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Resumen

En décadas recientes, los bancos centrales han ido incrementando el uso de la comunicación como una herramienta de política. Nosotros usamos métodos computacionales lingüísticos para extraer la información latente de los documentos de política monetaria en español del Banco Central de Chile y utilizamos esta información para evaluar el impacto de las sorpresas de política monetaria sobre los mercados financieros. En primera instancia, presentamos una metodología diseñada para analizar documentos de banca central en español, construimos un índice de sentimiento que captura el sesgo de política para cada uno de los documentos, y examinamos si estos documentos contienen información que permita anticipar cambios en la tasa de política monetaria. Encontramos que las sorpresas de tasa de política monetaria (TPM) tienen efectos fuertes e inmediatos sobre la curva de rendimiento. Sin embargo, el impacto es de corto plazo y disminuye a lo largo de la curva de rendimiento. Por otro lado, las sorpresas de sentimiento de los comunicados de las reuniones de política monetaria exhiben una reacción débil pero persistente sobre los instrumentos. En tanto, las sorpresas de las minutas no afectarían los precios de la curva de rendimiento, lo que indicaría que la información presentada en estas habría sido incorporada en los precios de los activos. Finalmente, las sorpresas en el Informe de Política Monetaria (IPoM) tendrían un efecto positivo sobre las tasas de interés a 2 años, indicando que la información contenida en estos informes provee nueva y relevante información sobre las expectativas de mediano plazo. En términos de anticipación, encontramos que los documentos de política del Banco Central proveen información relevante para anticipar los movimientos futuros de tasa de política.

Abstract

In recent decades, central banks have increasingly relied on communication as a policy tool. We use linguistic methods to extract the latent information from monetary policy documents in Spanish of the Central Bank of Chile and use this information to reassess the impact of monetary policy surprises on financial markets. As a by-product of this analysis, we present a methodology for analyzing central bank documents in Spanish, construct a sentiment index that captures the policy tilt of each document, and examine whether these documents provide information that can help anticipate changes in the monetary policy rate. The sentiment index is categorized into key economic topics—Inflation, Activity, External Conditions, Financial Conditions, Expectations, and Risk—enabling a detailed understanding of the dynamics behind policy bias. Our findings reveal that monetary policy rate (MPR) surprises have a strong and immediate effect on the yield curve. However, this impact is short-lived and diminishes along the yield curve. In contrast, sentiment surprises in press releases exhibit a weaker, but more persistent effect across instruments. Regarding the minutes, our results suggest that the information they contain is generally already priced in, as sentiment surprises from these documents do not significantly affect the yield curve. Conversely, surprises in the Monetary Policy Report (IPoM) have a positive effect on two-year interest rates, indicating that these reports provide new information that shapes medium-term monetary policy expectations. In terms of anticipation, we find that Central Bank policy documents provide enough information to anticipate policy rate movements.

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1 Introduction

In recent decades, central banks have increasingly relied on communication as a policy tool, a trend extensively documented in the literature on central bank communication (e.g., Blinder et al. (2008); Blinder et al. (2024)). This body of work highlights the crucial role of communication in shaping public expectations, influencing interest rates, and facilitating monetary policy implementation. As noted by Apel et al. (2022), understanding central bank messages is essential, as economic agents incorporate them when forecasting future policy decisions and macroeconomic developments.

This paper studies the effect of the primary forms of communication of the Central Bank of Chile (BCCh) on the financial market. Using linguistic methods, we extract latent information from monetary policy press releases, minutes from policy meetings, and the introduction of monetary policy reports (IPoM, from its Spanish acronym) using dictionary methods. This latent information is summarized in a policy bias index, which increases (decreases) when the press release signals higher (lower) inflationary pressures, suggesting future increases (reductions) in the policy interest rate.

Our first key finding reveals that monetary policy rate (MPR) surprises have a distinct impact on the bond market compared to communication surprises. While MPR surprises generate strong but short-lived effects on market rates, communication surprises from monetary policy meetings exhibit a weaker yet more persistent influence on yields, which remains relatively stable along the yield curve. A second finding shows that sentiment surprises from IPoMs have a significant positive effect on two-year interest rates, suggesting that these reports contain new information that shapes medium-term policy expectations. In contrast, sentiment surprises from minutes do not appear to affect market interest rates, indicating that their content is generally already priced in. These results are consistent with Cieslak and Schrimpf (2019), who find that the effectiveness of central bank communication varies among different channels.

Our second key finding concerns the extent to which information disclosed by the Central Bank of Chile (BCCh) helps anticipate movements in the MPR. We find that new information contained in press releases can anticipate a 25 basis point movement in the MPR approximately five meetings in advance. Similarly, the information revealed in the minutes of monetary policy meetings also helps forecast 25 basis point changes, although these adjustments tend to materialize over a longer horizon. Finally, we find that new information presented in the introduction of the Monetary Policy Report (IPoM) also contributes to anticipating MPR movements, which typically occur after two subsequent reports.

An additional contribution of this paper is the construction of a methodology and a dictionary designed to analyze the communication of a central bank in a small open economy whose native language is Spanish. For an accurate evaluation of sentences and documents, the dictionary must be contextually relevant and reflect the vocabulary used in such communications. For instance, the word 'unexpected' might be perceived positively when describing a movie, but negatively when referring to a car's performance. Therefore, a specialized dictionary must be developed that accounts for the specific context in which words are used in central bank discourse.

The remainder of the paper is structured as follows: Section 2 and 3 introduce the literature and the Chilean framework, Section 4 and 5 present the methodology, Section 7 discusses the results, and Section 8 concludes.

2 Literature Review

This paper contributes to two branches of literature. First, it adds to the growing body of research that examines central bank communication through textual analysis techniques. A seminal study by Hansen and McMahon (2016) employs computational linguistics tools to identify which elements of FOMC press releases have the greatest impact on financial markets and macroeconomic variables. Similarly, Picault and Renault (2017) develops a dictionary of n-grams[1] to better capture the information conveyed in European Central Bank (ECB) press conferences. A related study, Apel et al. (2022), analyzes various communication channels within a single central bank. The authors construct a dictionary-based approach to quantify the extent of discussions in monetary policy meetings, as recorded in FOMC transcripts and minutes. Their findings reveal a strong positive linear relationship between the two forms of communication, suggesting that minutes effectively reflect the discussions held during the meetings. This result aligns with our findings, where we measure the correlation between sentiment indices across different central bank documents.

The second strand of literature explores the impact of central bank surprises on financial markets, focusing on how monetary authorities communicate economic information and signal their policy decisions. Seminal works in this area include Kuttner (2001) and Gürkaynak et al. (2005). The former finds that unexpected changes in the monetary policy rate influence interest rates, bond prices, and Treasury securities. The latter shows that a surprise increase in the federal funds rate raises short-term forward rates but lowers long-term forward rates. Consistent with this literature, we find that

[1] N-grams are multi-word terms, such as "monetary policy."

monetary policy surprises significantly impact short-term interest rates. More recently, Jarociński and Karadi (2020) use market reactions to disentangle the effects of pure monetary policy shocks from communication effects.

In the case of Chile, while extensive research examines the impact of monetary policy rate surprises on financial markets (e.g., Larrain (2005), Gonzalez and Tadle (2020), Aruoba et al. (2021), Acosta-Henao et al. (2023)), we extend this literature by differentiating between interest rate surprises and communication surprises in press releases. Studies analyzing the role of central bank communication on financial markets remain limited (see Pescatori (2018), Gonzalez and Tadle (2020)).

3 Chile's Monetary Policy Framework and Communication

Chile's monetary policy operates under an inflation-targeting regime, evolving through a transition process that began with the 1980 Constitution and the 1989 Constitutional Act. The Basic Constitutional Act of the BCCh, established in 1989, mandates the BCCh to stabilize the currency and ensure the normal functioning of the internal and external payment system. This differs from the dual mandate of the U.S. Federal Reserve, which also targets maximum employment.

The MPR is Chile's primary policy tool. Since 2018, the Central Bank holds eight monetary policy meetings per year, announcing decisions at 6 PM on the same day through a press release.[2] These documents explain the rationale behind policy decisions, primarily based on inflation forecasts, economic shocks, and global developments affecting Chilean inflation. Although growth and unemployment are not part of the BCCh's mandate, they are referenced due to their impact on inflation. Two weeks after these meetings, the BCCh publishes minutes, which provide greater detail on policy discussions.

Additionally, the BCCh publishes the IPoM four times a year where it presents its vision about the recent evolution of the economy, its forecasts for the following years and how it expects to conduct its monetary policy in the coming years. Therefore, the report offers a comprehensive analysis of the domestic economy, including medium-term forecasts for inflation, economic activity, and potential future policy paths. In this report the conduction of the fiscal policy is taken as given and uses the information provided publicly by the government in various channels.

[2]Before 2018 meetings were held monthly, and press releases were shorter.

4 Methodology Sentiment Index

The basic methodology for building a sentiment index involves defining the types of sentiments to be studied; particularly in the context of monetary policy analysis, the sentiments can be contractionary, expansionary, or neutral. A contractionary sentiment suggests that the central bank is inclined to raise the monetary policy rate. Examples include phrases like "increasing inflation," "accelerating growth," and "decrease in unemployment." Conversely, an expansionary sentiment indicates a tendency to lower the monetary policy rate, reflected in phrases such as "slowing inflation," "weaker growth," and "increase in unemployment." A neutral sentiment does not signal a clear policy direction.

To construct the sentiment index, we follow the methodology presented by Gonzalez and Tadle (2020). Once the sentiment is defined, we apply the dictionary method to analyze the relevant text documents. In this case, we examine monetary policy press releases, the minutes of monetary policy meetings, and the introduction of the Monetary Policy Report.

The dictionary method involves defining a list of words and assigning a sentiment to each in order to evaluate a sentence. However, in our approach, we use combinations of words to determine the sentiment of a sentence. As stated before, for an accurate evaluation of sentences and documents, the dictionary must be contextually relevant and encompass the vocabulary used in the documents.

The sentiment index of a document is determined by analyzing its individual sentences, classifying them as contractionary, expansionary, or neutral based on keyword combinations and qualifying words that give the sentence an economic sense. Each sentence is mapped into a discretized space to create an index. The assigned values are:

- Contractionary $\rightarrow +1$
- Expansionary $\rightarrow$ -1
- Neutral $\rightarrow 0$

The document's overall sentiment index is calculated as the sum of contractionary and expansionary sentence indexes, divided by the total number of classified sentences, then multiplied by 100 to express it as a percentage, which is shown in Equation (1)[3]. For example, a document containing three contractionary sentences and two expansionary sentences would have a contractionary index of 3 and

[3]This type of equation is common in the literature; see Hubert and Labondance (2021).

an expansionary index of -2. The sentiment index would then be calculated as $\frac{3-2}{3+2} \times 100 = 20$.

$$Sentiment\ score_t = \frac{Contractionary\ Score + Expansionary\ Score}{Total\ Classified\ Sentences} \times 100 \tag{1}$$

where the total of classified sentences is the sum of the number of contractionary sentences, expansionary sentences and neutral sentences.

4.1 General Dictionary Method

To classify the sentiment of sentences, we rely on two types of words: Keywords and Modifiers.

1. **Keywords**: These are nouns or compound nouns[4] that identify sentences containing potentially economically significant information. Examples include "inflation rate," "monetary policy," "growth," and "unemployment." These terms are central to understanding the content of a sentence, as they directly relate to economic indicators and policy discussions.

2. **Modifiers**: These are adjectives or verbs that indicate the direction of a keyword. For example, in the phrases "decreasing inflation" or "rapid growth," the modifiers "decreasing" and "rapid" inform the reader of the direction of inflation and growth, which in turn defines how the sentiment of the sentence is classified. Modifiers are further categorized as positive, those associated with an increase in the keyword, and negative, those associated with a decrease in the keyword.

This methodology ensures that sentiment classification captures both the presence of relevant economic concepts and the tone in which they are discussed, allowing for a nuanced interpretation of central bank communications. To classify sentences as *contractionary* or *expansionary* we use the following rules.

1. **Contractionary combinations**: These occur when **keywords** and **modifiers** indicate rising inflationary pressures, which may lead the central bank to adopt a **tighter monetary policy** (i.e., increasing the policy rate).

    - **Example:** *"Inflation is increasing"*
        - **Keyword:** Inflation
        - **Modifier:** Increasing (Positive)

[4]The construction of compound nouns is presented in Subsection 4.1.1

- **Sentiment: Contractionary** (as rising inflation suggests a possible rate hike).

- Other **keywords** that typically signal a contractionary sentiment when paired with **positive modifiers** include *"growth"* and *"activity"* (e.g., *"Economic activity is accelerating"*).

- In contrast, certain **negative economic terms**, such as *"crisis"*, require **negative modifiers** to express a contractionary sentiment.

  - **Example:** *"The probability of a crisis has diminished"*

    * **Keyword:** Crisis

    * **Modifier:** Diminished (Negative)

    * **Sentiment: Contractionary** (as a lower crisis risk suggests stronger economic conditions, possibly leading to higher rates).

2. **Expansionary combinations**: These occur when **keywords** and **modifiers** indicate an economic slowdown or lower inflationary pressures, which could lead the central bank to adopt a **looser monetary policy** (i.e., lowering the policy rate).

   - **Example:** *"Unemployment is increasing"*

     - **Keyword:** Unemployment

     - **Modifier:** Increasing (Positive)

     - **Sentiment: Expansionary** (as rising unemployment suggests weaker demand and lower inflation, possibly leading to policy rate cuts).

   - Other **keywords** that typically signal an expansionary sentiment when paired with **positive modifiers** include *"unemployment," "risk," "slowdown,"* and *"recession"* (e.g., *"Recession risks are rising"*).

Therefore, we categorize each **keyword** as either *contractionary* or *expansionary*, depending on the sentiment it conveys when combined with **positive modifiers**. Using this categorization, the methodology allows us to correctly interpret the sentiment conveyed in central bank communications.

- **Contractionary keywords**: When combined with positive modifiers, these words indicate a likelihood of increased inflationary pressures, suggesting a more restrictive monetary policy stance.

- **Expansionary keywords**: When combined with positive modifiers, these words suggest lower inflationary pressures or an economic slowdown, indicating a potential easing of monetary policy.

There are various methods to select words for inclusion in a sentiment dictionary:

1. **Machine learning techniques:** Some studies employ advanced machine learning methods such as Latent Dirichlet Allocation (LDA) to identify relevant words or topics within a corpus. For instance, Hansen and McMahon (2016) and Gonzalez and Tadle (2020) use LDA to automatically discover patterns in textual data, which can then inform the selection of sentiment-indicating words.

2. **Ad-hoc methods:** Other papers take a more manual, ad hoc approach to dictionary construction. For example, Rosa and Verga (2007) and Apel and Grimaldi (2014) rely on expert judgment or specific criteria to handpick words that are likely to carry sentiment in the context of central bank communication.

3. **Frequentist approach:** In contrast, we adopt a frequentist approach similar to that used by Aruoba and Drechsel (2022). This method involves analyzing the most common words and phrases (n-grams) within the corpus of documents to identify those that are most indicative of sentiment. By focusing on frequently occurring terms, this approach ensures that the dictionary captures the core vocabulary used in the central bank's communications.

As is customary in this field of research, we begin the linguistic analysis by preprocessing the text to enhance the algorithm's ability to classify sentences accurately. The preprocessing steps include:

1. **Character replacement:** We remove al the tildes from tilded vowels, and we replace special characters, such as "ü" with "u" and "ñ" with "n", to avoid complications arising from non-standard characters.

2. **Symbol Removal:** Symbols such as "@," "#", and others that do not contribute to the meaning of the text are removed. Additionally, any subtitles or section headings are also removed to focus solely on the content of the sentences.

3. **Sentence segmentation:** The text is divided into individual sentences, which serve as the primary units of analysis.

4. **Tokenization:** Each sentence is further broken down into individual words or tokens. Tokenization helps in the precise identification of keywords and modifiers that are crucial for sentiment analysis.

5. **Lowercasing:** All tokens are converted to lowercase to ensure consistency in word recognition. This step prevents the algorithm from treating differently cased versions of the same word as separate entities.

In the usual approach within this field, the next steps often involve stemming or lemmatizing the words. The former consists in trimming the suffixes of words (e.g., "variable" and "variation" are reduced to "vari"), while the latter consists of replacing words with their basic or root form (e.g., "are," "is" and "was" are replaced with "be"). Additionally, stop words (common words that are usually removed because they do not contribute significant meaning, such as "and," "the," or "of") are typically eliminated. However, since our focus is on accurately identifying keywords and modifiers within sentences, we take a different approach. Instead of reducing words to their base forms or removing stop words, we first identify the parts-of-speech (POS) of each word.[5] This step is crucial because understanding the grammatical role of each word in a sentence helps us correctly interpret the meaning conveyed by the combination of keywords and modifiers.

After identifying the POS for each word, we proceed to lemmatize the document, with the important exception of nouns. This selective lemmatization is crucial because in Spanish certain verb conjugations can be homonyms with nouns. For example, the word "tasa" could be either a conjugation of the verb "tasar" (to rate) or the noun "tasa" (rate), often used in phrases like "interest rate" ("tasa de interés"). If we lemmatize the word "tasa," it would automatically be converted to "tasar," which would lead to errors in the context of economic discussions. After the document is selectively lemmatized, we remove the stopwords and do an automatic search for bigrams and trigrams. We then manually look through the list of bigrams and trigrams and keep the ones with economic meaning, such as "interest rate," "monetary policy," "labor market," etcetera. By following this method, we maintain the integrity of the economic language used in the documents and ensure that our sentiment analysis accurately reflects the intended meaning behind the text.

Once we have the list of the n-grams we want to keep, we are finally ready to build our dictionaries. As mentioned above, we followed a frequentist approach. The lemmatized text, including bigrams

[5]In Spanish, there are nine parts-of-speech categories: noun, pronoun, adjective, article, adverb, verb, preposition, conjunction, and interjection

and trigrams, was ordered by frequency of appearance. For the Keywords dictionary, we made a list containing nouns and n-grams. A similar procedure was followed for the Modifiers dictionary. From the lemmatized texts, we created a list with only verbs and adjectives. As the words are in their infinitive form, the sum of frequencies is representative of their use.

To enhance the depth of our sentiment analysis, we categorize the relevant sentences by their economic topics. We can identify the topic in question via the noun/s with economic meaning. Therefore, each of the Keywords is categorized into a specific economic topic. We identify and create six categories from the Keywords dictionary: activity, inflation, external, risk, financial, and expectations. This categorization allows us to link each sentence's sentiment index to a specific area of economic interest.

4.1.1 Bigrams and trigrams

In both Spanish and English, several nouns are formed by combining terms, creating compound nouns and noun phrases. Single-word compound nouns[6] are easily identified by dictionary methods. However, noun phrases, such as "interest rate," require additional processing to be correctly identified. In the text analysis literature, terms built with more than one word are called N-grams, where N represents the number of terms in the concept. We construct bigrams (N-grams with N=2) and trigrams (N-grams with N=3).

To construct the N-grams for our analysis, we employed a probabilistic model based on the foundational work of Mikolov et al. (2013) and Bouma (2009). These models group words in a way that maximizes the likelihood of their co-occurrence. We used the Python package "gensim" to create the bigram-trigram dictionary. The probabilistic model has a parameter that adjusts the looseness of the generated N-grams. We aimed to generate N-grams that were no longer than three terms in length.

To generate N-grams with lengths of one, two, or three words, we implemented a two-step process using the gensim model. In the first stage, we set the looseness parameter of the gensim model to a low value to create a limited number of bigrams. The first-stage model generates auxiliary texts containing these bigrams. These texts are then used as input for the second stage. Once again, the probabilistic model is run, assuming a loose threshold, to create new bigrams formed by adding a third term to the previous bigrams. The final texts will include only the single words, bigrams, and trigrams.

All relevant bigrams and trigrams are stored in the Keywords dictionary, as shown in Table 4. The

[6]A single word compound noun is a noun form by two words, an example is database, which is formed by data and base

generated N-grams are well-known economic terms. Most bigrams add a characteristic to the main keyword. For example, the term "economy" (economia) appears in different categories (Activity and External), allowing us to exploit the various keywords generated during the process.

4.1.2 Negations and exceptions

Negations are a group of terms that have not been previously mentioned but have a profound effect on the meaning of a sentence. These terms, in particular, invert the meaning of the surrounding words. Let us consider the case of a sentence with a Contractionary keyword and a positive modifier, for example, "The inflation has not risen". Using the methodology previously presented, the sentence would be categorized as Contractionary. However, this is incorrect, as the actual meaning of the sentence is the opposite. By including negations as a category, we can adjust the sentence's sentiment, in this case to Expansionary. Therefore, sentences containing a negation term will have their sentiment reversed. We manually built the negation list using the frequentist approach. Table 1 contains all the words considered to invert the meaning of a sentence.

Table 1: Negation words list

Type of exception	Words
Negation	No, nunca, evitar, menos

Finally, some standard sentences are included in every press release that expresses commitments made by the Board. These sentences can bias the sentiment index if a keyword appears in them. To address this potential issue, we set the sentiment index to zero for sentence j in text i if, and only if, it contains one of the exception n-grams listed in Table 2.

Table 2: Exception N-grams list

Type of exception	Words
Institutional	banco_central, tasa_politica_monetaria, consejo
Linguistic	no_mostrar_mayores

4.2 Applying Methodology in Spanish

Like other Romance languages, Spanish has a complex verb conjugation system, which makes it challenging for dictionary-based techniques to group entire sets of words. Although there are equivalent tenses between English and Spanish, some tenses in English are formed as combinations of words,

Table 3: Verb conjugation differences between Spanish and English in third person singular

	Spanish	English	
Verbal Tense	Crecer	To Grow	
Present	crece		grows
Pres cont.	creciendo		growing
Past	crecía/creció		grew
Past perfect	crecido	has	grown
Future	crecerá	will	grow
Conditional	crecería	would	grow
Imperative	crece		grow
Past participle	crecido		grown
Gerund	creciendo		growing

The table contains the most used verbal forms used in the Central Bank's communication.

reducing the number of words required to build the modifiers dictionary. For example, the simple future tense of the verb *to increase* is *will increase*, irrespective of the subject pronoun. In contrast, tenses in Spanish typically require changes to the infinitive form of the verb depending on the pronoun. For instance, the future tense of the verb *aumentar* (to increase) is *aumentará* for the third-person singular pronoun, while it becomes *aumentarán* for the third-person plural pronoun.

Another example is shown in Table 3, which compares the variations of the irregular verb *to grow* in English and its Spanish equivalent *crecer*. Although there are five variations in English, this number increases to eight in Spanish. This complexity makes creating a dictionary for linguistic analysis in Spanish more challenging than in English, especially if we want to avoid stemming. The difference is even more pronounced when considering regular verbs, as in English the past participle and past tense are the same.

Verb variations are crucial for building a dictionary that remains usable over time. While creating the dictionary, we observed that verbs in the documents appear in different tenses and in both third-person singular and plural forms. Therefore, in the modifiers dictionary, we include not only the conjugated verbs as they appear in the documents, but also the missing conjugations for both third-person singular and plural forms.

5 Tone and Subtone Indexes Methodology

As discussed above, the sentiment index is computed using a sentence-by-sentence approach. After determining the score for each sentence, the document score is standardized by the number of relevant sentences in the analyzed text. Each sentence is assigned a score $S \in [-100, 0, +100]$, where a score of

-100 corresponds to an expansionary monetary policy, a score of 0 reflects a neutral monetary policy, and a score of 100 indicates a contractionary policy. This section provides a detailed explanation of the methodology.

To assign a specific score to each sentence, we use the previously defined dictionaries. Consider a sentence that contains at least one term from the Keywords dictionary; this sentence is then selected for analysis.[7] Also, assume than this Keyword is classified as Contractionary. A sentence is classified as **Contractionary** and assigned a score of $+1$ if it contains more positive than negative modifiers. Conversely, a sentence is classified as **Expansionary** and assigned a score of -1 if it contains more negative than positive modifiers. A sentence is categorized as **Neutral** but if an equal number of positive and negative modifiers. If the sentence contains a negation term, as presented in Table 1, its score is reversed. After assigning a score to each sentence in the document, we use Equation (1) to compute the aggregate sentiment index of the document.

For more clarity on the score algorithm, let us consider the following sentence included in the Press Release of January 2009:

Las medidas mensuales de inflación subyacente mostraron una reducción.

The corresponding official translation is as follows:

Monthly measures for core inflation showed a reduction.

The previous sentence discusses a reduction in different measures of core inflation. However, to determine the sentiment of the sentence, we only need the words *inflation* and *reduction*, as it would be categorized as Expansionary regardless of the specific measure of inflation referenced. Therefore, we identify *inflation* as the Contractionary Keyword and *reduction* as the Negative Modifier. The combination of a Contractionary Keyword with a Negative Modifier forms a Contractionary-Negative tuple, which is assigned a score of -1.

6 Data

The data for the construction of the sentiment index are the press releases of monetary policy meetings, the minutes of the meetings and the summary of the monetary policy reports. The data used for the econometric analysis consists of the MPR, the swap rates for 3-, 6- and 12-months, the rates on 2-, 5- and 10 year BCCh nominal bonds, the nominal exchange rate, the US government rates for similar

[7] Note that sentences with an implicit subject or those referring to the subject of a previous sentence are not analyzed.

maturities, the EMBI spread of the Government of Chile debt. The documents were downloaded from the webpage of the BCCh, while the rest of the data was obtained from Bloomberg.

Another essential piece of data for analyzing the effect of monetary policy on financial markets is the release date of each monetary policy document. For press releases, the release date is included within the documents themselves. For the minutes, the release dates are available on the Central Bank of Chile's website. However, the release dates of the Monetary Policy Report (IPoM) are only available on the Central Bank's website from June 2014 onward. For earlier dates, we rely on the Wayback Machine from the Internet Archive. As stated on its website, this non-profit organization is continuously building a digital library of internet sites.

7 Results

The following section presents the main results obtained using the Dictionary methodology and the Sentiment index methodology. We begin by analyzing the overall cyclical behavior of the policy document's indexes. Next, we present and examine the decomposition of these indexes. Finally, we introduce the local projections of various sentiment indexes across the yield curve.

7.1 Dictionary and Classification

The results of the methodology presented in Section 4 for constructing the dictionaries are summarized in Table 4 and Section A of the Appendix. The table categorizes the Keywords into six predefined sub-sections: Activity, Inflation, External, Risk, Financial, and Expectations.

The dictionary consists of 94 keywords, of which 79 are classified as Contractionary and 14 as Expansionary. The largest subcategory is Activity, which includes 36 Contractionary n-grams and five Expansionary terms. The use of bigrams is crucial for distinguishing between topics. For instance, the bigrams *economía chilena* and *economía local* ("Chilean economy" and "local economy," respectively) are used interchangeably in press releases to describe domestic economic events.[8]

Conversely, the bigrams *economía mundial* and *economía global* ("world economy" and "global economy") refer to economic developments occurring outside Chile. Therefore, these terms are classified under the External category, which encompasses all words related to international economic conditions. Additionally, we include most commodity-related terms here, given Chile's nature as a

[8]It is important to note that, in the context of the press releases, the term "economy" is often used synonymously with growth, GDP, or activity, which is why these terms are assigned to the Activity group.

Table 4: Keywords' Categorization for Sentiment Analysis

Actividad	Contractionary	actividad, capacidad, capital, comercio, construccion, consumo, costos, crecimiento, demanda, dinamismo, economia, economia_chileno, economia_local, empleo, energia, estimulo, existencia, expansion, gasto, inversion, inventario. mercado, mercado_laboral, mineria, pib, produccion, producto, recuperacion, salario, slack, fuerza_trabajo, tipo_cambio,
	Expansionary	desaceleracion, desempleo, desocupacion, importaciones, oferta.
Inflación	Contractionary	inflacion, ipc, ipcnfe, ipcx, ipcx1, precio.
	Expansionary	
Externo	Contractionary	economia_mundial, economia_global,mercado_internacional, precio_materias_primo, economias, mercado_global, petroleo, cobre, precio_combustible, commodities, dolar, externo, socios_comercial, precio_productos_basicos, paridad, crudo.
	Expansionary	peso
Riesgo	Contractionary	confianza
	Expansionary	riesgos, riesgo, incertidumbre, volatilidad, tensiones, vaivenes, dudas, crisis
Financiero	Contractionary	tasa_interes, mercado_financiero, mercado_bursatil, credito, liquidez, financiamiento,empresas, exportaciones, bancos, colocaciones, bolsas, creditos, bolsa, endeudamiento.
	Expansionary	
Expectativas	Contractionary	expectativas, perspectivas, proyeccion, proyecciones, panorama, escenarios
	Expansionary	

small open economy. Furthermore, all terms associated with the exchange rate, such as "dollar" and "parity," are categorized as part of the external sector.

The classification of words related to Inflation is relatively straightforward. This category includes terms such as *precios* ("prices"), the consumer price index (CPI) and some of its core measures (IPCX, IPCX1, IPCNFE), *inflación* ("inflation"), and *costos* ("costs").

The Expectations category groups sentences that refer to the central bank's forecasts of future events. It includes terms such as *expectativas* ("expectations"), *perspectivas* ("prospects"), and *proyección* ("forecast"), as well as several bigrams containing the word *escenario* ("scenario"). The inclusion of "scenario" in this category is non-trivial, as its meaning depends on how the BCCh uses it. In press releases, whenever the term "scenario" is mentioned, it refers to a forecast's point estimate, even when combined with words denoting external or international factors.

The Financial category includes terms associated with banking and loans, such as *bancos* ("banks"), *crédito* ("credit"), and *colocaciones* ("loans"). Additionally, words related to financial markets, such as *mercado bursátil* and *bolsas* ("stock market"), as well as terms like credit, liquidity, banks, stock

exchange, indebtedness, and bigrams including *mercado* ("market") and *tasa de interés* ("interest rate"), are included in this category.

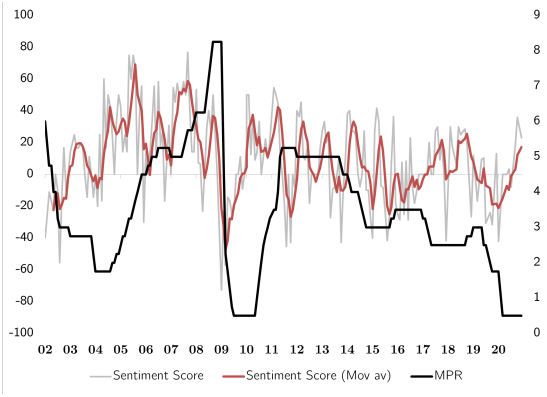
Finally, the Risk category includes Expansionary terms associated with volatility and uncertainty, such as *riesgo* ("risk"), *incertidumbre* ("uncertainty"), and *volatilidad* ("volatility"). Conversely, *confianza* ("trust") is classified as a Contractionary term, as it serves as an antonym for risk.

7.2 Press Release's Sentiment Index

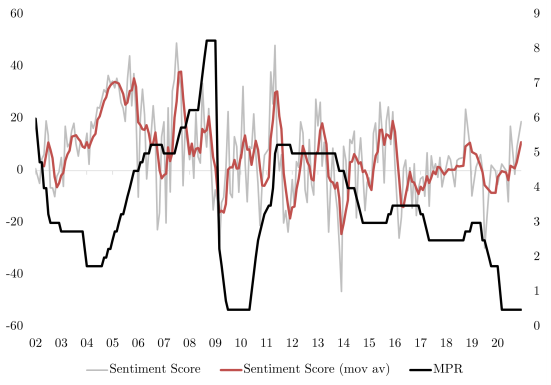
Following the algorithm discussed in the previous section, Figure 1 presents the time series of the raw Sentiment Index for press releases, minutes, and IPoMs, alongside the MPR.[9] The raw sentiment index series exhibits high volatility. To address this, we also present a six-month moving average of the sentiment index for press releases and minutes.

Figure 1: Sentiment Index of BCCh's Documents and MPR

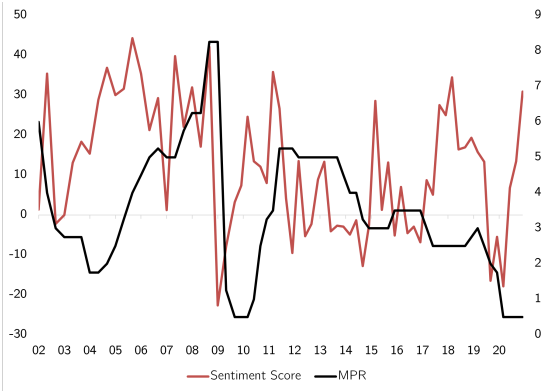
A) Sentiment Index of Press Releases



B) Sentiment Index of Minutes



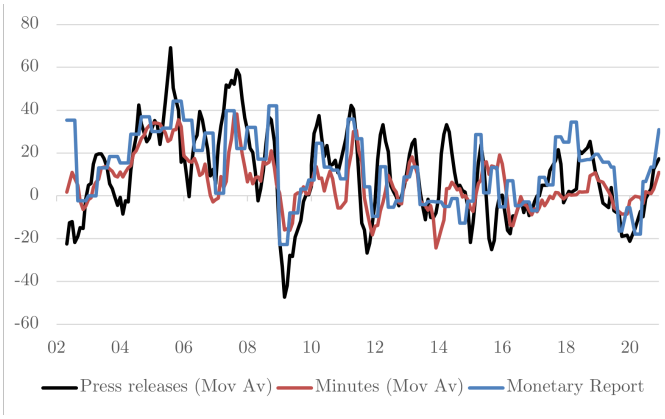
C) Sentiment Index of Monetary Policy Report



Note: The gray is the raw index, the red line is the moving average of that index. The MPR is plotted on the secondary axis.

[9]The MPR is plotted on the secondary axis.

Figure 2: Sentiment Index of BCCh Document



Two key observations can be drawn from Figure 1. First, the sentiment indexes exhibit similar dynamics over time. From the beginning of the sample period until 2005, there was a noticeable increase in Contractionary sentiment in the documents published by the BCCh. Subsequently, in 2008, the indicators experienced a sharp decline, coinciding with the Global Financial Crisis. Toward the end of the sample period, all indicators trended upward, reflecting a shift toward a more Contractionary sentiment.

Second, a visual inspection suggests that the sentiment index series tends to anticipate movements in the MPR. The increases in sentiment indexes at the beginning of the sample were followed by MPR hikes between 2004 and 2007. Similarly, the decline in sentiment indexes during the GFC, along with their subsequent rebound, was mirrored by comparable movements in the MPR. Lastly, the decline in all indicators between 2018 and 2019 preceded reductions in the MPR between 2019 and 2020. The following sections explore these relationships in greater detail.

7.2.1 Agreement between Documents

Figure 2 presents the sentiment indexes for the three primary publications of the BCCh within the same graph.[10] A key feature of this graph is the consistency in sentiment across all three documents, suggesting that the BCCh maintains a uniform tone throughout its official communications. This observation is further supported by examining the correlation between the sentiment indexes.

[10]The sentiment index of the Monetary Policy Report was repeated as necessary to account for its lower publication frequency.

Table 5: Correlation of CBC Documents

	Monet. Report	Press Releases	Minutes
Monetary Report	1	0.63	0.71
Press releases	0.63	1	0.65
Minutes	0.71	0.65	1

As shown in Table 5, the correlation between the sentiment indexes is both positive and strong. The highest correlation is observed between the IPoM and the minutes, while the lowest occurs between the press releases and the Monetary Policy Report. Nevertheless, even this lower correlation remains substantial at 0.63. It is important to note that the correlation between minutes and press releases is not perfect. This is significant, considering that the minutes are more detailed documents than the press releases, yet both refer to the same monetary policy decision.

7.3 Sentiment Indexes Decomposition

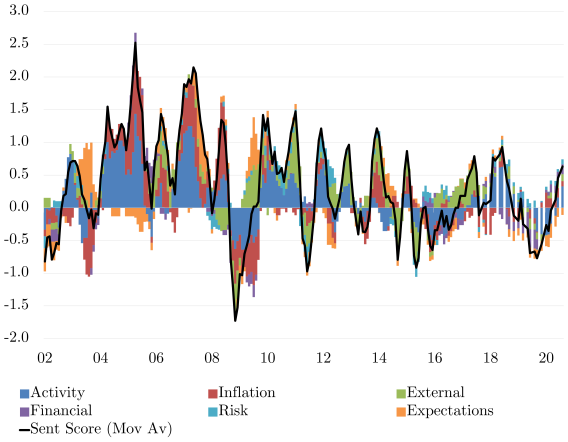
Following the methodology outlined in the previous section and considering the six topics identified in Table 4—Activity, Inflation, External, Risk, Financial, and Expectations—we can decompose the aggregate sentiment score in a manner resembling a historical shock decomposition. The methodology for constructing the individual category scores follows naturally from the aggregated index. In this case, the score accounts for the number of Contractionary and Expansionary sentences associated with each topic. The following formula is then applied to each category:

$$\begin{matrix}\text{Score Index} \\ \text{of Category}(i)_t\end{matrix} = \frac{\text{Contractionary Score of Category}(i)_t + \text{Expansionary Score of Category}(i)_t}{\text{Total Classified Sentences}_t} \tag{2}$$

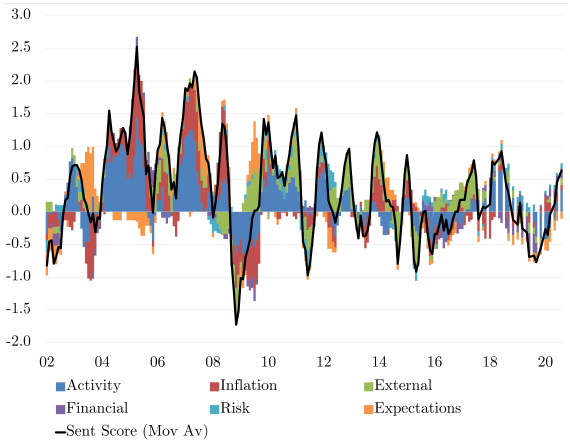
Figure 3 presents the topic decomposition of the Sentiment Indexes derived from press releases, minutes, and IPoMs. Notably, all three documents exhibit similar trends. The first key observation is that within the same document, some topics can be classified as Contractionary while others are marked as Expansionary. This phenomenon is particularly evident in the press release graph from 2009, where the topics of Activity and Inflation were distinctly Expansionary, whereas External and Expectations were classified as Contractionary.

Figure 3: Sentiment Index of BCCh's Documents and thde MPR

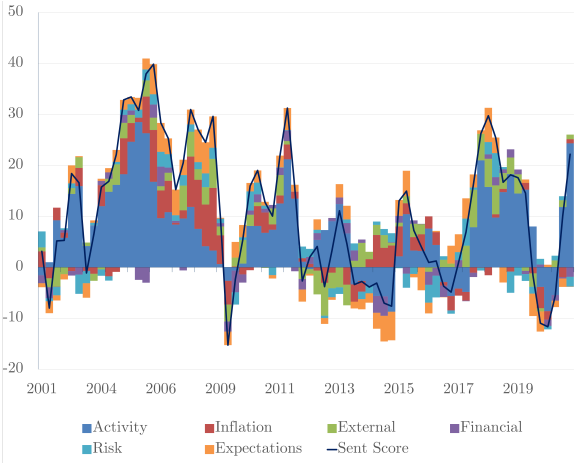
A) Sentiment Index of Press Releases



B) Sentiment Index of Minutes



C) Sentiment Index of Monetary Policy Reports



A second key observation from Figure 3 is that the primary drivers of sentiment are the topics of Activity, Inflation, and External, while the remaining topics play a comparatively minor role.[11] This finding is further confirmed in Table 6, which presents the variance decomposition of the sentiment index by topic across the three analyzed documents. The decomposition reveals that the dominant factor influencing the tone of BCCh publications is Activity, followed by Inflation.

This result highlights two important aspects of the BCCh's publications. First, although the Bank's primary mandate is to maintain price stability, the Governors place significant emphasis on Activity, probably in an effort to identify potential risks to inflation. Second, the topic of External factors also plays a notable role, particularly in press releases. This aligns with the fact that Chile is a small open economy, making it susceptible to global economic developments.

[11] This is particularly evident in the sentiment of press releases.

Table 6: Press Release Variance Decomposition

Category	Press Releases	Minutes	Monetary Report
Activity	0.34	0.33	0.38
Inflation	0.26	0.08	0.10
External	0.14	0.03	0.05
Financial	0.02	0.02	0.02
Risk	0.03	0.03	0.03
Expectations	0.09	0.08	0.07
Comov	0.12	0.43	0.34
Std. Dev.	26.09	16.9	16.1

[a] M.A. (4 PR) stands for Moving Average of 4 Press Release Scores.

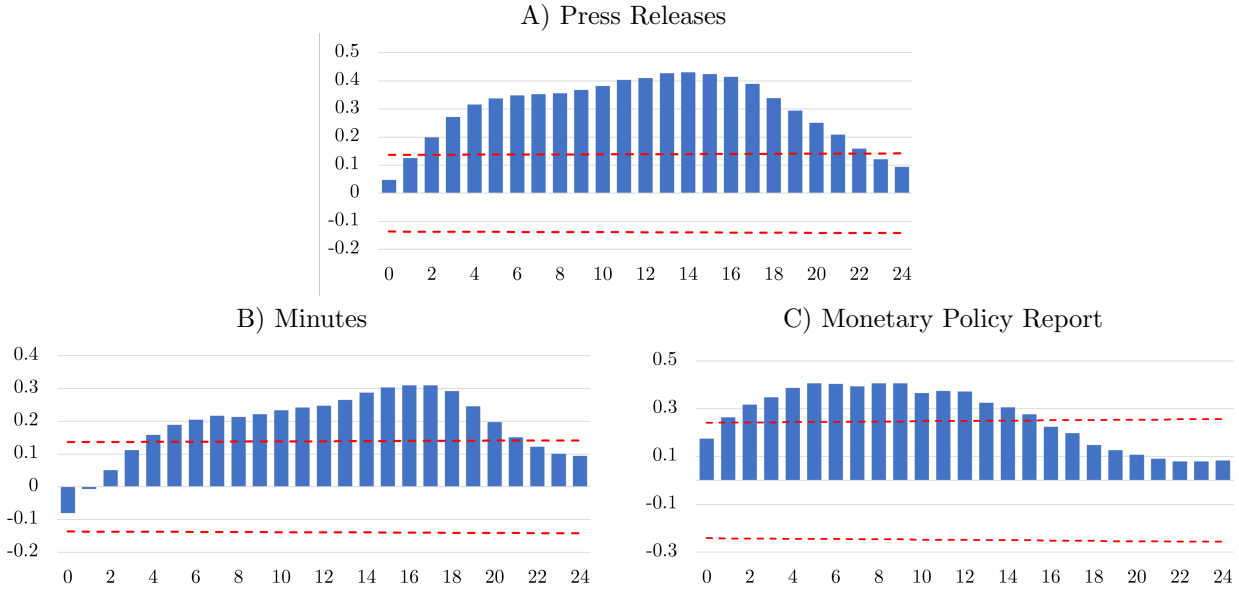
7.4 Short Term Monetary Policy Anticipation

In this section, we examine one of the claims made when first presenting the results of the sentiment index methodology: whether the BCCh provides relevant information to anticipate movements in the MPR. We examine this claim by performing two exercises. First, we study if there is a timely statistical relationship between the sentiment indexes and the monetary policy rate by analyzing the cross-correlation between the sentiment index and the MPR. This analysis measures the correlation between a time series x_t and another series y_t at different time lags. Formally, this technique tests the null hypothesis that there is no cross-correlation between two variables, $H0 : \rho_{x,y}(h) = 0$ at lag h. Specifically, we are interested in determining whether changes in sentiment precede movements in the MPR.

Figure 4 presents the cross-correlation values between the Sentiment Index of the BCCh's documents at time t and the MPR h periods ahead.[12] First, the direction of the correlation aligns with expectations: Contractionary (Expansionary) movements in the sentiment index are followed by increases (decreases) in the MPR. For press releases and minutes, the cross-correlation values increase until approximately period five, remaining relatively stable until around period ten, and then reaching a peak between periods 14 and 16. In contrast, the cross-correlogram for monetary policy reports peaks earlier, around periods 6 to 8. This earlier peak aligns with the fact that these reports are published only four times per year.

[12] The confidence intervals are calculated as $\frac{2}{\sqrt{N}}$, where N is the sample size.

Figure 4: Total Sentiment Index Cross Correlograms between CBC's Documents and MPR



Note: Panels A) and B) show the correlation between the sentiment index of press releases and minutes at time t and the MPR h meetings ahead, while Panel C) shows the correlation between the sentiment index of monetary policy report at time t and the MPR that is set in the release of h monetary reports ahead.

We further analyze the anticipation of the information provided by the BCCh in their policy documents by running a Local Projections exercise, as proposed by Jordà (2005), that estimates the effect of new information on monetary policy rate movements. For this exercise, we follow a two-stage procedure. In the first stage, we estimate the unexpected component of the sentiment index, which we use as a measure of new information released by the BCCh. In the second stage, we use this measure of surprise index for calculating how MPR moves after releasing new information using Local Projections.

$$s_t^i = \beta_0 + \beta_1 s_{t-1}^i + \Lambda Y_t + \epsilon_t^i \tag{3}$$

The first-stage regression follows a modified version of the Taylor rule, in which the monetary policy rate is replaced by the sentiment index. This is presented in equation (3), where s_t^i denotes the sentiment index for document type i at time t. On the right-hand side, we include a one-period lag of the sentiment index, along with several measures of inflation and economic activity. Specifically, we control for next-month inflation expectations, 11-month inflation expectations, Imacec expectations, the most recent available value of non-mining Imacec, and the three-month U.S. Treasury bill rate. These variables are included because they represent publicly available information at time t, when

monetary policy decisions were made. The residual from the regression, denoted ϵ_t^i, captures the unexpected component of the sentiment index, such that $\epsilon_t^i = s_t^{i,surp}$.

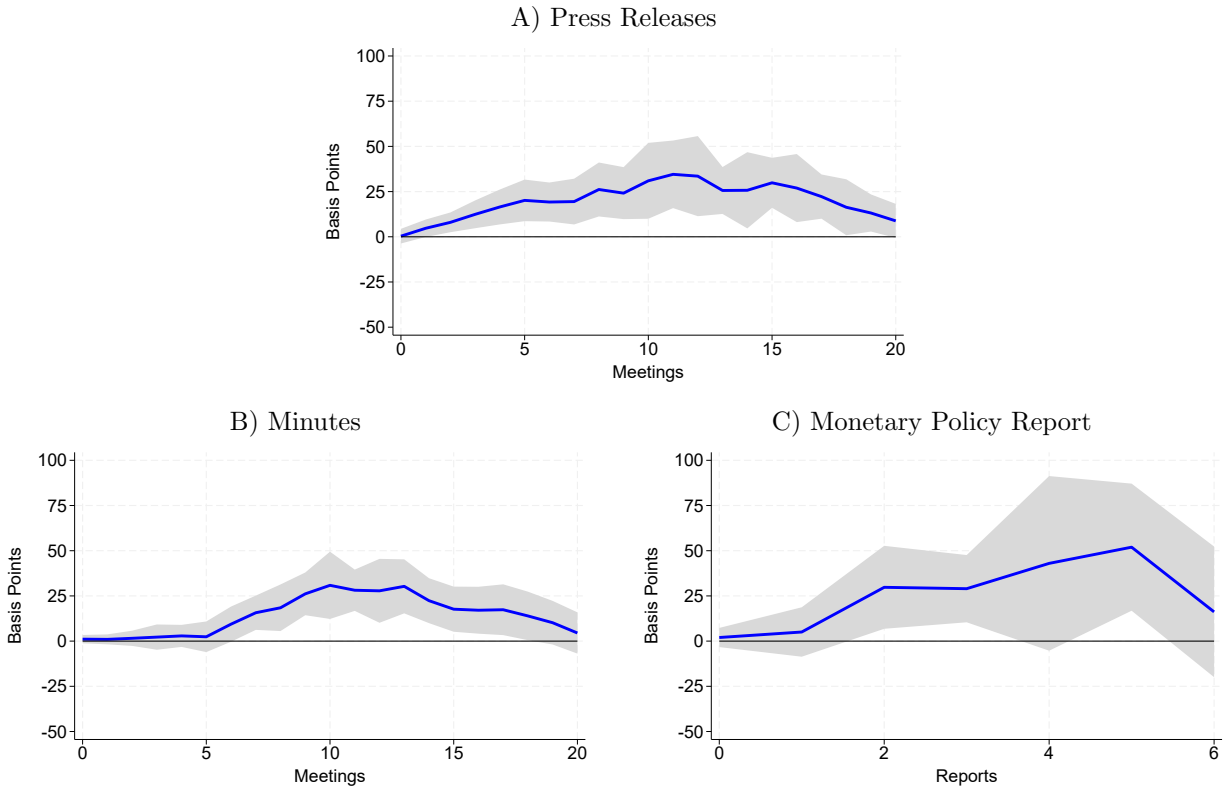
The first-stage regression follows a modified version of the Taylor rule, where the monetary policy rate is replaced by the sentiment index. This is presented in equation (3), where s_t^i represents the sentiment index of document type i at time t. On the right-hand side, we include a one-period lag of the sentiment index, along with various measures of inflation and economic activity. Specifically, we control for next-month inflation expectations, 11-month inflation expectations, Imacec expectations, the most recent available value of non-mining Imacec, and the three-month U.S. Treasury bill rate. These controls are included because they represent publicly available information at time t when monetary policy decisions were made. The residual of the regression, denoted as ϵ_t^i, captures the unexpected component of the sentiment index, with $\epsilon_t^i = ss_t^{i,surp}$.

$$MPR_{t+h} = \beta_0^h + \beta_1^h s_t^{i,surp} + \beta_2^h MPR_{t-1} + \beta_3^h MPR_{t-2} + \beta_4^h r_{t-3} + \Gamma^h X_t + u_t \tag{4}$$

The second-stage regression consists of using the unexpected component obtained in the previous regression in a Local Projections regression as shown in 4, where MPR_t refers to the monetary policy rate at time t, $ss_t^{i,surp}$ refers to the unexpected component of the policy document i at time t, X_t refers to a group of controls. In particular, we include as controls the current observation as well as lags of the non-volatile component of CPI inflation, the non-mining IMACEC, the three-month swap rate, the exchange rate, the fed funds rate, and the sovereign EMBI spread. In this regression, we measure the anticipation component of BCCh documents of the MPR at time h with β_1^h with β_1^h.

The results of this exercise are presented in Figure 5 and are in line with what was presented in Figure 4. Panel A of the figure shows that a one standard deviation shock on the sentiment index of press releases leads to an increase in the MPR of 25 basis points after five meetings. In addition, this panel shows that this effect lasts up to 15 meetings, where the effect starts to decrease. A similar result is shown in Panel B, where the effects of a standard deviation shock in the sentiment index of minutes also lead to an increase of 25 basis points in the MPR, but in this case, the increase is somewhat delayed. Finally, Panel C shows that one standard deviation shock of Monetary Policy Reports leads to an increase in the MPR of 25 basis points after 2 reports.

Figure 5: Monetary Policy Responses to Sentiment Index Surprises on Press Releases



Note: Panels A) and B) show the correlation between the sentiment index of press releases and minutes at time t and the MPR h meetings ahead, while Panel C) shows the correlation between the sentiment index of monetary policy report at time t and the MPR that is set in the release of h monetary reports ahead.

7.5 Effects of Monetary Policy Surprises on the Bond Market

In this section, we analyze the effects of monetary policy surprises on various interest rates along the yield curve. Specifically, we examine the impact of MPR surprises and sentiment index surprises from press releases, monetary policy reports, and minutes on swap rates with maturities of three, six, twelve, and twenty-four months, as well as on five- and ten-year Central Bank nominal bonds. To assess these effects on financial markets, we employ again the local projections methodology as proposed by Jordà (2005). The sample period for this analysis spans from January 2006 to December 2020. As before, we follow a two-step approach. The first step uses the sentiment surprises estimated in the previous section.

The second step consists in adapting Jarociński and Karadi (2020) for the available data. In that paper, the authors measure the impact of monetary policy surprises using short time windows before

and after the press releases. However, applying this approach to Chile's financial market presents several challenges. First, monetary policy press releases are published after market closing, meaning that their effects become apparent only on the next trading day. A potential workaround is to compare the closing price on the announcement day with the opening price on the following trading day. However, more often than not, the opening price simply replicates the previous day's closing value, making it an unreliable measure. Consequently, we use the closing values of two consecutive trading days. Nevertheless, this measure may be affected by global events occurring overnight, which could influence asset prices. To control for these external factors, we include as additional controls the relevant U.S. interest rate, the Chilean EMBI index, and the exchange rate.

Taking all of the above into account, we run two types of regression to measure the effects of monetary policy surprises. First, for the press releases we estimate the following model:

$$r_{t+h} = \alpha_0^h + \alpha_1^h r_t^{US} + \alpha_2^h MPR_t^{surp} + \alpha_3^h s_t^{PR,surp} + \alpha_{10}^h r_{t-1} + \Gamma X_t + u_t \tag{5}$$

where r_{t+h} is the interest rate studied, and r_t^{US} is the relevant rate of the US. The variable MPR_t^{surp} is the surprise in the monetary policy rate built as $MPR_t - MPR_t^{ex}$, where MPR_t^{ex} is the expected monetary policy rate taken from Bloomberg. Finally, X_t is a vector of contemporaneous and lagged control variables mentioned above. The parameter α_2^h measures the effect of MPR surprises on the interest rate r at time $t+h$, while the parameter α_2^h measures the effect of sentiment surprises on the interest rate r at time $t+h$.

Since monetary policy rate announcements do not accompany the release of minutes or the IPoM, we exclude the monetary policy surprise regressor when estimating the effects of these documents. This specification is presented in equation (6). In this case, we focus on the parameter γ_2^h, which measures the effect of the sentiment surprise on r at time $t+h$.

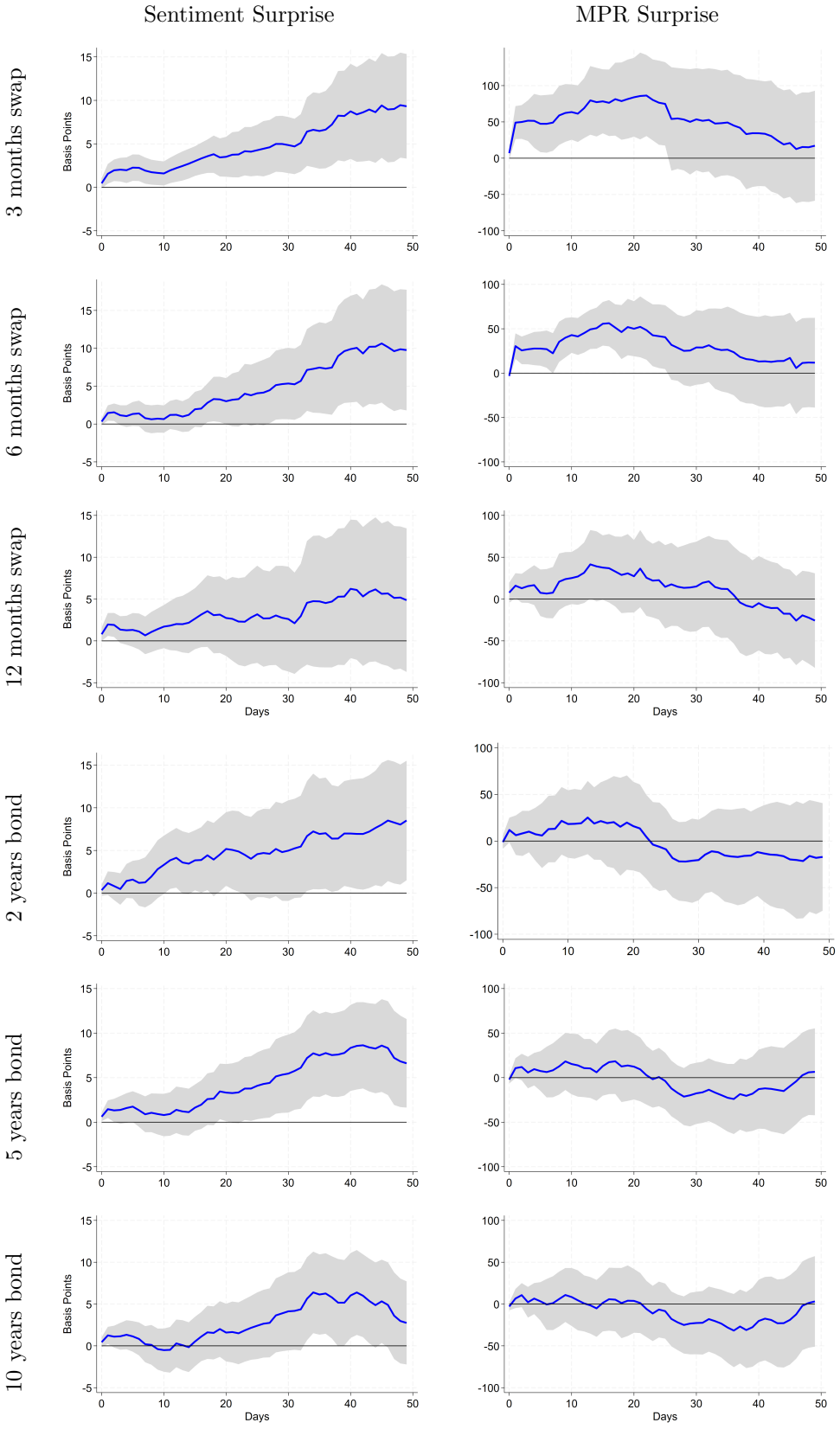
$$r_{t+h} = \gamma_0^h + \gamma_1^h r_t^{US} + \gamma_2^h s_t^{M,surp} + \gamma_3^h r_{t-1} + \Gamma X_t + v_t \tag{6}$$

Running separate local projections for each type of document allows us to assess whether the market reacts differently to various forms of communication. The market may respond to a sentiment surprise in the press release when the monetary policy decision is announced with limited information available. Later, it may react differently to the release of the minutes or the IPoMs, which provide additional insights.

Figure 6 illustrates the effect of monetary policy surprises from press releases using local projection methods. The first column shows that sentiment surprises from press releases have a modest yet persistent impact on yields. A one-standard deviation increase in the sentiment index raises three- and six-month interest rates by approximately ten basis points. Similarly, the effect on 2-, 5-, and 10-year instruments follows a comparable but slightly weaker pattern.

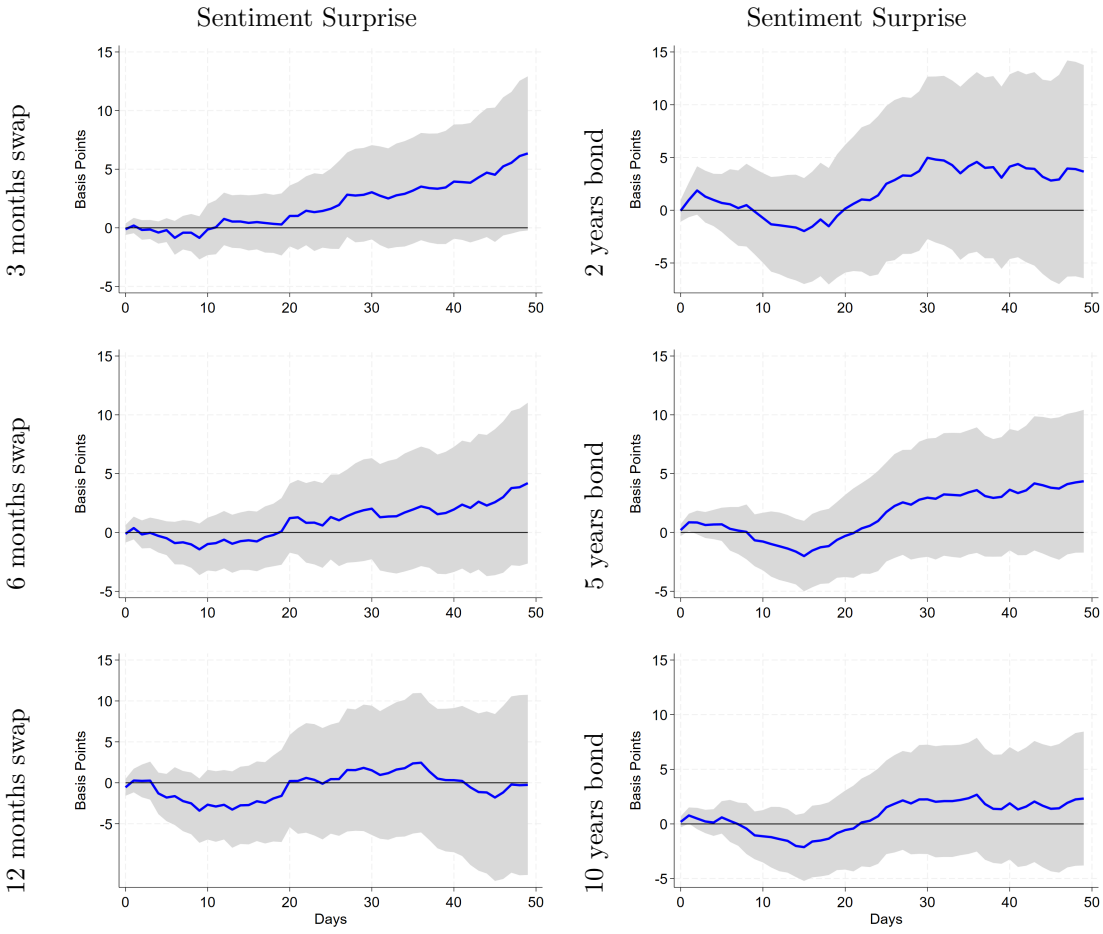
Conversely, the effect of monetary policy rate surprises on market rates is stronger but short-lived. The impact occurs immediately after the shock, dissipates quickly, and primarily affects the shorter end of the yield curve.

Figure 6: Market Responses to Monetary Policy Surprises on Press Releases



A different picture emerges when analyzing the market's response to sentiment surprises of the minutes. As shown in Figure 7, while all instruments exhibit a positive response, none is statistically significant. This suggests that the market absorbs all relevant information from the monetary policy press releases, leaving little room for additional surprises in the minutes. However, this does not imply that the minutes lack importance. While they may not significantly impact market expectations, they play a crucial role in transparency and accountability.

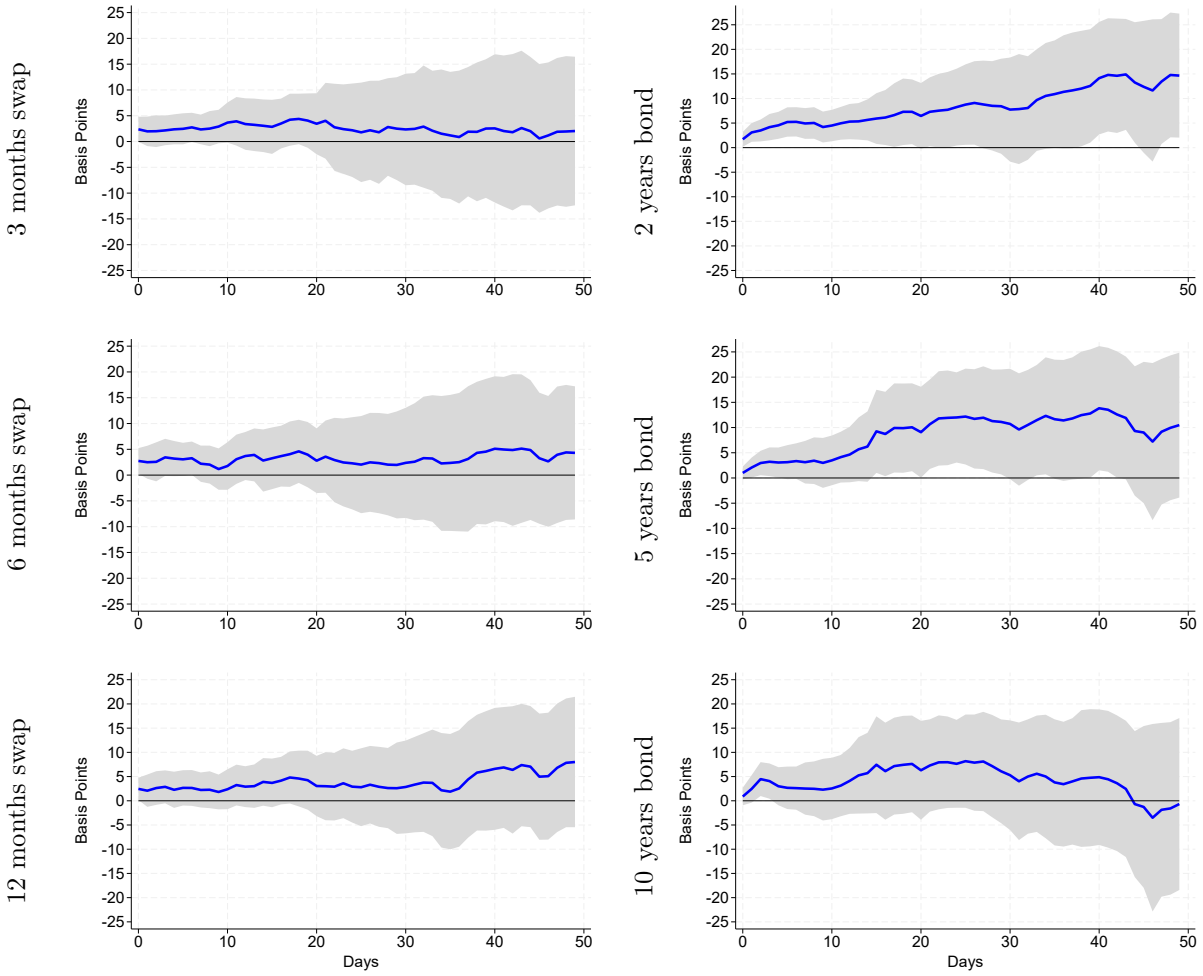
Figure 7: Market Responses to Sentiment Surprises on Monetary Policy Meeting Minutes



Finally, we examine the effects of sentiment surprises of IPoMs. Due to the smaller sample size, the confidence intervals are wider compared to those in press releases and minutes. Notably, we find that IPoM affect mainly the two-year rates. This result aligns with expectations, as monetary policy reports provide insights extending to the end of the policy horizon, which is precisely two years. We also see having effects on the five-year rates and the ten-year rates. In contrast, the findings suggest that these

documents generally do not shift short-term market expectations, as the information they contain is likely already priced in by the market. As we are controlling for the already revealed information — the press release and the new interest rate— the monetary report contains new information regarding the forecasts of key economic variables up to the policy horizon —2 years—, implying that giving the communication timing of the CBC the IPoM reveals new information in the mid-term horizon, affecting those expectations.

Figure 8: Market Responses to Sentiment Surprises on Monetary Policy Reports



8 Conclusion

The purpose of this paper is twofold. First, we present a methodology to extract latent information from monetary policy documents by constructing a sentiment index for each publication. This

methodology enhances our understanding of the information conveyed by the CBC by decomposing the sentiment index into key economic topics: inflation, activity, external conditions, financial conditions, expectations, and risk.

We apply this approach to monetary policy press releases, minutes, and IPoMs. Our results indicate that the information contained in these documents helps anticipate future movements in the monetary policy rate. Additionally, we find that activity and inflation are the primary drivers of monetary policy communication.

Furthermore, we use the sentiment index to assess the impact of monetary policy surprises. Our findings suggest that MPR rate surprises have a strong, immediate, but short-lived effect on the yield curve. In contrast, sentiment surprises in press releases exert a more persistent effect across all instruments along the yield curve, except for the 12-month swap, although this effect is weaker than that of MPR rate surprises.

For monetary policy minutes, our results indicate that the information they reveal is typically already incorporated into prices, as sentiment surprises of minutes do not significantly impact financial markets. Lastly, we find that sentiment surprises of monetary policy reports positively affect two-, five- and ten-year interest rates, suggesting that these documents provide new information that influences medium-term monetary policy expectations.

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A Modifiers Dictionaries

Positive Modifiers (262): acelera, aceleraba, aceleración, acelerado, acelerando, acelerar, acelerara, acelerará, acelerare, aceleraría, acelerarse, acelerase, acelere, aceleró, altas, altos, alza, alzas, amplía, ampliaba, ampliado, ampliando, ampliar, ampliara, ampliará, ampliare, ampliaría, ampliase, amplíe, amplió, apoya, apoyaba, apoyado, apoyando, apoyar, apoyara, apoyará, apoyarán, apoyare, apoyaría, apoyase, apoye, apoyó, aumenta, aumentaba, aumentado, aumentando, aumentar, aumentara, aumentará, aumentare, aumentaría, aumentaron, aumentase, aumente, aumento, aumentó, aumentos, auspiciosas, avanza, buen, buena, buenos, crece, crecen, crecer, crecerá, crecería, crecía, crecido, creciendo, creciente, crecientes, creciera, creciere, crecieron, creciese, creció, crezca, deprecia, depreciaba, depreciación, depreciado, depreciando, depreciar, depreciara, depreciará, depreciare, depreciaría, depreciase, deprecie, depreció, dinámica, dinámico, dinamismo, eleva, elevaba, elevadas, elevado, elevados, elevando, elevar, elevara, elevará, elevare, elevaría, elevase, eleve, elevó, empujado, estabilización, estable, estables, estimulativa, evolucionar, expanda, expande, expanden, expander, expandía, expandido, expandiendo, expandiera, expandiere, expandiese, expandió, expandirá, expandiría, expansivas, expansividad, favorable, favorables, favorecer, favorecido, fortalece, fortalecer, fortalecerá, fortalecería, fortalecía, fortalecido, fortaleciendo, fortaleciera, fortaleciere, fortaleciese, fortaleció, fortaleza, fortalezas, fortalezca, fuertes, grandes, holgadas, impulsa, impulsaba, impulsado, impulsando, impulsar, impulsara, impulsará, impulsare, impulsaría, impulsase, impulse, impulso, impulsó, incrementa, incrementaba, incrementado, incrementando, incrementar, incrementara, incrementará, incrementare, incrementaría, incrementase, incremente, incremento, incrementó, incrementos, intenso, mayor, mayores, mejor, mejora, mejoraba, mejorado, mejoramiento, mejorando, mejorar, mejorara, mejorará, mejorare, mejoraría, mejorase, mejore, mejores, mejoría, mejoró, optimista, optimistas, positiva, positivas, positivo, positivos, rápida, rápido, reanudar, recupera, recuperaba, recuperación, recuperado, recuperando, recuperar, recuperara, recuperará, recuperare, recuperaría, recuperase, recupere, recuperó, repuntar, repunte, suba, subamos, sube, subía, subían, subido, subiendo, subiera, subiere, subieron, subiese, subió, subir, subirá, subiría, suma, sumaba, sumado, sumando, sumar, sumara, sumará, sumare, sumaría, sumase, sume, sumó, supera, superaba, superado, superando, superar, superara, superará, superare, superaría, superase, supere, superior, superiores, superó.

Negative Modifiers (264): acotada, acotado, acotados, afecta, afectaba, afectada, afectado, afectados, afectando, afectar, afectara, afectará, afectare, afectaría, afectase, afecte, afectó, aprecia, apreciaba, apreciación, apreciado, aprecian, apreciando, apreciar, apreciara, apreciará, apreciare, apreciaría, apreciase, aprecie, apreció, atenúa, atenuaba, atenuado, atenuando, atenuar, atenuara, atenuará, atenuare, atenuaría, atenuase, atenúe, atenuó, baja, bajaba, bajado, bajando, bajar, bajara, bajará, bajare, bajaría, bajaron, bajas, bajase, baje, bajo, bajó, bajos, cae, caer, caerá, caería, caía, caída, caídas, caído, caiga, cayendo, cayera, cayere, cayese, cayó, comprima, comprime, comprimía, comprimido, comprimiendo, comprimiera, comprimiere, comprimiese, comprimió, comprimir, comprimirá, comprimiría, comprometa, compromete, comprometer, comprometerá, comprometería, comprometía, comprometido, comprometiendo, comprometiera, comprometiere, comprometiese, comprometió, conflicto, contrajeron, contrario, débil, débiles, debilidad, debilita, debilitaba, debilitada, debilitado, debilitando, debilitar, debilitara, debilitará, debilitare, debilitaría, debilitase, debilite, debilitó, declinar, deflacionarias, deflacionario, desacelera, desaceleraba, desaceleración, desacelerado, desacelerando, desacelerar, desacelerara, desacelerará, desacelerare, desaceleraría, desaceleraron, desacelerase, desacelere, desaceleró, descender, descenderá, descendería, descendía, descendido, descendiendo, descendiera, descendiere, descendieron, descendiese, descendió, descenso, descensos, descienda, desciende, deteriora, deterioraba, deteriorado, deteriorando, deteriorar, deteriorara, deteriorará, deteriorare, deterioraría, deteriorase, deteriore, deterioro, deterioró, difícil, dificultan, disminución, disminuía, disminuido, disminuir, mariadisminuirá, disminuiría, disminuya, disminuye, disminuyendo, disminuyera, disminuyere, disminuyeron, disminuyese, disminuyó, escasa, frágil, inestables, inferior, lenta, lento, leves, menor, modera, moderaba, moderada, moderadas, moderado, moderados, moderando, moderar, moderara, moderará, moderare, moderaría, moderase, modere, moderó, modestos, negativa, negati-

vas, negativo, negativos, paulatina, peor, pesimista, preocupación, ralentizado, reducción, reducciones, reduce, reducía, reducida, reducidas, reducido, reducidos, reduciendo, reducir, reducirá, reduciría, redujera, redujere, redujeron, redujese, redujo, reduzca, restricción, restricciones, restrictivas, restrictivo, restrictivos, revertía, revertido, revertir, revertirá, revertiría, revierta, revierte, revirtiendo, revirtiera, revirtiere, revirtiese, revirtió, riesgosos, sufra, sufre, sufría, sufrido, sufriendo, sufriera, sufriere, sufrieron, sufriese, sufrió, sufrir, sufrirá, sufriría, tensión, turbulencias, volátiles, vulnerables.

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