communication, Media Coverage, and Financial Market Reactions**

### **ABSTRACT**

We examine the impact of Bank of Canada communications and media reporting on them on Canadian (short- and medium-term) bond and stock market returns using a GARCH model. Communications are rather uniformly distributed over the sample period (1998–2006); however, media coverage is particularly high during phases of increased uncertainty about the future course and timing of Canadian monetary policy. Official communications exert a larger influence on the bond market, whereas media coverage is more relevant for the stock market. In general, media filtering does not play a prominent role.

JEL: E52, G14, G15

Keywords: Bank of Canada, Central Bank Communication, Financial Markets, Media Coverage, Monetary Policy

## I. INTRODUCTION

Bank of Canada (BOC) Senior Deputy Governor Paul Jenkins (2005, 60) stated in 2004 that “*effective communication has become a vital tool in the implementation of monetary policy.*” The BOC engages in several types of communication: post-meeting statements accompanying interest rate decisions, quarterly monetary policy reports, and congressional hearings and speeches.

Given this emphasis on communication, it is worth investigating whether and, if yes, to what extent, these communications affect financial market expectations. Hayo and Neuenkirch (2010) show that BOC communications exert a significant and economically relevant impact on Canadian financial market returns and volatility. Their approach is based on the efficient market hypothesis and implicitly assumes that financial markets automatically process news at the time the information becomes available. However, in the case of Federal Reserve Bank (Fed) communications, there is preliminary evidence that “*financial market news is not necessarily created at the time when the information becomes available, but comes into existence only after it goes through a filtering process by the media*” (Hayo et al., 2008, 27). Furthermore, newswire reports may include additional information from informal interviews and the question-and-answer sessions that often take place after formal communications.

To address the question of whether this media filtering process is also present in the case of Canadian central bank communication, we extend Hayo and Neuenkirch’s (2010) data set and analyse *all types of BOC communications and media reporting on them* (Reuters, *The Globe and Mail*, *National Post*, and *Canadian Press*) regarding monetary policy and economic outlook. We address two specific research questions: (1) To what extent is Canadian central bank communication covered by the media? (2) Does media coverage initiate larger reactions on Canadian bond and stock markets than the original communications?

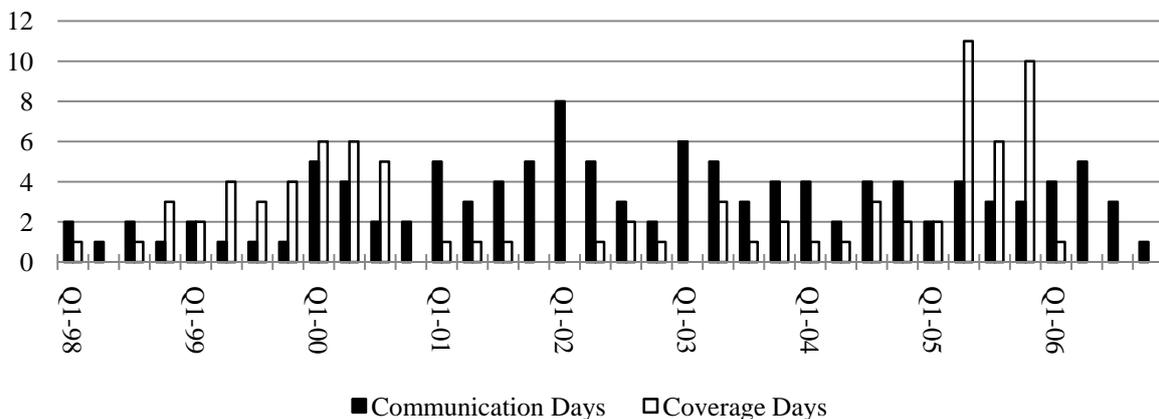
To our knowledge, this is the first study that systematically compares the financial market impact of three different sources of information about official central bank communications, namely, original communications, reports on these communications in leading national newspapers, and international news agency coverage of same. First, we find that the intensity of media coverage does not simply reflect official central bank communications. Second, original communications by the Bank of Canada dominate other sources of information on bond markets, whereas national newspapers are particularly relevant for the stock market.

## II. DATA

We start with the same data set used in Hayo and Neuenkirch (2010). The communications are coded as being either related to monetary policy or to economic outlook, allowing for possible asymmetric reactions of financial markets. Coding of the dummy variables for the Canadian economic outlook communications is either “positive” (EO+) or “negative” (EO-); “tightening” (MP+) and “easing” (MP-) are the categories for monetary policy communications. There are 12 communication dummies as each type of communication (statements, monetary policy reports, congressional hearings and speeches) can be coded into four different categories (EO+, EO-, MP+, MP-).

We extend Hayo and Neuenkirch’s (2010) original data set by including the world’s largest newswire agency, Reuters, and three major Canadian newspapers: *The Globe and Mail*, *National Post* (formerly *Financial Post*), and *Canadian Press*. Over the sample period January 1, 1998 to December 31, 2006, we systematically review the daily announcements available on the respective websites. We collect new stories if they concern Bank of Canada communications related to economic outlook or monetary policy inclination. Figure 1 gives an overview of how central bank communication days and media coverage days are distributed over the sample period.

FIGURE 1: Communication Days vs. Coverage Days



There is slightly more media coverage about communication (142; represented by transparent bars) than original communication events themselves (116; represented by black bars), but the original events are more uniformly distributed over the sample period. There are two phases during which Canadian central bank communication received relatively intense media attention. The first one is from Q2-1999 to Q3-2000, which is the period before the

BOC introduced a fixed schedule of interest rate decision days (fixed announcement dates).<sup>1</sup> During this period, financial market agents (and the media) were uncertain as to which day in a month the BOC would change its target for the overnight rate. Thus, every piece of central bank news was scrutinised for any hint as to the BOC's monetary policy course and timing. The second phase of intensified coverage is from Q2-2005 to Q4-2005. During this time span, there was great uncertainty about when and to what extent the BOC would re-join the Fed's tightening cycle. The BOC left its target rate unchanged between October 2004 and September 2005, while the Fed raised its target rate by a total of 175 bps.

In our analysis, we differentiate between the original source (12 dummy variables) and media coverage by Reuters and the major newspapers.<sup>2</sup> We check whether the coverage (1) *matches* the original source, (2) *deviates* from the original source (shows an obviously different interpretation than the original wording, e.g., due to the question-and-answer session), or whether it is (3) an *exclusive* report of central bank communication insofar as there is no original communication on the reporting day or the day before. Thus, in the case of Reuters news and newspaper coverage, we differentiate between "matching", "deviant", and "exclusive" and assign these the same subcategories used for sorting original communications (EO+, EO-, MP+, MP-).

### III. ECONOMETRIC METHODOLOGY

Our Canadian financial market indicators comprise daily closing interest rates on government securities and daily returns on stock markets for the period January 1, 1998 through December 31, 2006.<sup>3</sup> We study daily changes of three-month, six-month, and one-year Treasury bills and two-year Treasury notes and rates of change of the Toronto Stock Exchange Index (TSX).

We start with a generalised version of a GARCH(1,1) specification (Engle, 1982; Bollerslev, 1986) and apply a consistent general-to-specific testing-down process (Hendry, 1995) at a 5% significance level to further increase estimation efficiency.<sup>4</sup>

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<sup>1</sup> The Bank of Canada had four key objectives when it introduced the new system for announcing target rate decisions in September 2000: reduced uncertainty in financial markets, more emphasis on medium-term monetary policy, increased transparency regarding the BOC's interest rate decisions, and greater focus on the Canadian rather than the U.S. economic environment (Parent et al., 2003).

<sup>2</sup> As there are very few observations for some categories in a particular newspaper, we construct summary variables for all three newspapers.

<sup>3</sup> We choose daily data instead of intraday data for two reasons. At a conceptual level, we are interested in whether there are economically important effects that persist over time, instead of just short-term blips in the data. At a practical level, it is impossible to time the original central bank news more precisely.

<sup>4</sup> Diagnostic testing of preliminary OLS estimations reveals significant ARCH effects: F(1,2161) = 33.3\*\* (3 month); 54.0\*\* (6 month); 35.7\*\* (1 year); 35.1\*\* (2 years); and 12.2\*\* (TSX).

$$\begin{aligned}
(1) \text{ Returns}_t &= \gamma \sum_{r=1}^6 \delta_r \text{ Financial Control Variables}_{t-r} + \zeta \text{ Control Variables} \\
&+ \eta \text{ Media Coverage Dummies} + \theta \text{ Communication Dummies} + \lambda h_t + \mu_t, \\
\mu_t &= \epsilon_t h_t^{1/2}, \\
h_t &= \alpha_0 + \alpha_1 (\mu_{t-1} - \kappa_1)^2 + \kappa_2 \tau (\mu_{t-1} - \kappa_1)^2 + \beta_1 h_{t-1}, \\
\tau &= 1 \text{ if } \mu_{t-1} < \kappa_1 \text{ and zero otherwise,}
\end{aligned}$$

where  $\alpha_0, \alpha_1, \beta_1, \mu, \kappa_1, \kappa_2, \gamma, \delta, \zeta, \eta, \theta, \iota,$  and  $\lambda$  are parameters or vectors of parameters,  $\tau$  is an indicator function, and  $\epsilon_t | \Gamma_{t-1} = t(v)$ .  $\Gamma_{t-1}$  captures all information up to  $t-1$ , and  $t(v)$  is a  $t$ -distribution with  $v$  degrees of freedom.

The vector of financial controls contains lagged returns, Canadian and U.S. stock and bond returns, and CAD/USD and CAD/EUR spot market returns. Other control variables are changes in Canadian and U.S. target rates, the surprise component of several commonly watched macroeconomic announcements from both countries, and an impulse dummy for 9/11.<sup>5</sup> Contemporaneous returns are excluded to avoid simultaneity problems. Bank of Canada communications and media coverage variables enter the equation when they actually hit the market. For example, a speech (or a newswire report about a speech) after market closure hits the market the following day. Model (1) allows for several special features: student- $t$  distributed errors, variance in the mean equation, asymmetric effects of shocks, and asymmetry thresholds.

#### IV. EMPIRICAL ANALYSES

Table 1 shows the reaction of Canadian short- to medium-term bond market and stock market returns to central bank communication and its media coverage.<sup>6</sup>

All coefficients of the original BOC sources show the expected sign, but the signs of several coverage variables are counterintuitive.<sup>7</sup> For the bond market, more communication variables cause a significant reaction (overall and with expected signs), whereas media coverage and, in particular, newspapers dominate on the stock market. On bond markets, media coverage is notably relevant when it provides an obviously *different* interpretation than

<sup>5</sup> Data sources: Bond and foreign exchange market series: Federal Reserves' Statistical Releases H15 and Bank of Canada's statistical database; stock market series: Datastream. Surveys of macroeconomic announcements: Bloomberg newswire.

<sup>6</sup> The coefficients can be interpreted as follows:  $-0.023$  denotes a decrease of 2.3 bps in three-month interest rates after a negative economic outlook in a monetary policy report.

<sup>7</sup> Newspaper Deviant MP-: 6 month, 1 year, 2 years, TSX;

Newspaper Matching MP+: 3 month;

Reuters Exclusive MP-: 3 month;

Reuters Deviant EO+: TSX.

suggested by the official communication. On the stock market, media information is particularly influential when it *exclusively* reports news about central bank communication, i.e., there is no BOC communication, as captured by our indicator, on the reporting day or the day before.

TABLE 1: Regression Estimates for Bond and Stock Market Returns

	3 Month	6 Month	1 Year	2 Years	TSX
<b>Newspapers</b>					
Exclusive MP+		0.019 **			-0.46 *
Exclusive MP-					1.09 *
Exclusive EO+					0.42 **
Exclusive EO-					-1.10 **
Deviant MP+	0.021 **				
Deviant MP-		0.073 **	0.092 **	0.124 **	-0.75 **
Deviant EO-				-0.084 **	
Matching MP+	-0.016 *				-0.71 **
Matching EO+					0.98 *
<b>Reuters</b>					
Exclusive MP-	0.013 **				
Deviant MP+	0.010 *				
Deviant EO+	0.044 **				-2.04 **
Deviant EO-	-0.014 **	-0.041 **	-0.071 **		
Matching MP+		0.025 *		0.017 *	
<b>Original Source</b>					
Statement EO+		0.036 **	0.035 **	0.035 **	
Statement EO-		-0.039 **	-0.066 **	-0.069 **	
MPR EO+				0.024 **	
MPR EO-	-0.023 **	-0.041 **	-0.061 **	-0.056 **	-0.78 **
Speech/Test. MP+	0.017 **	0.021 **	0.035 **		
Speech/Test. MP-	-0.009 **	-0.026 **	-0.022 **	-0.040 **	
Speech/Test. EO+				0.025 **	
Speech/Test. EO-		-0.024 **	-0.042 **	-0.043 **	-0.48 **

Notes: \* (\*\*) indicates significance at a 5% (1%) level. Number of observations: 2,169. Robust standard errors (Bollerslev and Wooldridge, 1992) are used. Only the variables of interest of the reduced model resulting from the testing-down process ( $\text{Chi}^2(99) = 122.3$ ;  $\text{Chi}^2(98) = 109.6$ ;  $\text{Chi}^2(97) = 120.9$ ;  $\text{Chi}^2(95) = 104.2$ ;  $\text{Chi}^2(105) = 125.9$ , respectively) are listed. Full tables are available upon request. EO = Economic Outlook; MP = Monetary Policy.

In general, we can come to no definitive conclusion as to whether the original source or its coverage in the media has a statistically larger impact on bond and stock markets. Moreover, in terms of financial market impact, the coefficient estimates presented above

could be misleading, as some types of news appear more frequently than others. Therefore, we compare the impact of newspaper reports, Reuters coverage, and official central bank communication by taking into account the frequency of news (i.e., the number of events per indicator). Table 2 shows the cumulative impact on returns per category on each market in our sample.

TABLE 2: Cumulative Absolute Returns for Bond and Stock Markets

	<b>3 Month</b>	<b>6 Month</b>	<b>1 Year</b>	<b>2 Years</b>	<b>TSX</b>
<b>Newspapers</b>	0.24	0.45	0.28	0.71	29.5
<b>Reuters</b>	0.14	0.28	0.14	0.14	2.0
<b>Original Source</b>	0.48	2.45	3.48	4.20	14.0

Note: The figures are calculated by taking the absolute estimates from Table 2, which are then multiplied by the respective frequency of news and aggregated into the three sources (newspaper, Reuters, original source). EO = Economic Outlook; MP = Monetary Policy.

Confirming the impression given by Table 2, official central bank communication has a greater cumulative impact across all bond maturities compared to both news sources. This is particularly evident for the six-month, one-year, and two-year maturities, where its impact is at least three times higher than that of media coverage. In contrast, the stock market's reaction is largely dominated by relevant reports in major national newspapers. Finally, Reuters coverage does not play a prominent role in the transmission of BOC communications to Canadian financial markets.

## V. CONCLUSIONS

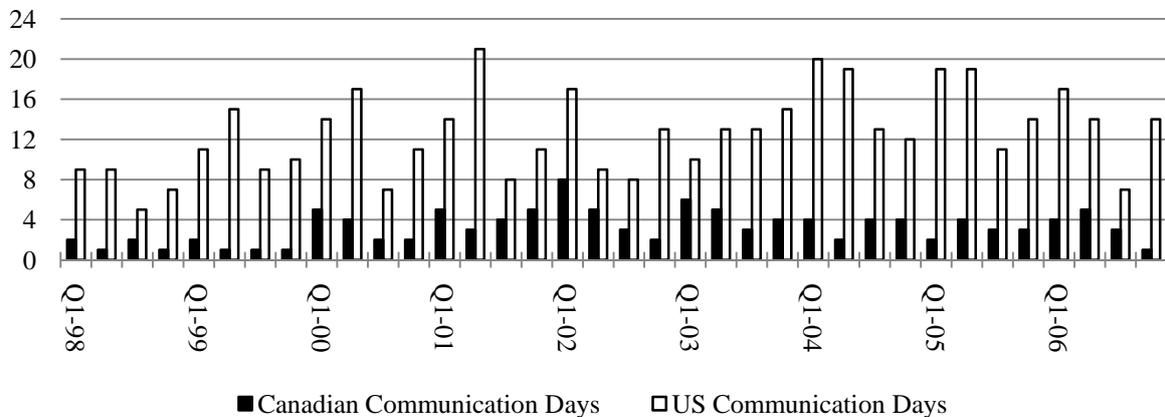
We examine the impact of all types of BOC communications and media reporting on them (Reuters, *The Globe and Mail*, *National Post*, and *Canadian Press*) on Canadian bond and stock market returns using a GARCH model.

BOC communications are rather uniformly distributed over the sample period, but media coverage is particularly high during two phases of heightened uncertainty about the future course and timing of Canadian monetary policy. In the case of the short- and medium-term bond market, more communication variables cause a significant reaction, whereas on the stock market, media coverage and, in particular, newspapers dominate. This result is not surprising, as monetary policy news is relatively more important for interest rates than for stock prices. Media coverage is notably relevant when its interpretation of the communication deviates from the original wording or when it exclusively reports about central bank communication, i.e., there is no original communication on the reporting day or on the day

before. Reuters coverage does not play a prominent role in the transmission of central bank communication across Canadian financial markets.

In Canada, media filtering plays a less prominent role than it does in the United States (see Hayo et al., 2008), with the exception of the stock market. Canadian market participants directly monitor central bank communication and do not rely on newspapers or news agencies for information. There are at least two crucial differences between Canadian and U.S. central bank communication, which might explain the difference in findings for these countries. First, the Bank of Canada has a clear inflation-targeting mandate, whereas the Federal Reserve Bank has more discretion as to monetary policy due to its dual mandate. The inflation-target makes monetary policy more predictable and thus attracts less media attention. Second, Bank of Canada officials use communication less frequently than do their Fed counterparts. Figure 2 compares Canadian communication days (black bars) and U.S. communication days (transparent bars). Market participants in the United States have to cope with a flood of official communications by members of the Fed and, therefore, rely on newswire filtering, whereas Canadian participants can monitor BOC communication by themselves.

FIGURE 2: Canadian Communication Days vs. U.S. Communication Days



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