Are Loans Cheaper when Tomorrow seems Further ?♣

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Abstract

This paper studies how future tense marking affects the terms of bank loans. We predict that languages that grammatically mark the future affect speakers' intertemporal preferences and thereby reduce the perception of the risks associated with loan issuance. We test this hypothesis on a sample of 977 bank loans from 17 European countries. We observe that the use of a language with future tense marking is associated with lower loan spreads and lower collateral use in loan contracts. The results corroborate Chen (American Economic Review, 2013)'s hypothesis that future tense marking makes the future more distant than the present. They suggest that linguistic structure affects terms of loan contracts.

JEL Codes: D83, G20, G41, Z13.

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1. Introduction

Language structure has been shown to influence economic outcomes by shaping decision-making. The key underlying idea is that language has an effect on cognition and behavior, and through that channel it affects the economic behavior of agents.[1] A linguistic feature that has received considerable attention in economics is future tense, following the seminal paper from Chen (2013). This paper explains how the future tense marking in language can shape the behavior of individuals. Languages differ in how they encode references to future events. On the one hand, languages like German use the present tense to talk about the future. As a consequence, these languages have no clear separation of the present and the future, and this is referred to as a weak future time reference (FTR). On the other hand, languages like English and French require future tense marking. English and French use different grammatical forms to talk about the future, that is, either auxiliary verbs (e.g., English) or a dedicated future tense form (e.g., French). Consequently these languages have a distinctive separation of the present and the future, and this is referred to as a strong FTR.

Chen (2013) tests the hypothesis that languages that grammatically separate the present and the future make speakers dissociate the future from the present. As a consequence, the language would exert an influence on the intertemporal preferences. Speakers with a strong FTR would have a less future-oriented behavior than speakers with a weak FTR. He finds evidence in favor of this hypothesis by showing that speakers of strong FTR save less but also invest less in their health than speakers of weak FTR. Recent works have provided support for the influence of the future tense on economic behavior. Mavisakalyan, Tarverdi, and Weber (2018) show that speakers of weak-FTR languages are more willing to address environmental problems than speakers of strong-FTR languages. Chen et al. (2017) observe that weak-FTR language firms have higher precautionary cash holdings. These findings support the hypothesis that the dissociation between the present and the future contributes to reducing how much economic agents care about the future.

[1] See Mavisakalyan and Weber (2018) for a survey of the literature.

The influence of future tense on the individual savings behavior was shown by Chen (2013) and on corporate financial decision-making by Chen et al. (2017), who also raise questions regarding how future tense can shape private debt contracts such as bank loans. Namely, a strong-FTR language contributes to making the future feel more distant and thus tends to alter the perception of risks associated with bank loan issuance. Indeed, linguistic perception of the future may affect the design of the credit contract and thus key loan characteristics. The latter transpose contractually a myriad of banking risks such as credit risk, renegotiation risk, collateral risk… Ultimately, future tense may lead contracting parties to misperceive the importance of default risk (loan losses for the lender, bankruptcy costs and/or loss of reputation for the borrowing firm).

The objective of this paper is to investigate whether this prediction can be confirmed. To this end, we perform a cross-country investigation on a large dataset of loans from European countries. We test whether the future tense form influences the loan characteristics. In line with the literature on loan characteristics (e.g., Qian and Strahan, 2007), we consider three key loan variables: the interest rate, the maturity, and that the loan is secured with collateral. Our hypothesis predicts that bank loan contracts have lower loan spreads, are less often secured, have longer maturity to borrowers in countries with strong FTR.

European countries provide an excellent opportunity to study the effects of the future tense on the loan feature contracts for two reasons. First, the design of credit contracts is very important in Europe because the European financial system is bank based (de Haan et al., 2012; Gomes and Phillips, 2012) and European companies are much more dependent on private credit for external financing than U.S. companies. Second, strong-FTR and weak-FTR languages coexist in Europe. Strong-FTR languages include all Romance languages (e.g., French, Italian), Slavic languages (e.g., Czech, Polish), English, and Hungarian, and weak-FTR languages are all Germanic languages other than English (e.g., German, Swedish), Estonian, and Finnish.

Our paper contributes to two debates in the literature. First, we augment the literature on the impact of linguistic structure on economic outcomes by investigating the influence of future tense on loan contract terms. We complement Chen (2013)'s work on individual saving behavior by investigating corporate lending behavior. Second, we

improve our understanding of the determinants of loan characteristics. This vast literature has shown the influence of legal (Qian and Strahan, 2007; Bae and Goyal, 2009; Waisman, 2013; Hasan et al., 2014) and economic determinants, for example, monetary policy (Delis, Hasan and Mylonidis, 2017) and economic policy uncertainty (Ashraf and Shen, 2019). We extend this literature in the direction of culture and, more precisely, of language. Former works have already provided evidence on cultural differences (Giannetti and Yafeh, 2012) and on social capital (Hasan et al., 2017) but never on language.

The remainder of the paper is organized as follows. Section 2 presents the background of the research question. Section 3 describes the data and the methodology. Section 4 reports the results, and Section 5 concludes.

2. Background

2.1 Language and behavior

The claim of an influence of language on cognition and behavior is at the heart of the linguistic relativity hypothesis (LRH), also known as the Sapir-Whorf hypothesis. The strong version of the hypothesis considers that language determines the range of cognitive processes; therefore, a linguistic determinism would exist. The weak version of the hypothesis says that language exerts some constraints in some areas of cognition; thus, it is associated with the existence of a linguistic influence.

Both versions of the hypothesis had been ignored until the early 1990s for several reasons. First, some linguists such as Noam Chomsky consider that the principles underlying the linguistic structure are biologically determined in the human brain and, consequently, hereditary (Chomsky, 1957). Therefore, because linguistic structure is innate and shared by all individuals, it would not influence cognition. Second, the strong version of the hypothesis generates negative reactions because of its implication consigning individuals from different languages to different inner lives. The underlying idea is that individuals speaking some languages are not able to have certain thoughts, which has unpopular implications. Third, the hypothesis did not obtain empirical support.

As stressed by Mavisakalyan and Weber (2018), early empirical works suffered from weak empirical design and from several methodological problems.

The LRH has, however, experienced a new interest since the 1990s. This change has been motivated by new empirical works supporting the weak version of the LRH (Levinson, 1996; Boroditsky, Schmidt and Phillips, 2003), and the strong version of the LRH being rejected in the literature. Thus, the language would shape behavior without controlling cognitive process. To illustrate that sentence, we consider how Russian and English define colors. Although English has a generic word for blue, Russian does not; Russian has one word for light blue ("goluboy") and another one word for dark blue ("siniy"). The consequence of this linguistic difference is that Russian speakers must distinguish light blue from dark blue when they talk about colors. Winaver et al. (2007) then show that Russian speakers are faster than English speakers to discriminate different shades of blue.

The literature on the relationship between linguistic structures and behavior then investigated several linguistic features including gender (Mavisakalyan, 2015), pronoun use (Davis and Abdurazokzoda, 2016), foreign language (Costa, Vives and Corey, 2017), and future tense. We elaborate on the latter in the next section.

2.2 Future tense

Languages differ in how they encode references to future events. Languages such as German use the present tense to talk about the future, and languages such as English and French require future tense marking. English and French can use different grammatical forms to talk about the future, either with an auxiliary verb (e.g., English), or with a dedicated future tense form (e.g., French). We, respectively, call these languages weak-FTR and strong-FTR languages.

A concrete example can be used to explain these differences:

German: *Morgen präsentiere ich dieses Paper*

English: *I will present this paper tomorrow*

French : *Je présenterai ce papier demain*

The influence of the future tense on the economic behavior has been investigated following the seminal paper of Chen (2013). This work explains how the future tense

marking can affect the behavior of individuals. The idea is that both categories of languages differ in the separation between the present and the future. Strong-FTR languages have a distinctive separation for the present and the future, and weak-FTR languages do not.

In a cross-country analysis with data on individuals, Chen (2013) tests the hypothesis that languages that grammatically separate the present and the future make speakers dissociate the future from the present in their decisions. The future tense marking would then affect the intertemporal preferences. Speakers with a strong-FTR time would have a less future-oriented behavior than speakers with a weak FTR. He finds evidence in favor of this hypothesis by showing that speakers of strong-FTR languages save less but also invest less in their health than speakers of weak FTR.

The conclusion of Chen (2013) that future tense marking influences economic behavior has been confirmed in other works extending this seminal paper in different directions. Chen et al. (2017) extend Chen (2013)'s analysis to incorporate decisions by investigating whether weak-FTR language firms have higher precautionary cash holdings. The argumentation is similar because cash policy at the corporate level has a lot in common with savings behavior at the individual level. Both behaviors are motivated by a precautionary motive. They test this hypothesis on a large cross-country sample of listed firms from 44 countries. They show that cash holdings are higher for weak-FTR language firms. This finding then supports the hypothesis that the dissociation between the present and the future contributes to reducing how much economic agents care about the future. In another cross-country analysis with data on individuals, Mavisakalyan, Tarverdi, and Weber (2018) question whether speakers of strong-FTR languages would be more reluctant to address environmental problems. This assumption is again in accordance with the perspective that the language affects intertemporal preferences. This assumption is based on the argument that individuals forced to cleave the future from the present would care less about future detrimental events and more about immediate costs. They observe evidence that the presence of future tense marking diminishes environmentally responsible behavior, and this result is in line with Chen's prediction.

2.3 Hypothesis

By following the linguistic-savings hypothesis from Chen (2013), we develop a linguistic hypothesis for loans. A strong-FTR language makes the future feel more distant from the present and, as a consequence, alters the importance of the risks associated with the loan contract, such as credit risk, renegotiation risk, or collateral risk. Ultimately, a strong FTR language affects the perception of loan default risk. These banking risks occur in the future, and loan contracts are negotiated in the present. Potential losses for the lender and potential costs for the borrower (bankruptcy costs, loss of reputation) associated with the loan default are less important in the mind of both contracting parties when the future is more distant. We therefore test the hypothesis that a strong-FTR language leads to more favorable terms in loan contracts. This hypothesis must be detailed to be a testable prediction.

We must specify which loan contract terms are considered in the analysis. We consider three loan contract terms in our analysis in line with the literature on loan characteristics (Qian and Strahan, 2007; Bae and Goyal, 2009; Giannetti and Yafeh, 2012).[2] We focus on the loan spread because it considers the assessment of the credit risk associated with the loan. We also consider two nonprice terms: presence of collateral and loan maturity. We consider the presence of collateral in the loan contract because of its key role to diminish credit risk. In addition to mitigating problems resulting from information asymmetries, collateral is widely used by banks to reduce the risk of loan loss in the event of default. Empirical evidence has shown that banks require more collateral from riskier borrowers (Berger and Udell, 1990; Jimenez and Saurina, 2004). Loan maturity is also considered because of its direct association with the perception of the future, and a longer loan means more distant repayments and thus more risks (Berger et al., 2005).

We must also choose whose language must be considered in the work. Namely, a lending relationship combines by definition a borrower and at least one lender, and both contracting parties can be from different countries. Therefore, we must decide whether

[2] We do not consider loan covenants as this contractual feature mitigates moral hazard problems and is difficult to relate to the link between FTR language and perception of banking risks.

we test the influence of the language of the borrower or of the lender. We adopt the language of the borrower for three reasons.

First, cross-country works in the literature on the determinants of loan characteristics have considered the determinants in the country of the borrower. Qian and Strahan (2007) examine how laws and institutions shape the terms of loans and consider to this end the legal and institutional framework in the country of the borrower. Similarly, Bae, and Goyal (2009) perform an analysis of the impact of the enforceability of contracts on loan contract terms and focus on the country of the borrower.

Second, our sample consists of large loans in which borrowers, that is, large companies, have a bargaining power because they are not uniquely funded by bank loans. The situation is therefore totally different from small companies that could be constrained to accept loan terms chosen by the lender. We do not argue that all loan contract terms are decided by the borrower but it is the borrower who usually initiates the negotiation to obtain a bank loan and ultimately agrees to the final credit contract.

Third, the vast majority of loans in our sample are syndicated loans, that is, loans for which at least two banks jointly grant funds to a company. The specific nature of these loans is not at all a topic for our research question, because we are concerned about the impact of the language on the loan contract terms, and syndicated loans are standard loan contracts. However, it practically means that loans generally combine several lenders, which makes identifying the language of the lender difficult in loan contracts with syndicates combining different nationalities of banks. By focusing on the nationality of the borrower, we avoid this identification concern.

For all these reasons, we focus on the language of the borrower rather than the language of the lender. Notably, this question only has importance for the cross-country loan contracts in our sample, which represents 43% of the observations. All other cases are domestic loans, for which by definition the languages of the borrower and the lender are the same. [3] Nevertheless, we perform a robustness check to test the alternative choice of the language of the lender in the estimations.

[3] We perform robustness checks on a sub-sample with domestic loans only.

Thus, our hypothesis leads to the following testable prediction: A strong-FTR language for the borrower is associated with lower loan spreads, lower presence of collateral, and longer maturity in the loan contract.

3. Data and methodology

3.1 Measurement of future tense

We use the classification of languages based on the data from Chen (2013). We consider two types of languages based on the FTR. The first category of languages is the strong-FTR languages that require the use of a dedicated marking of the future. The second category of languages contains the weak-FTR languages in which speakers can talk about the future with the present tense. The key independent variable is *Strong FTR*, which is a dummy variable equal to one if the language of the borrower is a strong-FTR language and zero otherwise.

We consider only European countries with a dominant language to ensure proper identification of the borrower language.[4] We therefore exclude three European multilingual countries (Belgium, Luxembourg, Switzerland) from the analysis. For such countries, the identification can be erroneous even if we consider the dominant language of the city of origin of the borrower. For instance, many Belgian companies have their headquarters in Brussels, a majority–French-speaking city, and can have Flemish-speaking top management because Brussels is the economic capital of the country located inside the Flemish-speaking region and the seat of the Flemish Region (it is not the seat of the French-speaking Walloon Region). The same issues occur in Luxembourg because the country is fully polyglot, with the vast majority of inhabitants speaking the strong-FTR French and the weak-FTR German and Luxembourgish.[5]

To test the sensitivity of our results, we also consider an alternative coding for the languages. As explained by Chen (2013), strong-FTR languages include inflectional markers such as the future-indicating suffixes in French and periphrastic markers such as

[4] All countries in our sample have one official language or have one language as the native language of the large majority of the population (e.g., Finnish in Finland).

[5] A 2018 survey shows that French is spoken by 98% of the Luxembourg population, and German and Luxembourgish are, respectively, spoken by 78% and 77% (TNS Ilres survey for the Ministry of National Education, Childhood and Youth in Luxembourg).

the English auxiliary "will." Therefore, a stronger criterion for the FTR is the presence of an inflectional future tense, and we also create the dummy variable *Very Strong FTR*, which is a dummy variable equal to one if the language of the borrower has inflectional markers for the future time. Given that *Very Strong FTR* is more restrictive than *Strong FTR*, the finding of an influence of the language with the first variable in addition to this finding with the second variable would strengthen the relevance of our conclusions.

3.2 Data and variables

We obtain a sample of bank loans from the Bloomberg database that provides detailed information on loans to large companies. We use loan data for the period of January 1999 to December 2017. In line with the literature on loans (e.g., Qian and Strahan, 2007), we exclude loans to firms from the financial industry (SIC 6) and from the public sector (SIC 9). Public ownership or a monopoly situation are likely to influence the risk of loans granted to these firms, and interbank loans have specific features. We only include observations for which information is available for the main loan characteristics: loan spread, loan maturity, and loan amount. At this stage, the sample contains 2,601 loans. Next, we also include information to control for borrower characteristics. Due to data availability, this last filter significantly reduces the sample size. The final sample comprises 977 loans from 17 European countries.

The focus of our research is the relation between the FTR and the loan characteristics. In line with literature on loans, we focus on three loan characteristics. The first one is the loan spread measured by the basis points spread over LIBOR inclusive of all fees (*Spread*). The second characteristic is the loan maturity measured in years (*Maturity*). The third one is the presence of collateral measured by a dummy variable (*Secured*) equal to one if the loan is secured and to zero otherwise. We use the log of *Spread* and the log of *Maturity* in the estimations, to follow Qian and Strahan (2007), among others. This specification is also motivated by the large dispersion of these variables in the sample.

We consider a set of loan-level control variables to consider the features of the loan: the amount of the loan, the presence of covenants, the number of lenders involved in the loan, the presence of lenders belonging to league tables, and the existence of

borrower-lender relationship. We also include four variables at the firm level which can influence loan characteristics: size, indebtedness, profitability, and current ratio. All variables are defined in the Appendix.

Our analysis of the link between the FTR and loan characteristics controls for a range of observable features of countries that have been accounted for in the literature on the determinants of loan characteristics.

GDP per capita controls for economic development and is expressed in current US$. *GDP per capita* is from the World Bank World Development Indicators. *Sovereign rating* controls for the sovereign default risk of the country which can influence loan characteristics of the companies. It is measured with the Standard and Poor's LT Issuer rating extracted from Thomson Reuters. The ratings are coded in eight categories that are present in the sample, such that AAA is 1 and C is 8. Financial development is measured with the ratio of financial resources provided to the private sector by financial institutions divided by GDP (*Private credit*) and the total value of all listed shares in a stock market as a percentage of GDP (*Stock market capitalization*). Both latter variables are extracted from the Global Financial Development Database from the World Bank.

Table 1 displays the composition of the sample per year and per country. Table 2 reports the descriptive statistics for all variables used in the estimations[6]. Notably, 70% of loans in the sample are from countries with a strong-FTR language. When considering very strong-FTR language, the sample is almost split into two equal populations because 50% of loans are from countries with a very strong-FTR language. Notably, the figures are very similar when considering the language of the lender rather than the language of the borrower: the figures are then, respectively, 69% and 52% for strong-FTR language and very strong-FTR language.

Additionally, the mean loan spread is 207.13 basis points; the average loan maturity is close to 6 years; 36% of loans are secured and 15% have covenants attached; the average amount is above USD 2 billion and confirms that the sample includes large loans; and the average number of lenders is 14 and in line with the view that the vast majority of loans are syndicated loans. 15% of lead lenders belong to the European league table and 14% of the borrowers have a relationship with their lenders.

[6] Firm level variables are symmetrically winsorized at 5%.

3.3 Econometric specification

To analyze the relationship between language FTR and loan characteristics, we run regressions of loan features on the language FTR and a set of control variables:

$$Loan\ characteristic_{ijk} = \alpha + \beta\, Strong\ FTR_{ijk} + \chi\, X_i + \gamma\, Y_k + \delta\, Z_j + \varepsilon_{ijk} \quad (1)$$

where *Loan characteristic* is alternatively *Spread, Secured,* or *Maturity*; *Strong FTR* is the dummy variable for the strong future tense reference; *X* is the set of loan-specific control variables; *Y* is the set of firm-specific control variables; *Z* is the set of country-level control variables; i is for the loan, k is for the firm, and j is for the country. The equation is estimated with OLS for *Spread* and *Maturity*, and with a probit model for *Secured* because this variable is a dummy variable. We include year fixed effects in the estimations to control for the influence of the business cycle. Standard deviations are clustered by borrower in all estimations.

4. Results

4.1 Main estimations

We investigate whether future tense marking influences loan characteristics. We perform regressions explaining loan spread, loan maturity, and presence of collateral. The estimations are reported in Tables 3 to 5. In each table, we test four specifications. In the first two columns, we use the variable *Strong FTR*. In the last two columns, we use the variable *Very Strong FTR*. In each case, we consider only a set of loan-specific control variables in the first column and the full set of loan-specific and country-level control variables in the second column.

First, we analyze how future tense marking affects spread. We observe that the coefficient of the language variable is negative in all estimations and significant in three of the four specifications. We observe no significant coefficient only in the second specification using *Strong FTR* and the full set of control variables. This result is more observed with the more restrictive variable *Very Strong FTR* and strengthens its relevance. Therefore, we observe that a strong FTR is associated with lower spread. This

lower spread consequently accords with the view that a strong-FTR language contributes to making the future feel more distant and, as such, reduces the perception of risks involved in the loan contracts.

Second, we consider the relation between future tense marking and the presence of collateral. We observe that the coefficient of the language variable is negative and significant in all estimations. Therefore, we obtain evidence that a strong future reference contributes to reducing the presence of collateral in the loan contracts. As such, this result corroborates the hypothesis that a strong-FTR language reduces the importance of risks in the long-run. The absence of collateral in a loan contract enhances the potential losses for the bank.

Third, we investigate how future tense marking affects the loan maturity. We observe no significant coefficient in all estimations. In other words, a strong FTR exerts no influence on the loan maturity. This finding is at odds with our hypothesis that the language would affect loan maturity.

In summary, our results provide support for the influence of future tense marking on loan characteristics. The use of a strong-FTR language is significantly associated with lower loan spread and lower collateral, but does not influence loan maturity. These results support the idea that future tense marking affects the economic behavior of agents involved in the contracting of loans. These results corroborate the conclusion of Chen (2013) regarding individual savings behavior: a strong-FTR language contributes to making the future feel more distant than the present.

4.2 Robustness checks

Our main estimations already include several tests to control for the sensitivity of our results. We use two alternative specifications for the language variable and two different sets of control variables. We provide additional procedures to check the robustness of our findings.

First, we focus on the language of the lender in the estimations. We have, until now, focused our analysis on the language of the borrower in line with the view that the borrower characteristics should be the characteristics influencing the most loan features. We have motivated this choice. We can, however, question if our findings would stand if

we instead consider the language of the lender. Because most loans in our sample are syndicated loans, we consider the language of the lead bank in the syndicate. Namely, a syndicated loan combines the funds of several banks to provide the transaction to a company. In that process, a lead bank establishes the relationship with the company and negotiates the terms of the loan contract. This bank then searches for participant banks willing to grant a share of the loan. The language of the lender can therefore be defined as the language of the lead bank, because of its key role in the negotiation of the loan contract terms with the borrower.

Thus, we redo our estimations by now using the language of the lender. We use dummy variables *Strong-FTR Lender* and *Very Strong-FTR Lender*, which are equal to one if the language of the lender is, respectively, a strong-FTR language or has inflectional markers for the future time. We report the results in Table 6.

We first examine the influence of future tense marking on the loan spread. We observe strong evidence that a strong-FTR is associated with lower spread: the coefficient of the language variable is significantly negative in all estimations. We consider it notable to show that this finding corroborates what has been observed when considering the language of the borrower, for which the results were similar, except for being only significant in three of the four estimations.

Next, we investigate the relation between future tense and presence of collateral. Coefficients for the language variables are significant only in regressions without country level control variables. Given that the estimations with the language of the borrower show a significant and negative coefficient in all estimations, this result shows a slight difference between the language of the borrower and the language of the lender when not controlling for country variables. We further address the impact of FTR on the loan maturity. We again observe no significant impact.

We thus observe the same findings when we use the language of the lender or the language of the borrower. We again observe that a strong future tense is associated with lower loan spread and lower use of collateral.

Second, we use a subsample of domestic loans only which reduces the number of loans by half. The language, and thus the future tense marking, is now the same for the borrower and the (lead) lender. So the use of this subsample avoids any concern related to

the choice of the language of the borrower or of the lender. Table 7 provides the results. We observe strong support for the impact of the future tense marking on loan spread: the coefficient of the language variable is significantly negative in all four estimations. We do not find evidence on the influence of the future tense marking on collateral, while we still do not find support for the impact on maturity.

Third, we include an indicator for economic policy uncertainty in the estimations since uncertainty in government policies exerts an influence on borrower average risk. In line with that, Ashraf and Shen (2019) have shown that greater economic policy uncertainty increases banks' loan pricing.

We therefore want to check if the inclusion of this variable to take into account these cross-country differences in economic policy uncertainty influences our results.

To this end, we redo our estimations by adding the variable *Economic Policy Uncertainty*, which is the yearly average of economic policy uncertainty index provided by Baker, Bloom and Davis (2016).

We report the results in Table 8. We find again support for the impact of the future tense marking on loan spread, with a significantly negative coefficient of the language in both estimations, but no significant coefficient when explaining collateral and maturity.

Fourth, we use alternative specifications, notably by including *Spread (log)*, *Secured* and *Maturity (log)* as explanatory variables in the *Secured* and *Maturity* regressions. The results, available upon request, remain similar to those in tables 4 and 5.

5. Conclusion

In this paper, we examine how future tense marking affects the terms of bank loans. We test the hypothesis that a strong-FTR language is associated with lower loan spreads, lower presence of collateral, and longer maturity in the loan contract. This hypothesis is motivated by the idea that a strong-FTR language makes the future feel more distant than the present. We provide evidence supporting this hypothesis. The use of a strong FTR language is significantly associated with lower loan spreads and lower collateral use in loan contracts, and weakly associated with shorter loan maturity.

Therefore, our findings support the conclusion from Chen (2013): future tense marking influences economic behavior. We assert that our work presents topics for further research on bank loans. Individual loan datasets in multilingual countries could be used to confirm the relevance of our findings. In addition, this study is novel in its work on the influence of linguistic structure on loan term contracts. Other linguistic features such as gender or personal pronouns can also affect the cognition of loan contracting parties and influence loan terms.

References

Ashraf, B., Shen, Y., 2019. Economic Policy Uncertainty and Banks' Loan Pricing. Journal of Financial Stability 44, Article 100695.

Bae, K., Goyal., V., 2009. Creditor Rights, Enforcement, and Bank Loans. Journal of Finance 64, 2, 823-860.

Baker, S., Bloom, N., Davis, S., 2016. Measuring Economic Policy Uncertainty. Quarterly Journal of Economics 131, 1593-1636.

Berger, A., Udell, G., 1990. Collateral, Loan Quality, and Bank Risk. Journal of Monetary Economics 25, 21-42.

Berger, A.N., Espinosa-Vega, M.A., Frame, W.S., Miller, N.H., 2005. Debt Maturity, Risk, and Asymmetric Information. Journal of Finance 60, 2895–2923.

Boroditsky, L., Schmidt, L., Phillips, W., 2003. Sex, Syntax, and Semantics. In: Gentner, D., Goldin-Meadow, S. (Eds.), Language in Mind: Advances in the Study of Language and Thought (pp. 61-79), MIT Press, Cambridge.

Chen, K., 2013. The Effect of Language on Economic Behavior: Evidence from Savings Rates, Health Behaviors, and Retirement Assets. American Economic Review 103, 2, 690-731.

Chen, S., Cronqvist, H., Ni, S., Zhang, F., 2017. Language and Corporate Savings Behavior. Journal of Corporate Finance 46, 320-341.

Chomsky, N., 1957. Syntactic Structures. Mouton, Paris, France.

Costa, A., Vives, M., Corey, J., 2017. On Language Processing Shaping Decision Making. Current Directions in Psychological Science. 26, 2, 146-151.

Davis, L., Abdurazokzoda, F., 2016. Language, Culture and Institutions: Evidence from a New Linguistic Dataset. Journal of Comparative Economics 44, 3, 541-561.

Delis, M., Hasan, I., Mylonidis, N., 2017. The Risk-Taking Channel of Monetary Policy in the U.S.: Evidence from Corporate Loan Data. Journal of Money, Credit and Banking 49, 1, 187-213.

de Haan, J., Oosterloo, S., Schoenmaker, D., 2012. Financial Markets and Institutions: A European Perspective, 2nd ed. Cambridge University Press.

Giannetti, M., Yafeh, Y., 2012. Do Cultural Differences between Contracting Parties Matter? Evidence from Syndicated Bank Loans. Management Science 58, 2, 365-383.

Gomes, A., Phillips, G., 2012. Why Do Public Firms Issue Private and Public Securities? Journal of Financial Intermediation 21, 619–658.

Hasan, I., Hoi, C.K., Wu, Q., Zhang, H., 2014. Beauty is in the Eye of the Beholder: The Effect of Corporate Tax Avoidance on the Cost of Bank Loans. Journal of Financial Economics 113, 1, 109-130.

Hasan, I., Hoi, C.K., Wu, Q., Zhang, H., 2017. Social Capital and Debt Contracting: Evidence from Bank Loans and Public Bonds. Journal of Financial and Quantitative Analysis 52, 3, 1017-1047.

Jimenez G., Saurina J., 2004. Collateral, Type of Lender and Relationship Banking as Determinants of Credit Risk. Journal of Banking and Finance 28, 2191-2212.

Levinson, S., 1996. Frames of Reference and Molyneux's Question: Crosslinguistic Evidence. In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), Language, Speech, and Communication. Language and Space (pp. 109-169), MIT Press, Cambridge.

Mavisakalyan, A., 2015. Gender in Language and Gender in Employment. Oxford Development Studies 43, 4, 403-424.

Mavisakalyan, A., Tarverdi, Y., Weber, C., 2018. Talking in the Present, Caring for the Future: Language and Environment. Journal of Comparative Economics 46, 4, 1370-1387.

Mavisakalyan, A., Weber, C., 2018. Linguistic Structures and Economic Outcomes. Journal of Economic Surveys 32, 3, 916-939.

Mis en forme : Français (France)

Mis en forme : Français (France)

Mis en forme : Français (France)

Qian, J., Strahan, P., 2007. How Laws and Institutions Shape Financial Contracts: The Case of Bank Loans. Journal of Finance 62, 2803-2834.
Waisman, M., 2013. Product Market Competition and the Cost of Bank Loans: Evidence from State Antitakeover Laws. Journal of Banking and Finance 37, 12, 4721-4737.
Winawer, J., Witthoft, N., Frank, M., Wu, L., Wade, A., Boroditsky. Russian Blues Reveal Effects of Language on Color Discrimination. Proceedings of the National Academy of Sciences 114, 19, 7780-7785.

Appendix: Brief description of all variables and their sources

Variable	Description	Source
Language variables		
Strong FTR	=1 if the language of the borrower has a strong future-time reference, =0 otherwise	Chen (2013)
Very Strong FTR	=1 if the language of the borrower has inflectional markets for the future time, =0 otherwise	Chen (2013)
Lender Strong FTR	=1 if the language of the lender has a strong future-time reference, =O otherwise	Chen (2013)
Lender Very Strong FTR	=1 if the language of the lender has inflectional markets for the future time, =0 otherwise	Chen (2013)
Loan contract variables		
Loan Spread	Loan spread in basis points	Bloomberg
Maturity	Maturity of the loan in years	Bloomberg
Secured	=1 if the loan is secured by collateral, =0 otherwise	Bloomberg
Amount	Size of the loan in thousands of dollars	Bloomberg
Covenants	=1 if the loan includes financial covenants, =0 otherwise	Bloomberg
Lenders	Number of lenders	Bloomberg
League	=1 if the lead lender is listed among the top 3 of the Bloomberg European league table	Bloomberg
Relationship	=1 if the lead lender issued a loan for the same borrower during the last 3 years	Bloomberg
Borrower variables		
Total assets (log)	Log of total assets in millions of dollars	Bloomberg
Debt / assets	Total debt to total assets	Bloomberg
ROA	Return on assets	Bloomberg
Current ratio	Current assets to current liabilities	Bloomberg
Country variables		
GDP per capita	GDP per capita in USD.	World Bank
Private Credit	Private credit by deposit money banks and other financial institutions to GDP	Global Financial Development Database
Sovereign rating	Standard and Poor's LT Issuer Rating (coded in eight categories from 1 for AAA to 8 for C)	Thomson Reuters
Stock market capitalization	Total value of all listed shares in a stock market as a percentage of GDP	Global Financial Development Database
Economic Policy Uncertainty	Yearly average of Economic Policy Uncertainty scaled by 100	Baker, Bloom and Davis (2016)

Table 1.
Composition of the sample

This table shows the number of loans in the sample by year and country.

Year	Loans	Country	Loans
1999	5	Austria	9
2000	25	Czechia	6
2001	32	Denmark	13
2002	31	Finland	21
2003	55	France	247
2004	69	Germany	130
2005	123	Greece	11
2006	90	Hungary	11
2007	120	Ireland	13
2008	93	Italy	78
2009	55	Netherlands	100
2010	4	Poland	13
2011	38	Portugal	6
2012	40	Slovenia	3
2013	92	Spain	169
2014	65	Sweden	30
2015	40	UK	117
Total	977	Total	977

Table 2.
Descriptive statistics

This table indicates the mean values and standard deviations for the variables in the estimations.

Variable	Mean	Standard deviation	Median
Strong FTR	0.70	0.46	1
Very strong FTR	0.50	0.50	1
Strong FTR Lender	0.69	0.46	1
Very Strong FTR Lender	0.52	0.50	1
Amount	2,069.05	9,156.25	600
Spread	207.13	158.63	200
Maturity	6.15	3.18	6
Secured	0.36	0.48	0
Covenants	0.15	0.36	0
Lenders	14.01	12.82	10
League	0.15	0.35	0
Relationship	0.14	0.35	0
Total assets (log)	8.24	1.94	8.16
Debt / Assets	0.34	0.19	0.33
ROA	0.03	0.06	0.03
Current ratio	0.01	0.01	0.01
GDP per capita	36,625.82	9,809.13	36,526.77
Private credit	1.08	0.35	0.97
Stock market cap.	0.76	0.31	0.76
Sovereign rating	1.50	0.90	1
Economic Policy Uncertainty	1.13	0.47	0.99

Table 3.
Loan spread

This table presents the results of OLS regressions examining the relation between the future tense reference and loan spread. The dependent variable is the log of *Spread*. Definitions of variables are provided in the Appendix. Loan controls include loan currency (EUR, GBP, USD), loan type (term, revolving), and loan purpose (acquisition, general corporate, LBO, project finance, debt refinancing). Standard errors (in brackets) are clustered by borrower. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Strong FTR	-0.160**	-0.159**		
	(0.063)	(0.076)		
Very Strong FTR			-0.176***	-0.160**
			(0.060)	(0.064)
Amount (log)	-0.027	-0.027	-0.029	-0.027
	(0.026)	(0.026)	(0.026)	(0.026)
Maturity (log)	0.173***	0.181***	0.172***	0.180***
	(0.048)	(0.051)	(0.048)	(0.051)
Secured	0.298***	0.285***	0.290***	0.282***
	(0.059)	(0.061)	(0.059)	(0.061)
Covenants	0.171**	0.178**	0.160*	0.166**
	(0.081)	(0.079)	(0.082)	(0.080)
Lenders (log)	-0.083**	-0.084**	-0.084**	-0.082**
	(0.039)	(0.039)	(0.039)	(0.039)
League	0.031	0.082	0.028	0.074
	(0.070)	(0.070)	(0.069)	(0.070)
Relationship	-0.006	-0.006	0.005	0.002
	(0.068)	(0.069)	(0.067)	(0.069)
Total assets (log)	-0.119***	-0.120***	-0.115***	-0.118***
	(0.019)	(0.019)	(0.019)	(0.019)
Debt / assets	0.362**	0.354**	0.364**	0.360**
	(0.142)	(0.153)	(0.142)	(0.154)
ROA	-2.053***	-2.050***	-2.083***	-2.063***
	(0.507)	(0.531)	(0.511)	(0.529)
Current ratio	-1.401	-0.979	-1.209	-0.777
	(3.167)	(3.077)	(3.154)	(3.075)
GDP per capita (log)		0.102		0.164
		(0.135)		(0.132)
Private credit		0.351***		0.339***
		(0.098)		(0.099)
Stock market cap.		0.073		0.042
		(0.120)		(0.119)
Sovereign rating		0.021		0.019
		(0.039)		(0.039)
Intercept	5.943***	4.227***	5.862***	3.508***
	(0.334)	(1.358)	(0.341)	(1.306)
Loan controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Loans	966	926	966	926
Adjusted R^2	0.54	0.55	0.55	0.55

Table 4.
Collateral

This table presents the results of probit regressions examining the relation between the future tense reference and presence of collateral. The dependent variable is *Secured*. Definitions of variables are provided in the Appendix. Loan controls include loan currency (EUR, GBP, USD), loan type (term, revolving), and loan purpose (acquisition, general corporate, LBO, project finance, debt refinancing). Standard errors (in brackets) are clustered by borrower. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Strong FTR	-0.307**	-0.434**		
	(0.139)	(0.183)		
Very Strong FTR			-0.416***	-0.406**
			(0.138)	(0.158)
Amount (log)	-0.131**	-0.156***	-0.139**	-0.157***
	(0.059)	(0.060)	(0.060)	(0.060)
Covenants	1.195***	1.208***	1.176***	1.179***
	(0.169)	(0.168)	(0.169)	(0.168)
Lenders (log)	0.044	0.057	0.040	0.058
	(0.092)	(0.094)	(0.092)	(0.095)
League	0.369**	0.450***	0.373**	0.432**
	(0.169)	(0.173)	(0.164)	(0.168)
Relationship	-0.239	-0.207	-0.214	-0.199
	(0.167)	(0.174)	(0.166)	(0.173)
Total assets (log)	-0.080*	-0.075*	-0.073*	-0.070
	(0.044)	(0.044)	(0.043)	(0.044)
Debt / assets	0.760**	0.873**	0.792**	0.873**
	(0.361)	(0.382)	(0.368)	(0.386)
ROA	-0.018	0.106	-0.001	0.124
	(1.255)	(1.335)	(1.260)	(1.339)
Current ratio	6.348	7.081	7.118	7.839
	(6.922)	(7.028)	(6.895)	(7.043)
GDP per cap. (log)		-0.397		-0.228
		(0.346)		(0.321)
Private credit		0.158		0.148
		(0.247)		(0.247)
Stock market cap.		0.178		0.107
		(0.341)		(0.327)
Sovereign rating		-0.065		-0.070
		(0.100)		(0.099)
Intercept	1.366*	1.498	1.203	-0.538
	(0.797)	(3.264)	(0.799)	(3.123)
Loan controls	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes
Loans	934	894	934	894
Pseudo-R^2	0.28	0.29	0.29	0.29
Log.L	-1184.40	-1111.53	-1176.00	-1109.66

Table 5.
Maturity

This table presents the results of OLS regressions examining the relation between the future tense reference and loan maturity. The dependent variable is the log of *Maturity*. Definitions of variables are provided in the Appendix. Loan controls include loan currency (EUR, GBP, USD), loan type (term, revolving), and loan purpose (acquisition, general corporate, LBO, project finance, debt refinancing). Standard errors (in brackets) are clustered by borrower. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Strong FTR	-0.010	-0.033		
	(0.038)	(0.051)		
Very Strong FTR			-0.030	-0.036
			(0.042)	(0.047)
Amount (log)	-0.044**	-0.052***	-0.044**	-0.052***
	(0.017)	(0.018)	(0.017)	(0.018)
Covenants	0.128***	0.119**	0.127***	0.116**
	(0.049)	(0.049)	(0.049)	(0.048)
Lenders (log)	0.030	0.043	0.030	0.043
	(0.028)	(0.029)	(0.028)	(0.029)
League	-0.065	-0.044	-0.064	-0.045
	(0.059)	(0.058)	(0.058)	(0.057)
Relationship	-0.030	-0.049	-0.028	-0.048
	(0.044)	(0.045)	(0.044)	(0.045)
Total assets (log)	-0.032***	-0.027**	-0.031***	-0.027**
	(0.012)	(0.012)	(0.012)	(0.012)
Debt / assets	0.021	0.014	0.026	0.015
	(0.114)	(0.119)	(0.115)	(0.121)
ROA	0.191	-0.017	0.189	-0.021
	(0.375)	(0.390)	(0.374)	(0.388)
Current ratio	-0.922	-1.478	-0.933	-1.437
	(1.979)	(2.006)	(1.973)	(2.001)
GDP per cap. (log)		-0.104		-0.092
		(0.083)		(0.074)
Private credit		-0.003		-0.006
		(0.074)		(0.073)
Stock market cap.		0.058		0.053
		(0.107)		(0.106)
Sovereign rating		-0.016		-0.016
		(0.026)		(0.027)
Intercept	2.226***	3.390***	2.227***	3.244***
	(0.551)	(0.875)	(0.549)	(0.800)
Loan controls	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes
Loans	966	926	966	926
Adj.R^2	0.21	0.22	0.21	0.22

Table 6.
Robustness check: language of the lender

This table presents the results of OLS regressions (for *Spread* and for *Maturity*) and probit regressions (for *Secured*) examining the relation between the future tense reference and loan characteristics. The dependent variable is mentioned at the top of each panel. Definitions of variables are provided in the Appendix. All regressions include loan variables ((1) and (3)) and country variables ((2) and (4)). Loan controls and year fixed effects are included in all estimations. Standard errors (in brackets) are clustered by borrower. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Dependent variable : Spread (log)				
Strong FTR Lender	-0.153***	-0.150**		
	(0.057)	(0.061)		
Very Strong FTR Lender			-0.229***	-0.215***
			(0.057)	(0.058)
Loans	966	926	966	926
Adjusted R^2	0.52	0.52	0.52	0.53
Dependent variable : Secured				
Strong FTR Lender	-0.210	-0.176		
	(0.131)	(0.146)		
Very Strong FTR Lender			-0.243*	-0.176
			(0.141)	(0.154)
Loans	934	894	934	894
Pseudo R^2	0.28	0.28	0.28	0.28
Dependent variable : Maturity (log)				
Strong FTR Lender	-0.016	-0.026		
	(0.039)	(0.041)		
Very Strong FTR Lender			-0.005	-0.014
			(0.039)	(0.041)
Loans	966	926	966	926
Adjusted R^2	0.21	0.22	0.21	0.22

Table 7.
Robustness check: domestic loans

This table presents the results of OLS regressions (for *Spread* and for *Maturity*) and probit regressions (for *Secured*) examining the relation between the future tense reference and loan characteristics. The dependent variable is mentioned at the top of each panel. Definitions of variables are provided in the Appendix. All regressions include loan variables ((1) and (3)) and country variables ((2) and (4)). Loan controls and year fixed effects are included in all estimations. Standard errors (in brackets) are clustered by borrower. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
	Dependent variable : Spread (log)			
Strong FTR Lender	-0.222***	-0.275**		
	(0.083)	(0.114)		
Very Strong FTR Lender			-0.237***	-0.271***
			(0.079)	(0.094)
Loans	551	541	551	541
Adjusted R^2	0.56	0.56	0.56	0.56
	Dependent variable : Secured			
Strong FTR Lender	-0.244	-0.004		
	(0.217)	(0.322)		
Very Strong FTR Lender			-0.252	-0.086
			(0.214)	(0.306)
Loans	519	509	519	509
Pseudo R^2	0.31	0.32	0.32	0.32
	Dependent variable : Maturity (log)			
Strong FTR Lender	0.048	-0.021		
	(0.049)	(0.065)		
Very Strong FTR Lender			0.021	-0.064
			(0.049)	(0.064)
Loans	551	541	551	541
Adjusted R^2	0.23	0.22	0.23	0.22

Table 8.
Robustness check: controlling for economic policy uncertainty

This table presents the results of OLS regressions (for *Spread* and for *Maturity*) and probit regressions (for *Secured*) examining the relation between the future tense reference and loan characteristics. The dependent variable is mentioned at the top of each panel. Definitions of variables are provided in the Appendix. All regressions include loan variables and country variables. Loan controls and year fixed effects are included in all estimations. Standard errors (in brackets) are clustered by borrower. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Spread (log)		*Secured*		*Maturity (log)*	
Strong FTR	-0.208**		-0.061		-0.030	
	(0.099)		(0.222)		(0.064)	
Very Strong FTR		-0.167*		0.142		-0.043
		(0.093)		(0.251)		(0.055)
Economic Policy Uncertainty	0.158	0.106	-0.301	-0.379	0.074	0.072
	(0.100)	(0.095)	(0.277)	(0.258)	(0.073)	(0.074)
Loans	859	859	835	835	859	859
Adjusted R^2	0.54	0.54	0.30	0.30	0.21	0.21