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Cultural Bonds*

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Abstract

We show that households' investments in government bonds are influenced by their cultural origin. For identification, we analyze the holdings of government bonds by households of different cultural origins within a single bilingual jurisdiction, using the European sovereign debt crisis as a shock to the perception of government debt sustainability. We find that households of different cultural origins invest differently in government bonds after the crisis, reflecting cultural differences in the perception of public debt. These findings cannot be attributed to home bias, economic patriotism, socioeconomic factors, exposure to foreign cultures, banks' distorted advice, or moral suasion. Our results carry significant policy implications for monetary policy, financial stability, and sovereign debt issuance and management.

JEL classification: D14, G11, G41

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1 Introduction

Economists have long argued that individuals' cultural backgrounds can affect their economic behavior. This link has been demonstrated through several empirical studies finding evidence of the influence of culture on outcome variables such as stock market participation, entrepreneurship, trade, savings and indebtedness, and government policies (see Guiso, Sapienza, and Zingales, 2006; Osili and Paulson, 2008; Haliassos, Jansson, and Karabulut, 2017; Fuchs-Schündeln, Masella, and Paule-Paludkiewicz, 2020, among several others).

In this paper, we add to this literature by analyzing the role of culture on households' investments in government bonds. This research question is of first-order economic importance due to the role of government bonds for public finance and monetary policy implementation, as well as from a financial stability perspective, if different cultural groups systematically adjust their holdings differently. The question is particularly relevant as culturally diverse countries seek greater integration in capital markets with initiatives such as the EU's Capital Markets Union, the issuance of European sovereign bonds to finance programs such as NextGenerationEU, and ongoing discussions about potential defense bonds and broader Eurobond proposals. To the best of our knowledge, this is the first paper investigating whether culture plays a role on households' investments in government bonds.

It is well acknowledged that identifying the impact of culture on investment decisions of households is empirically challenging due, for example, to reverse causality or omitted variables (Guiso et al., 2006). Our identification strategy consists of three elements that allow us to attribute a causal effect of culture on individuals' investment decisions. First, we limit the impact of omitted variables by exploiting cultural variation within a jurisdiction with fixed institutional, economic, and regulatory factors (see Fernández, 2011). Specifically, we use detailed security-level data containing household investments from the South Tyrol region in Northern Italy, which is home to individuals of two very distinct cultural groups: Italian and Germanic. This region is an ideal laboratory for our research question because as

we discuss below, the two cultural groups differ in several characteristics that might influence their preferences for government securities (such as differences in their dislike for debt and excessive spending). Indeed, the two cultural groups are the poster children of the North-South divide in Europe, where Germany and Austria are the stereotypical representative of thrifty Northern Europeans with stable public finances, and Italy of the profligate Southerners with larger public debt.[1] Moreover, the South Tyrol is a relevant setting to study households' investments in financial securities and government bonds, as the region is one of the richest in Europe, with a GDP per capita as of 2022 of almost €50,000 and similar to the levels in Germany and Finland (Heaton and Lucas, 2000; Wachter and Yogo, 2010; Calvet and Sodini, 2014; Andersen and Nielsen, 2011; Briggs, Cesarini, Lindqvist, and Östling, 2021); and Italy is one of the European countries with the largest share of household holdings of bonds, particularly government bonds.[2]

Second, we use the European sovereign debt crisis as a shock that allows us to identify the impact of culture on government securities in a difference-in-difference setting. By highlighting the North-South differences in government debt management and triggering bailouts towards Southern countries, this crisis created tensions across EU member states, with Northern states (such as Germany) largely being self-perceived as the virtuous supporters of the heavily indebted Southerners (like Italy). Thus, the crisis plausibly affected the perception of the Italian government differently among the two cultural groups. In fact, this would be in line with several studies that have shown that cultural biases become more salient during episodes of elevated stress (Fuchs and Gehring, 2017; Pursiainen, 2022; Eichengreen and Saka, 2022).

Third, we have access to detailed supervisory data containing the total quarterly retail

[1] See for example Matthijs and McNamara (2015).

[2] See Badarinza, Campbell, and Ramadorai (2016); Gomes, Haliassos, and Ramadorai (2021) for cross-country differences in household holdings of bonds. Regarding government securities, in Italy the household sector held 7.7% of all government securities in 2022. This fraction was only larger in Hungary (21.4%), Malta (15.7%), Portugal (13.1%), and Ireland (11.2%). Source: Eurostat.

holdings of each security held by banks as custodians, at each single ISIN level, for all banks with branches in the South Tyrol. We measure the predominant cultural group of each bank's clientele using the primary language in the locations where the bank operates. The structure of our data allow us to control for several factors, other than culture, that could potentially lead to our results. Specifically, we introduce fixed effects to control for unobserved factors such as time-invariant preferences of investors in certain banks for different categories of securities (bank-by-security type fixed effects) and time-varying factors affecting the composition of the banks' clientele and the custodian banks (bank-by-time fixed effects). Our baseline regression also includes security-by-time fixed effects, implying that identification originates from the variation in government bond holdings across banks with clients of different cultural origins while accounting for any time-varying factors affecting a specific security. In addition, we control for other observable determinants of financial investments and perform several robustness tests to ensure that investors of both cultural groups are more comparable counterfactuals.

Our hypothesis suggests that German-speaking South Tyroleans might have been less willing to invest in Italian government bonds post-crisis compared to their Italian-speaking counterparts. We build this hypothesis on several elements suggesting that German speakers might have perceived the crisis more negatively due to their generalized dislike for debt and excessive spending (which leads to high public deficits). First, the German word for debt, "Schuld", implies moral culpability, in contrast to the Italian "debito", which simply denotes a financial obligation. These linguistic differences mirror broader cultural attitudes, with German-speaking communities traditionally viewing debt more negatively. Empirical findings from Bedendo, Garcia-Appendini, and Siming (2020, 2023) support this perspective, revealing a stronger tendency among Italian firm managers to favor financial structures with higher levels of debt as opposed to Germanic-origin managers. This linguistic feature is likely to apply to public debt. As case in point, in 2009 Germany enshrined a debt brake

("Schuldenbremse") in its constitution, with the aim to restrict structural budget deficits and control government debt.[3]

Second, existing evidence suggests that the structure of a language can affect economic behavior by affecting individuals' time preferences (Chen, 2013). Languages that associate future events with present ones tend to observe a longer-term orientation in economic behavior. In our setting, the German language differs from Italian in that the former often employs the present tense for future actions. In line with different time preferences, several papers find evidence of higher saving rates for German speakers relative to speakers of languages that make a larger distinction between the present and future tense (Chen, 2013; Guin, 2016; Sutter, Angerer, Glätzle-Rützler, and Lergetporer, 2018; Ayres, Katz, and Regev, 2023). In our context, cultural differences in preferences for saving rates may be associated with differing views on excessive public spending, which leads to high public deficits and, in turn, higher public debt.

Third, the crisis was triggered by concerns about high public debt and large fiscal deficits (with Southern European governments commonly perceived as profligate), both of which carry negative connotations for individuals of Germanic origin. Thus, the narratives surrounding the crisis could have led to a change in the perception of the Italian government and of the sustainability of Italian debt among the German-speaking Italians, making the above-mentioned cultural differences more salient and leading to differential investment patterns in government bonds among the two cultural groups.

Consistently with our hypothesis, we find that after the onset of the sovereign debt crisis in Italy, German-speaking households invested less in government debt securities relative to other assets, compared to Italian-speaking households. We further show that these differences are specific to government securities: the crisis did not trigger significant cultural differences in the propensity to hold stocks, bonds issued by private corporations and financial insti-

[3]The media often highlights the traditional German aversion to high public debt; see for example articles in The Economist (Nov. 30, 2023) and in The Financial Times (Dec. 31, 2023).

tutions, or mutual funds. Similarly, we find no differential effects on the holdings of other securities with Italian ISINs, on securities from German-speaking countries, or on other foreign securities. These results suggest that cultural differences in the perception of public debt affect investors' holdings of government bonds. In addition, the fact that we do not observe cultural changes in the holdings of other Italian securities or securities from German-speaking countries suggests that home bias or some degree of economic patriotism—which would lead individuals to invest relatively more in securities aligned with their cultural origin—is not the main driver of our results.

Based on a rich literature that highlights the importance of physical proximity for banking relationships (Petersen and Rajan, 2002; Degryse and Ongena, 2005; Agarwal and Hauswald, 2010; Hollander and Verriest, 2016; Herpfer, Mjøs, and Schmidt, 2023), in our main analysis we use the location of bank deposits to infer the cultural identity of investors of each bank, itself based on the cultural origin of their predominant clientele. We reduce the possibility that this measure is picking up spurious correlations by using several alternative measures to classify the cultural identity of the banks' investors. Similarly, we mitigate the possibility that our proxies for Germanic culture are capturing other known observable determinants of investment, such as income, wealth, education, age, or physical proximity to foreign cultures, by including proxies for these demographic and socioeconomic characteristics.

Our identifying assumption is that in the absence of the sovereign debt crisis, government bond holdings of individuals of both cultural groups would have followed similar paths (parallel trends). In line with this assumption, an analysis of the dynamics of our effects reveals that the relative decrease in investment in Italian government bonds by German-speaking South Tyroleans was absent before any signs of the sovereign debt crisis emerged.

In extensions to our main results, we investigate which external factors might have influenced the differential demand for government debt by individuals of Germanic cultural origin during our period of study. We do not find evidence that our results are driven by

distorted advice from banks, i.e., steering (Bolton, Freixas, and Shapiro, 2007; Stoughton, Wu, and Zechner, 2011; Inderst and Ottaviani, 2012; Hoechle, Ruenzi, Schaub, and Schmid, 2018; Fecht, Hackethal, and Karabulut, 2018; Guiso, Pozzi, Tsoy, Gambacorta, and Mistrulli, 2022): our results are the same regardless of whether the banks are active in securities trading or not, and for banks with diverse stakes on government bonds. Similarly, we explore whether the observed differences could result from moral suasion by the Italian government (Ongena, Popov, and Van Horen, 2019), which might have been more effective among Italian- than among German-speaking South Tyroleans. However, we find that our baseline results are virtually identical regardless of the government's need to refinance its debt (approximated in the same way as in Ongena et al., 2019).

Finally, we investigate several potential channels through which culture might affect the holdings of government bonds. Specifically, we explore the role of risk preferences (Malmendier and Nagel, 2011; Rieger, Wang, and Hens, 2015; Ek, Gokmen, and Majlesi, 2022), trust in national institutions (Guiso, Sapienza, and Zingales, 2004, 2008; Georgarakos and Pasini, 2011; Giannetti and Wang, 2016), time preferences (Chen, 2013; Sutter et al., 2018), and debt preferences (Bedendo et al., 2020; Martínez-Marquina and Shi, 2024). We find that the cultural differences in government debt holdings are similar in magnitude across groups of investors with different average time and debt preferences. In contrast, we find that cultural differences in government debt holdings are influenced slightly by trust and more significantly by risk aversion. Specifically, we show that after the crisis, risk-averse German-speaking Italians invest relatively less in government bonds compared to their Italian-speaking counterparts; this cultural difference is not statistically significant among the more risk-loving investors. These findings support the interpretation that the cultural differences in government debt holdings are driven by a relative increase in the risk perception of the Italian government debt by Germanic-origin individuals.

Our findings offer several contributions to the literature. First, we extend existing re-

search on the influence of culture on financial decisions (Giannetti and Yafeh, 2012; Ahern, Daminelli, and Fracassi, 2015; Fisman, Paravisini, and Vig, 2017; Pan, Siegel, and Wang, 2017; Giannetti and Zhao, 2019; Pan, Siegel, and Yue Wang, 2020; Pursiainen, 2022), particularly on retail investors' investment decisions (Grinblatt and Keloharju, 2001; Haliassos, Jansson, and Karabulut, 2017; Ek, Gokmen, and Majlesi, 2022; Addoum, Cuculiza, Kumar, and Webb, 2024). Grinblatt and Keloharju (2001) show that Finnish investors prefer to invest in stocks of geographically close firms, those communicating in their native language, and those led by culturally similar CEOs. Haliassos, Jansson, and Karabulut (2017) examine how cultural predispositions influence investment behavior, particularly stock market participation, among European migrants in Sweden, finding that while cultural effects persist, exposure to host-country institutions facilitates assimilation. Ek, Gokmen, and Majlesi (2022) demonstrate that second-generation immigrants in Sweden inherit risk-taking tendencies from their parents' countries of origin, leading them to favor direct stock holdings over mutual funds. Addoum, Cuculiza, Kumar, and Webb (2024) analyze how Hispanic investors in the U.S. overweight local, lottery-type, and high-momentum stocks. Our focus is on retail investments in government debt. To the best of our knowledge, our study is the first to investigate the role of retail investors' cultural background on their investments in government bonds.

Second, we also expand the literature analyzing the relationship between the European sovereign debt crisis and different economic and financial outcomes. Alesina, Barbiero, Favero, Giavazzi, and Paradisi (2015) find that spending-based austerity had lower output costs than tax-based adjustments, while Guiso, Herrera, and Morelli (2016) highlight how cultural differences hindered crisis management. Ongena, Popov, and Van Horen (2019) document moral suasion, with governments pressuring domestic banks to buy sovereign bonds, and Bofondi, Carpinelli, and Sette (2018) show that Italian banks, facing rising funding costs, cut credit more than foreign banks. Banerjee, Gambacorta, and Sette (2021) find that re-

lationship lending helped firms retain credit access but only at well-capitalized banks, while Schivardi, Sette, and Tabellini (2022) reveal that undercapitalized banks propped up zombie firms, distorting credit allocation. Pursiainen (2022) finds that, during the European debt crisis, Northern analysts issued more negative ratings for Southern European firms. Eichengreen and Saka (2022) show that multinational banks' sovereign debt holdings are shaped by cultural trust biases, with banks investing more in countries their host nations trust, especially during crises. We build on their results by showing that the crisis may have accentuated pre-existing cultural differences even within the same country, affecting households' allocation to government bonds. We also extend the findings of Ongena, Popov, and Van Horen (2019) by showing that moral suasion might be less effective to increase the demand for government bonds in the presence of cultural differences. Additionally, by showing that the sovereign debt crisis directly affected the investments of individuals of different cultural origins, we complement the findings of Pursiainen (2022) who shows that investments were indirectly affected by recommendations of analysts of diverse cultural origin.

Our findings offer several policy implications. First, understanding cultural patterns in government security holdings could help policymakers design more effective debt issuance strategies that account for diverse investor bases, and to better predict market reactions to policy changes across different demographic groups. For example, different cultural preferences within the EU regarding government bonds should be considered when debating the issuance of Eurobonds. Second, our findings caution that culture might affect financial stability and the transmission of monetary policy, especially if different cultural groups systematically adjust their holdings in distinct ways during stress periods, thereby influencing market volatility and liquidity. These findings are particularly relevant for governments in heavily indebted nations within a diverse economic union (Guiso, Herrera, and Morelli, 2016) and during periods of economic stress (e.g. financial crises). Specifically, our results underscore the importance of communicating clearly and distinctly to individuals of diverse cultural ori-

gin, acknowledging the varied risk perceptions across different cultural backgrounds related to fiscal situations and public debt. Our findings are particularly relevant with the observed post-pandemic rise in government debt, and as countries increasingly rely on domestic investors to finance their public debt.[4]

2 Research design

To identify the effect of culture and distinguish it from the confounding influence of other factors commonly associated with culture (such as institutions, regulations, or economic conditions), we focus on individuals of different cultural backgrounds sharing the same economic and institutional context. Specifically, we implement the "epidemiological" approach (e.g. Fernández, 2011; Liu, 2016; Nollenberger, Rodríguez-Planas, and Sevilla, 2016; Hauge, Kotsadam, and Riege, 2023; Ek, 2024) and compare the investment decisions of individuals within a single jurisdiction hosting two distinct cultural groups: the South Tyrol region in Italy, where individuals of Germanic and Italian origin reside. This approach allows us to overcome the endogeneity issues commonly present in cross-country comparisons.

2.1 Institutional setting

South Tyrol is an autonomous region in Northern Italy sharing borders with Austria and Switzerland. The region was originally part of the Austro-Hungarian Empire; it was ceded to Italy following the defeat of the German and Austro-Hungarian Empires in the aftermath of World War I. At the time of its annexation in 1919, a majority (89%) of its residents were German speakers. Soon after, Italian Fascist policies introduced a range of economic, social and legal measures that banned education in German language and encouraged Italian immigration and German emigration, significantly altering the cultural demographics of the

[4]For evidence on the post-pandemic rise of debt see Kose, Ohnsorge, Reinhart, and Rogoff (2022). For evidence on direct household holdings of public debt see for example The Financial Times (September 2023), which shows that Italy, Belgium and Portugal issued about €60bn worth of bonds directly to households in 2023.

region (for more details about the "Italianization," refer to Belmonte and Di Lillo, 2021).

Shortly after the end of the Second World War, the incentives in favor of Italians were formally removed, German language education was reintroduced, and German and Italian were both recognized as official languages. The region gained autonomy in 1972, ensuring the right to use native languages in all aspects of life. This autonomy has allowed distinct cultural preservation for both German and Italian-speaking communities, despite them living in a highly segmented society. For instance, services like childcare and education are linguistically separated (Forer, Paladino, Vettori, Abel, et al., 2008). Despite this cultural segmentation, South Tyroleans operate under a unified institutional and economic structure, and banking regulations are nationally defined.

By 2011, German speakers constituted 69% of the population, with Italian speakers forming about a quarter (Accetturo, Barboni, Cascarano, and Garcia-Appendini, 2023). Figure 1 shows the percentage of inhabitants having German as a mother tongue in each municipality of the region. The figure shows that many of the municipalities in South Tyrol are predominantly German speaking. Most importantly for our study, there is a large variation across towns.

As mentioned in the introduction, focusing on the South Tyrol is particularly relevant to analyze the impact of culture on investment in government debt for several reasons. First, individuals of Germanic and Italian speak different languages (German and Italian respectively, both of which are official languages in the region) but share a common Catholic religious background and live side to side within municipalities, leading relatively segregated lives. Second, these two cultural groups are representative of the perceived "thrifty North"–"profligate South" divide in the European Union. Third, the Germanic and Italian cultures differ sharply on their attitudes towards debt. Fourth, South Tyrol is the wealthiest region in Italy, and has a GDP per capita that is comparable to that of Germany, and a well-diversified economy in terms of the presence of different industrial sectors. Other studies have used the

South Tyrol as a natural laboratory to study the impact of culture on individuals' time preferences and other economic variables (Angerer, Glätzle-Rützler, Lergetporer, and Sutter, 2016; Sutter, Angerer, Glätzle-Rützler, and Lergetporer, 2018; Bedendo, Garcia-Appendini, and Siming, 2020; Accetturo, Barboni, Cascarano, and Garcia-Appendini, 2023; Bedendo, Garcia-Appendini, and Siming, 2023).

2.2 Data

We have constructed a comprehensive and unique dataset on financial investments (e.g., bonds, stocks, mutual funds, etc.) held by households in South Tyrol between 2010 and 2012, under the custodianship of banks or other financial institutions. This dataset was assembled using Bank of Italy's supervisory data, which serves as a primary statistical source for detailed information on securities held by households in Italy (Coletta and Santioni, 2016). This supervisory dataset is also used to compile the Italian Securities Holdings Statistics (SHS) maintained by the European System of Central Banks (ESCB).

Each quarter, banks report to the Bank of Italy the aggregate value of each security held by households residing in each of the Italian provinces. Our focus is on the province of Bolzano, which constitutes the region of South Tyrol. Hence, our dataset exclusively captures investments from South Tyrolean households, even for securities held by nationally-operating banks. Our final dataset encompasses the total values of each security, identified with their unique ISIN code, which are held by households in South Tyrol and managed by banks operating at least one branch within the region. Each observation therefore consists of the aggregate value of a particular security held by households residing in South Tyrol at the ISIN-bank-quarter level.

As we discuss below, a fundamental requirement for identifying the culture of the bank clients is for the bank to have at least one branch in South Tyrol. This is not a limiting condition, considering that online brokers were not yet widespread during the period under

consideration.[5]

We merge the supervisory data with information on the type of security (e.g., government bond, corporate bond, stock, mutual fund), maturity date (if applicable), issuer, and issuer's country for each security at the ISIN level. The study period spans from January 2010, following the global financial crisis, to June 2012, immediately preceding Mario Draghi's announcement of Outright Monetary Transactions (OMT). We choose this period to distinctly isolate the impact of Italy's sovereign financial crisis from other significant financial events occurring before and after these dates.[6]

2.3 Measuring the cultural origin of investors

We measure the cultural origin of investors at the bank level based on the predominant cultural group of the bank's clientele: German- or Italian-speakers. For this purpose, we use the geographic distribution of bank deposits (or branches) throughout the region.

Our primary proxy for the predominant culture of a bank's clientele – i.e., its "germanicity" – is based on the distribution of deposits in the local labor market areas (LLMAs) in South Tyrol, similar to Accetturo, Barboni, Cascarano, and Garcia-Appendini (2023). LLMAs are the basic commuting areas where inhabitants can access employment opportunities within an acceptable range or switch jobs without needing to relocate their residence.[7] Specifically, we define a (deposit-based) germanicity index for each bank as follows:

$$Germanicity_j^{\text{Dep}} = \sum_{a \in A(j)} \frac{\text{German}_a}{\text{TotalPop}_a} \times \frac{\text{Deposits value}_{a,j}}{\text{Total deposits value}_{A(j)}},$$

where $A(j)$ represents the set of all LLMAs a in South Tyrol where bank j operates. To avoid endogeneity issues related to the sovereign financial crisis, our index is time-invariant, and

[5] In an unreported analysis, we find that 95% of the total value of securities held by residents of South Tyrol is maintained in banks that have at least one physical branch within the region.

[6] On 26 July 2012, President Mario Draghi announced that the ECB would do "whatever it takes" to address yield movements due to redenomination risk. This improvement was further reinforced by the ECB Governing Council's announcements in early August and September (Casiraghi, Gaiotti, Rodano, and Secchi, 2013). As a consequence of his speech, yields on Italian government bonds decreased sharply at the end of July 2012.

[7] See ISTAT for the definition. Figure A1 shows the 13 LLMA in South Tyrol.

deposits are taken for the year before the start of our analysis (2009). In our baseline model, a bank is deemed to have predominantly German-speaking clients if the above deposit-based germanicity index is above 0.5. In robustness tests, we also consider a cutoff value equal to the median of the distribution, and the continuous index itself. We also consider alternative measures based on the distribution of the bank branches across South Tyrol, modifying the germanicity index to weigh the fraction of German-speaking population in each LLMA by the fraction of bank branches in that area:

$$Germanicity_j^{\text{Bran}} = \sum_{a \in A(j)} \frac{\text{German}_a}{\text{TotalPop}_a} \times \frac{\text{Number of branches}_{a,j}}{\text{Total branches}_{A(j)}}$$

As with the deposit-based measures, we define three measures of the germanicity of the banks using the continuous index $Germanicity^{\text{Bran}}$ itself, and through binary variables for values of that index above 0.5 or above the median of the distribution. Finally, we also classify the predominant culture of the banks' clients as German using the language or cultural origin of the name of the bank itself as a proxy. This consideration is rooted in findings by Accetturo, Barboni, Cascarano, and Garcia-Appendini (2023), who show that firms tend to apply for loans from banks that are culturally closer to them. In the same way, individuals might plausibly prefer banks that align with their own cultural origins.

To construct these measures, we retrieve deposit data for each municipality from another Bank of Italy's confidential supervisory datasets, and obtain the distribution of bank branches across municipalities from the publicly accessible "Albi ed elenchi di vigilanza". Figure 2 illustrates the geographic distribution of bank branches across South Tyrolean municipalities, showing the presence of banks across the territory. We obtain the LLMAs in South Tyrol and their constituent municipalities from the Italian National Institute of Statistics (ISTAT). To infer the fraction of German speakers in each LLMA, we merge census information containing the percentage of German speakers in each South Tyrolean municipality, obtained from the South Tyrolean statistical institute (Landesinstitut für Statistik, or ASTAT).[8] Importantly,

[8] See the table in ASTAT.

similar to Accetturo et al. (2023), we chose to focus on LLMAs because they account for feasible commuting times between municipalities, allowing individuals to reside in one municipality while having their bank in a nearby one. However, our baseline results remain unchanged if we measure *Germanicity* at the municipality level instead of the LLMA level, as we will show in a robustness test.

2.4 Descriptive statistics

Table 1 provides summary statistics, at the bank level, for the deposit-based germanicity index and the composition of the asset portfolios of South Tyrolean households. The table shows that the average bank germanicity equals 68.8%, fully in line with the average fraction of German speakers in South Tyrol (68.6%). It also shows that the distribution of the German-speaking population exhibits a large variation: the minimum value of the germanicity of a bank's clientele is around 2%, the maximum is 99%, and its standard deviation is 21%.

Table 1 also shows that households predominantly invest in bonds. We classify the bonds into those issued by the government ("Buoni del Tesoro Poliennali" or "BTPs", corresponding to 8.1% of security holdings), and those issued by the private sector ("OtherBonds", corresponding to 77.3% of all holdings). This is consistent with the distribution of security holdings in Italy, a feature extensively documented in existing literature (Coletta and Santioni, 2016; Badarinza et al., 2016; Gomes et al., 2021). Table 1 also reveals a large variation in security preferences among clients of different banks.

In Table 2 we further break down the holdings of Italian government bonds according to the banks' germanicity, in the periods before vs after the crisis. The table indicates that, throughout the sample period, banks with a predominantly German-speaking clientele hold a smaller percentage of Italian government bonds relative to their total assets in custody compared to their counterparts. The table also shows that this difference in BTP holdings

increased from 2.55 to 3.51 percentage points (i.e. an increase of about 37.8%) in the aftermath of the financial crisis,[9] a time also marked by a substantial increase in the yields of 10-year bonds (Bofondi et al., 2018).

2.5 Methodology

Our objective is to analyze if customers of banks with a higher germanicity were less likely to hold BTPs, relative to other securities, after the start of the European sovereign debt crisis. There are several empirical challenges that we need to take into account to study this question.

First, the demand for securities might be affected by time-varying bank shocks and by time-invariant bank-specific factors, such as their governance or the demographics of their clientele. Second, we observe only the aggregate value of each security at the end of each quarter for each bank, which can be affected by changes in prices rather than by changes in the security holdings.[10] Third, we are interested in the relative change in the demand for BTPs versus other types of titles to avoid capturing overall trends in the holdings of securities, such as a general decrease in investments in all securities.

The degree of granularity and detail in our data allows us to address these empirical issues. Our data consist of 101,635 security-level observations held in various time periods, by multiple banks holding various types of titles. We therefore estimate the following empirical specification:

$$Hold_{i,k,j,t} = \beta_0 + \beta_1 \cdot BTP_i \cdot Crisis_t \cdot Germanicity_j + \theta_{j,k} + \gamma_{j,t} + \lambda_{i,t} + \varepsilon_{i,k,j,t}. \quad (1)$$

Hold represents the log market value of security i, of the type k, held by bank j at time t. *BTP* is a dummy variable equal to one if the security is a BTP. *Crisis* is a binary variable set to one starting from the second quarter of 2011. This period, as previously mentioned,

[9] The crisis was heralded by Moody's initial notification of a potential downgrade of Italian sovereign debt in June 2011, see BBC (2011).

[10] This is especially true in the high volatility environment surrounding the European sovereign debt crisis (Allegret, Raymond, and Rharrabti, 2017).

coincides with Moody's first signaling of a potential downgrade of Italian sovereign debt, when the yield on the 10-year bond spiked to 5%.[11] *Germanicity* stands for one of the various proxies measuring the culture of the bank's clientele, approximated in various ways as previously described. Standard errors are clustered by bank and security type.

Our key coefficient of interest is β_1. It quantifies the difference in BTP holdings relative to other securities, among banks with a predominantly German-speaking clientele compared to those with a predominantly Italian-speaking clientele, in the aftermath of the sovereign financial crisis. A negative coefficient for the three-way interaction implies that after the onset of the crisis, clients of German cultural origin invested in BTPs to a lesser extent relative to other securities as compared to clients of Italian origin.

Our choice of specification and fixed effects allows us to address the empirical challenges mentioned above. Specifically, the bank-security type fixed effects, $\theta_{j,k}$, control for time-invariant preferences that banks or their clients might have for certain types of assets (i.e. a particular strategy or preference for certain security types like BTPs or stocks, or willingness to recommend particular government bonds or stocks) (e.g., Paludkiewicz, 2021). Security-time fixed effects, $\lambda_{i,t}$, account for changes in the price of a specific security (at the ISIN level) during a quarter, and any other event specific to each security that might alter the demand for this asset (e.g., Peydró, Polo, and Sette, 2021). $\gamma_{j,t}$ are bank-time fixed effects, which control for time-varying shocks to each bank (e.g., Acharya, Bergant, Crosignani, Eisert, and McCann, 2022), and thus account for changes in individuals' decisions to hold assets with a particular bank, or in banks' incentives to promote certain investments in a given period.

Table A1 in the appendix presents the definitions of all the variables used throughout our analysis, while Table A2 provides their descriptive statistics. Table A3 summarizes other bank-level measures that we use for our analysis.

[11] Although we regard our definition of a crisis as the most suitable, considering the potential instantaneous response of retail investors to new information, our results remain consistent across alternative definitions (e.g., a crisis starting one quarter earlier or later).

3 Results

3.1 Investment in government bonds

Our main results are contained in Table 3, Panel A. Each column shows estimated coefficients for Equation 1, adding fixed effects parsimoniously. Given the empirical issues mentioned above, our preferred specification is the one presented in column 5, which includes the complete set of fixed effects.

Throughout all specifications, we find that after the sovereign financial crisis began to hit Italy, banks serving primarily German-speaking customers (measured by our index of $Germanicity^{\text{Dep}}$ higher than 0.5) invested in BTPs to a lesser extent relative to other assets, compared to banks serving a majority of Italian-speaking clientele. This difference in the dynamics of BTP investment across the two cultural groups is statistically significant, amounting to almost 11% in our preferred specification in column 5. Overall, our results align with the hypothesis that after the crisis, German-speaking South Tyroleans invested relatively less in Italian government bonds than in other securities, relative to their Italian-speaking counterparts.

In Panel B of Table 3, we explore the sensitivity of our results to the choice of our germanicity measure. Our baseline findings (corresponding to column 5 in Table 3) are reported in the first column. In column 2, we classify a bank as having a primarily German-speaking customer base if the germanicity of its depositor base (measured by $Germanicity^{Dep}$) exceeds the median value. In column 3, we consider the index as a continuous variable. The coefficient of interest remains consistently negative and statistically significant. Similarly, our conclusions are not contingent on how we measure the culture of the banks' clientele, as the results are qualitatively identical when employing the same thresholds using the measure based on the geographic distribution of bank branches ($Germanicity^{Bran}$), as shown in Table 3, Panel C, columns 1-3. Results remain similarly significant when using the bank's name linguistic origins (German or not) as a proxy, as evidenced in column 4. Lastly, our

baseline results remain unchanged if we construct our germanicity index based on deposits using weights at the municipality level instead of at the LLMA level (Columns 5-7).

3.2 Investments on other securities

In this section we explore whether the significant effect we find for BTPs is specific to these securities, or whether there are cultural differences in the investment patterns of other types of securities. To analyze this question, we run the same empirical specification as our baseline in the triple interaction but substituting *BTP* with different groups of securities, represented by the variable *OtherSecurities* in the following equation:

$$Hold_{i,k,j,t} = \beta_0 + \beta_1 \cdot OtherSecurities_i \cdot Crisis_t \cdot Germanicity_j + \gamma_{j,t} + \lambda_{i,t} + \theta_{j,k} + \varepsilon_{i,k,j,t}. \quad (2)$$

3.2.1 Mutual funds, stocks, and bonds

Following the sovereign crisis, German and Italian households might have differentially reallocated their securities holdings across different categories, not only government bonds. Cultural differences across the groups (for example, due to a higher cultural risk aversion coupled with the increased market volatility during the crisis) might have led to a differential shift in the investments in diversified mutual funds relative to other types of securities. Similarly, investors could have differentially shifted from direct holdings of BTPs to indirect holdings through mutual funds.[12] By the same token, cultural differences could have led to differential changes in the direct stock holdings across the two groups. Finally, their overall distaste for debt could have led German households to reduce their investments in all bonds, and not only in BTPs.

To analyze this issue, we substitute *OtherSecurities* in Equation 2 with a dummy equal to one if the security is, respectively, a mutual fund (*MutualFunds*) a bond (*Bonds*), or a stock (*Stocks*). Results are contained in Table 4. From these analyses, we drop the BTP category

[12]Government securities are part of the composition of the investments of mutual funds held by Italian households, according to Coletta and Santioni (2019).

from the sample, as its inclusion can confound the tests on other security holdings.[13] Column 1 contains results for mutual funds; they show that German and Italian households did not differentially increase their holdings of mutual funds (statistically insignificant coefficient) following the sovereign financial crisis. Similarly, the statistically insignificant coefficient for the triple interaction in column 2 suggests that an increase or decrease in the appetite for investing in stocks (rather than presumably safer assets such as government bonds or diversified mutual funds) does not change across the cultural groups following the crisis. Column 3 shows that the triple interaction term is also statistically insignificant when considering a binary variable set to one if the security is a bond, suggesting that our results are not related to a general increase in the distaste of debt securities.

Overall, these results show that our main findings are specific to government securities. They also suggest that the differential effects observed for investments on BTPs are not solely driven by cultural differences in the dislike for debt or risk aversion. These findings suggest that elements that are specific to government debt, such as a higher perceived riskiness of the Italian government debt by German-speaking investors during the sovereign financial crisis, are important for the results observed in Table 3.

3.2.2 Italian securities

We next explore whether the effect we observe on BTPs can be generalized to all Italian securities. A differential investment pattern in Italian securities by German-speaking South Tyroleans might be expected if the crisis led to an increase in nationalist or secessionist sentiment, leading to a relative reduction in their holdings of all Italian assets, not only

[13] Unreported regressions available upon request show that our results do not change if the BTP category remains included in the sample.

BTPs.[14]

For this analysis, we estimate Equation 2 substituting *OtherSecurities* with *ItaISIN*, a binary variable set to one for securities with an Italian ISIN. The results, contained in column 1 of Table 5, show that there are no significant changes in the relative holdings of Italian assets by banks with a predominantly German-speaking clientele after the onset of the sovereign financial crisis.

During the analyzed period, private corporate bonds issued by financial and non-financial firms constituted the major component of Italian securities. Therefore, to further analyze any cultural impact on investment in Italian debt, in column 2 we analyze cultural differences in investments in Italian corporate bonds following the sovereign financial crisis. Results are similar as before, and corroborate that results in Table 3 are specific to government bonds.

Overall, the fact that we do not find significant effects on Italian securities further suggests that our results are not driven by potential increases in nationalist behavior or secessionist sentiment by South Tyroleans of Germanic origin. In addition, the results in column 2 provide suggestive evidence that the observed results are not solely driven by a relative increase in the debt aversion of German-speaking investors, once again pointing at an important role of the negative view of public debt in our observed results.

3.2.3 German securities

One might wonder if the relative decrease in investments in Italian government bonds might be driven by a relative increase in investments in securities of German-speaking countries. The empirical literature finds that investors tend to invest in their home country (e.g. French and Poterba, 1991; Lütje and Menkhoff, 2007), a trend that persists even within domestic

[14] A differential investment in Italian securities due to a generalized increase in their risk profile is unlikely, as there is limited evidence for a positive association between sovereign yields and the returns of other securities during stress periods. Indeed, Bevilaqua, Hale, and Tallman (2020) document that the positive association between corporate and sovereign cost of funds borrowed on global capital markets weakens during periods of unusually high sovereign yields. In such periods, some corporate borrowers manage to issue debt at rates lower than those of sovereign debt. This pattern was also observed in Italy during our analysis period.

areas, regions, or states (Coval and Moskowitz, 1999, 2001; Huberman, 2001; Baik, Kang, and Kim, 2010). Baik, Kang, and Kim (2010) and Beugelsdijk and Frijns (2010) find that society's culture and the cultural distance between two markets play an important role in explaining foreign bias. Moreover, within Finland, Grinblatt and Keloharju (2001) find that investors are more likely to trade stocks of Finnish firms that communicate in the investor's native language and have chief executives of the same cultural background, and this is especially true for households.

In light of this literature, we investigate whether banks with a predominantly German-speaking clientele are more likely to increase their investment in securities issued in German-speaking countries after the onset of the sovereign financial crisis, compared to banks with a more Italian-speaking clientele. The idea is that people would be more inclined to invest in countries with which they share a closer cultural connection during a sovereign financial crisis since they might perceive them as safer and better-known alternative markets. Our analysis complements previous studies that have focused on the effects of common culture and language on the trade of goods (Chiswick and Miller, 2014; Falck et al., 2012; Helpman et al., 2008; Isphording and Otten, 2013; Melitz and Toubal, 2014). In particular, economic interactions between German South Tyroleans and other German-speaking countries are frequent. For example, Accetturo et al. (2019) find a positive correlation between the share of tourism from German-speaking countries (Germany, Austria, and Switzerland) and the share of the local population belonging to the German linguistic group. Similarly, Locatelli (2022) shows that firms with German-speaking South Tyrolean owners or managers are significantly more likely to trade with these countries, both in likelihood and trade value.

Nevertheless, Table 5, column 3, illustrates that investors affiliated with banks of higher germanicity did not significantly increase their investments toward securities with ISIN codes from Germany, Austria, and Switzerland. The results remain insignificant even when we exclude ISINs from Switzerland, which is a trilingual country with a part of the population

that is Italian-speaking (see Table A4, column 1), and when we consider only ISINs from Austria, the country that is culturally, historically, and geographically closest to German-speaking South Tyroleans (Table A4, column 2).

In Table 5, column 4, we replicate the empirical analysis for other foreign assets, specifically securities with non-Italian ISIN codes, excluding those from German-speaking countries. Given the geographic distribution of the German-speaking South Tyroleans, located closer to the border, it is possible that our results are driven by a substitution of BTPs for other foreign securities, reflecting the openness or exposure of this group to other cultures. The results show that there is also no significant uptick in the value of holdings of foreign assets from non-German-speaking countries by banks with a predominantly German-speaking clientele after the onset of the sovereign financial crisis.

Overall, the above findings corroborate that the difference in behavior between German- and Italian-speaking South Tyroleans is limited to BTPs. Moreover, they suggest that a cultural form of "home bias", where investors reallocate their portfolios to securities from culturally affine countries, is not the main driver of the results in Table 3. This finding further supports our prior interpretation that patriotism is unlikely to be the primary driver of our findings.

4 Robustness

Our results so far indicate that the sovereign debt crisis led to differential changes in the holdings of government bonds by individuals of different cultural groups. We have also shown that these results are robust to different measurements of culture. In this section, we further test the robustness of our baseline results.

4.1 Robustness of main results

Our main findings are robust to several tests. For example, in our main analysis we cluster standard errors by bank and security type, as this accounts for the likelihood that observations within the same bank or type of security are more similar to each other than to those from different banks or security types. However, our results remain qualitatively similar to clustering by bank, and to double clustering by bank and ISIN (Table A5).

One concern of our main result is that it might be driven by the differences in the distribution of bank size between Italian and German banks, as the former tend to be larger. In Table A6 we address this concern by sorting the banks by total assets and excluding observations from banks in the lowest and highest decile of the distribution (see column 1). Our main results remain unchanged. The same conclusion applies when excluding banks from the lowest and highest quintile of total assets (column 2). The results remain qualitatively similar also when we use deposits as a measure of size instead of assets (columns 3 and 4).

Another worry might be that the banks in our sample are not sufficiently Italian or German, and that our results are driven by banks that are not clearly aligned with either culture. As a last robustness test on *Germanicity*, in Table A7 we conduct another check by retaining in our sample only banks in the highest and lowest quartiles of *Germanicity*, based on deposits (column 1) and branches (column 2). This allows us to compare the two extreme groups, hence working with smaller samples. Nevertheless, our results still qualitatively hold.

Our identifying assumption is that, in the absence of the sovereign debt crisis, government bond holdings of individuals from both cultural groups would have followed similar paths (parallel trends). An analysis of the dynamics of our effects in Appendix B reveals that the lower increase in investments in Italian government bonds by German-speaking South Tyroleans was absent before any signs of the sovereign debt crisis emerged—consistent with our identification assumption—and only appeared afterward. We also discuss the key stages of the crisis and provide an interpretation of why the effect was particularly strong in certain

quarters.

4.2 Confounding factors

One concern of our results might be that investors of Germanic origin are not perfect counterfactuals for investors of Italian origin, leading our results to capture factors other than culture that could have led to differential investments in government bonds by investors of different cultural origin. For example, a large literature in household finance has shown that investment behavior is affected by education (Cole, Paulson, and Shastry, 2014), income and wealth (Heaton and Lucas, 2000; Wachter and Yogo, 2010; Andersen and Nielsen, 2011; Calvet and Sodini, 2014), age (Korniotis and Kumar, 2011). To the extent that the germanic population in South Tyrol displays different levels of education, income, wealth or age, our results could be capturing these effects rather than culture. By the same token, given the proximity of the German-speaking population of South Tyrol to the borders with Austria and Switzerland, one could argue that or proxies of culture are capturing the Germanic population's larger exposure to foreign cultures.

To analyze whether our results are driven by these alternative mechanisms, we estimate our baseline regression including an additional triple interaction term:

$$\begin{aligned} Hold_{i,k,j,t} =& \alpha + \beta_1 \cdot BTP_i \cdot Crisis_t \cdot Germanicity_j + \beta_2 \cdot BTP_i \cdot Crisis_t \cdot Confounder_j + \\ &+ \gamma_{j,t} + \lambda_{i,t} + \theta_{j,k} + \varepsilon_{i,k,j,t}. \end{aligned} \tag{3}$$

The results of this analysis are contained in Table 6. In column 1, we use income as the confounding variable. We use tax administration data to derive the average income for each bank's clientele.[15] Our findings, as shown in Table 6, Panel A, column 1, indicate that banks serving clients living in areas with relatively higher incomes do not significantly change the value of their BTPs held relative to other titles after the beginning of the financial crisis. On the other hand, the coefficient of $BTP \times Crisis \times Germanicity$ remains positive and

[15] Source: Italian Finance Ministry.

statistically significant. This is inconsistent with the idea that our germanicity measures are capturing the differential effects of income across the two cultural groups.

Next, we created a proxy for the wealth of a bank's clients, calculated as the sum of their total invested securities and deposits. These are traditionally considered key components of an individual's financial wealth. As shown in Table 6, Column 2, including this proxy (*Wealth* is equal to one for banks whose clients are wealthier than the median) does not change the sign or significance of the triple interaction with *Germanicity*.

In Table 6, Column 3, we carry out a similar analysis using the level of education (*Educ*) as the confounding variable. To determine educational levels, we use census data identifying the percentage of the population in each municipality that has obtained at least a high school diploma.[16] The variable *Educ* corresponds to the average fraction of the bank's clientele with a high school diploma, which we obtain by weighing education in the locations where the bank operates using the same procedure as our approach for *Germanicity*. We find that banks with a more highly educated clientele (e.g., those with an education index above the median in our bank sample) do not seem to alter their investments in BTPs after the beginning of the financial crisis, compared to others. This suggests that education (which is also our best proxy for financial literacy) does not confound our main result, as the sign and significance of $BTP \times Crisis \times Germanicity$ remain unchanged from our previous findings. We conduct a similar analysis with age, using the share of elderly people in each municipality as a proxy—the only available age measure at the municipality level from the same official source as our education data. As shown in Table 6, Column 4, including this proxy (*Old* is equal to one for banks whose clients are older than the median) does not change the sign or significance of the triple interaction with *Germanicity*.

To address the concern that our results are capturing a higher exposure to foreign cultures by German-speaking South Tyroleans, we use Google Maps to calculate the shortest travel

[16] Source: ISTAT.

time by car, under normal conditions, from each municipality of the South Tyrol to the closest foreign municipality. Subsequently, we compute the average distance to the border for each bank, to proxy for the average distance of the clients to the border. As usual, we use deposits in the municipalities where the bank is present as weights for this average distance. We define the binary variable *Distance* by setting it to one if the bank's weighted distance to the border is higher than the median, and zero otherwise. Results of including this potential confounder are contained in column 5 of Table 6. We find no significant effect of proximity to the border, suggesting that exposure to foreign cultures does not drive our result. In addition, as the countries bordering the South Tyrol region are also Germanic, these results further corroborate our previous finding that a nationalist or even a secessionist sentiment –i.e. a larger affinity towards more affine cultures– is not the main driver of our results.

Finally, one could argue that the industrial composition in the locality – which could proxy for education, wealth, and income – might influence financial behavior. Using the same source as for education and age data, we collected the number of people employed in the primary and tertiary sectors for each municipality. In Table 6, Column 6, we show that including the proxy *Primaryter*, which equals one for banks more exposed to areas where the primary sector is more dominant than the tertiary sector, does not change the sign or significance of the coefficient of the triple interaction with *Germanicity*.

Overall, these findings suggest that the observed patterns are indeed driven by culture, and not by other determinants of investment.

5 Extensions

In this section, we explore which factors could have led to the observed differential investment patterns in government bonds after the crisis. We first focus on external factors, such as distorted financial advice by banks, or moral suasion by the government to invest in government bonds. In Appendix C, we also present suggestive evidence of the role of foreign

media. Next, we investigate which elements correlated with culture could be behind our results. Specifically, we study the role of differences in risk aversion, trust in institutions, different time preferences, and dislike for debt.

5.1 External factors

5.1.1 Steering

A wide theoretical literature shows that intermediaries may have incentives to provide biased advice, or to steer their clients towards investments that are beneficial for themselves (Bolton, Freixas, and Shapiro, 2007; Stoughton, Wu, and Zechner, 2011; Inderst and Ottaviani, 2012). Empirically, Foà, Gambacorta, Guiso, and Mistrulli (2019) and Guiso et al. (2022) find that banks influence borrowers' choices through pricing and distorted advice in the mortgage markets, and Hoechle, Ruenzi, Schaub, and Schmid (2018) have similar evidence for retail security investments. Bagattini, Fecht, and Weber (2019) discover that German banks offloaded risky euro-area sovereign bonds to their retail customers during the European sovereign debt crisis.

We investigate whether distorted advice from banks with direct stakes could have played a role in our findings. To do so, we collect portfolio and balance sheet data from banks for the year preceding the crisis and create two variables measuring the banks' incentives to steer their customers' investments in BTPs. The first variable, *ActiveBanks*, takes the value of one if the bank's ratio of the total value of securities held in its portfolio to its total assets is higher than the median, and zero otherwise.[17] This aims to identify banks that are more active and exposed in the financial markets, potentially more inclined to steer their customers and sell their least profitable investments to avoid losses. The second variable, *BankBTP*, is set to one if the proportion of the value of BTPs in the bank's portfolio, relative to the total value of securities held, exceeds the median, and zero otherwise. This is intended to highlight banks particularly exposed to BTPs, which might be more likely to influence their

[17] Here, we are referring to securities held by the bank, not by the households.

clients' BTP investments after the crisis.

We test this steering hypothesis using a similar specification as in Equation 2, but we substitute our Germanicity proxy with a proxy for steering. The coefficients of interest are, as usual, the triple interaction terms. Table 7, Columns 1 and 2, present the results. The table does not provide evidence of steering by banks with large trading positions or large BTP holdings, regardless of whether *ActiveBanks* or *BankBTP* is used as a proxy for steering. Moreover, as shown in Columns 3 and 4, these proxies for steering do not affect the magnitude or significance of the triple interaction term (Germanicity $\times$ BTP $\times$ Post) when included.

5.1.2 Moral suasion

Ongena et al. (2019) find that moral suasion by fiscally stressed governments played an important role in leading to higher investments in government debt by domestic banks. To do so, they show that domestic banks were more likely to increase their holdings of domestic sovereign bonds during months of significant maturing debt, i.e. in periods where the government was in high need to refinance the debt.

We explore if the Italian government's efforts to persuade investors to hold more BTPs during the crisis were more effective among the more culturally affine Italian-speaking inhabitants of the South Tyrol, relative to the German speakers. To do so, we follow Ongena et al. (2019) and collect data on the amount of sovereign bonds, in euros, maturing each quarter in Italy during our analysis period, and create a binary variable, *HighNeed*, set to one if the amount of maturing domestic sovereign bonds in a particular quarter is above the country-specific median for the sample period, and zero otherwise. We then estimate Equation 1 over two mutually exclusive subsamples based on the amounts of maturing Italian sovereign bonds (above or below the median). As shown in Table 8, the results in the two samples are virtually identical, indicating that after the crisis, German-speaking South Tyroleans invested relatively less in BTPs than Italian-speaking ones, regardless of whether

there was a particular need from the government.

5.2 Economic mechanisms

In this section, we explore which factors linked to culture can explain our results. To do so, we estimate our baseline regression over mutually exclusive subsamples based on the following characteristics, which have been linked to culture in the previous literature (Guiso, Sapienza, and Zingales, 2004, 2009; Haliassos, Jansson, and Karabulut, 2017): risk preferences (Malmendier and Nagel, 2011; Rieger, Wang, and Hens, 2015; Ek, Gokmen, and Majlesi, 2022), trust in national institutions (Guiso, Sapienza, and Zingales, 2004, 2008; Georgarakos and Pasini, 2011; Giannetti and Wang, 2016), time preferences (Chen, 2013; Sutter et al., 2018), and debt preferences (Bedendo et al., 2020; Martínez-Marquina and Shi, 2024). Results are presented in Table 9.

First, in the introduction, we hypothesized that German-speaking individuals after the sovereign financial crisis would invest less in BTP due to perceiving the crisis more negatively given their generalized dislike for debt. In this section, we further investigate whether German-speaking South Tyroleans that are already risk averse are more likely to perceive greater risk in BTP investments post-crisis and thus invest less in them as the crisis was triggered by concerns of high public debt and deficit which ultimately impact Italy's financial stability.

To test whether this risk perception affected investment behavior, we adopt a revealed preference approach. Prior literature (e.g., Malmendier and Nagel, 2011; Black et al., 2018) links stock market participation to household financial risk-taking. As a proxy for client risk preferences, we use the fraction of financial assets held in stocks by each bank before our sample period. To examine whether risk perception influenced German-speaking investors, we analyze our findings by client risk preferences (*RiskPref*), dividing banks into those below (risk-averse) and above (risk-loving) the median. More risk-averse individuals are particularly

sensitive to perceived risk (Diamond and Stiglitz, 1974), leading to behavioral shifts. Table 9, Columns 1 and 2, reports baseline regressions for these subgroups. The results show that the negative relationship between *Germanicity* and BTP holdings post-crisis is especially pronounced in banks with risk-averse clients. This suggests that German-speaking investors, particularly those more risk-averse, perceived BTPs as riskier during the sovereign financial crisis.

Another cultural factor influencing government bond investments during a sovereign financial crisis is trust in national institutions, often measured through social capital levels. To approximate social capital at the Local Labor Market Area (LLMA) level, we use voter turnout from the national election closest to our study period as a proxy,[18] following seminal contributions by Putnam (1993, 2000) and its widespread use in economic literature (e.g. Guiso et al., 2004; Nannicini et al., 2013; Bolsen et al., 2014; Barrios et al., 2021; Bartscher et al., 2021). Following our approach for the Germanicity index, we construct a bank exposure index for high-social-capital areas, weighting by the geographic distribution of deposit values. We then examine whether trust in national institutions plays a substitute or complementary role for culture.

As shown in Table 9 (columns 3 and 4), we find only suggestive evidence that the negative relationship between *Germanicity* and BTP holdings post-crisis is statistically significant in areas with below-median *Trust* in national institutions, but not in areas with above-median *Trust*. This suggests that cultural heuristics may act as a substitute for trust during a sovereign crisis.

We further examine whether time preferences (*TimePref*), proxied by the weighted average maturity (*WAM*) of bonds in banks' client portfolios, influence investment decisions during the sovereign crisis. Following our previous approach, we classify banks into two groups based on whether their clients' *WAM* is above (indicating higher time preferences) or

[18] https://civis.bz.it/de/themen/wahlen.html

below the median. As shown in Table 9 (columns 5 and 6), the negative relationship between *Germanicity* and BTP holdings post-crisis remains statistically significant in both subsamples, with similar magnitudes. This result suggests that our main findings are unlikely to vary systematically with differences in time preferences.

We further investigate whether general debt preferences (*DebtPref*), proxied by the percentage of bonds (both public and private) held by a bank's clients before the crisis, influence investment decisions during the sovereign crisis. Following our previous approach, we classify banks into two groups based on whether their clients' pre-crisis bond holdings were above (indicating higher debt preferences) or below the median. As shown in Table 9 (columns 7 and 8), the negative relationship between *Germanicity* and BTP holdings post-crisis exhibits similar magnitudes across both subsamples, though statistical significance varies. This result suggests that differences in debt preferences are unlikely to explain the observed pattern. Instead, the fact that statistical significance is observed in the sample with higher pre-crisis bond holdings aligns more closely with the mechanism of increased risk perception among German investors, as bondholders are traditionally more risk-averse.

Hence, these results overall suggest that a relatively increased risk perception of Italian government bonds by German-speaking investors serves as a mechanism for our result. Additionally, albeit to a lesser extent, cultural heuristics appear to substitute trust in national institutions.[19]

6 Conclusions

In this study, we use the bilingual region of South Tyrol as a distinctive natural laboratory to investigate the investment behavior of households during the 2011 sovereign financial crisis in Italy. Our analysis of a comprehensive dataset on household investments reveals that,

[19]Some readers might argue that we should include these factors—risk preferences, trust, time preferences, and debt preferences—as controls rather than investigating them as mechanisms. Table A8 shows that the significance of the triple interaction of Germanicity remains robust even when triple interactions with risk preferences, trust, time preferences, and debt preferences are included.

during this period, German-speaking South Tyroleans invested less in Italian government bonds compared to their Italian-speaking counterparts. This divergence in investment choice appears to be influenced by changes in risk perceptions related to Italian government bonds between the two linguistic groups at the onset of the crisis, likely stemming from their distinct cultural and linguistic attitudes towards debt and excessive spending (which leads to high public deficits).

The findings of our study are both policy and historically relevant. The 2011 Italian crisis posed a severe threat to the Eurozone due to Italy's large economy and significant debt level (Baldwin, 2015). This crisis, part of the broader European debt crisis from 2011 to 2013, highlighted a North-South divide in economic performance and engendered various tensions among EU member states. These tensions were exacerbated by a narrative of "Northern Saints and Southern Sinners" leading to political conflicts and fiscal austerity measures (Matthijs and McNamara, 2015).

The mistrust between Northern and Southern European countries during this time and its impact on financial outcomes has been well-documented (e.g., Fuchs and Gehring, 2017; Pursiainen, 2022). Our study contributes to this discourse by analyzing how two culturally different groups, closely aligned with the opposite sides of the crisis yet residing in the same region, differed in their investment behaviors in response to the crisis. Our findings show that German-speaking residents, despite living in the same region as Italian speakers, were more reluctant to invest in Italian government bonds. Our results suggest that such cultural differences, when brought at a country level, might lead to coordination failures and potentially exacerbate political and financial crises if not adequately addressed in government policies and communications during turbulent times. This might be particularly relevant in an economic union where both cultures coexist (Guiso et al., 2016), and where the issuance of joint Eurobonds has been at the core of current European economic debates.

The limitations of our study are inherent in the dataset we used. We have investigated our

research question using bank-level data with a broader set of fixed effects and hand-collected proxies, as no database with individual-level data pertinent to our research question exists. However, individual administrative data from a single bank, although difficult to obtain, would not be representative of the entire population and would typically be constrained by privacy-related limitations. Therefore, our comprehensive dataset provides the most accurate and representative analysis for the research question studied.

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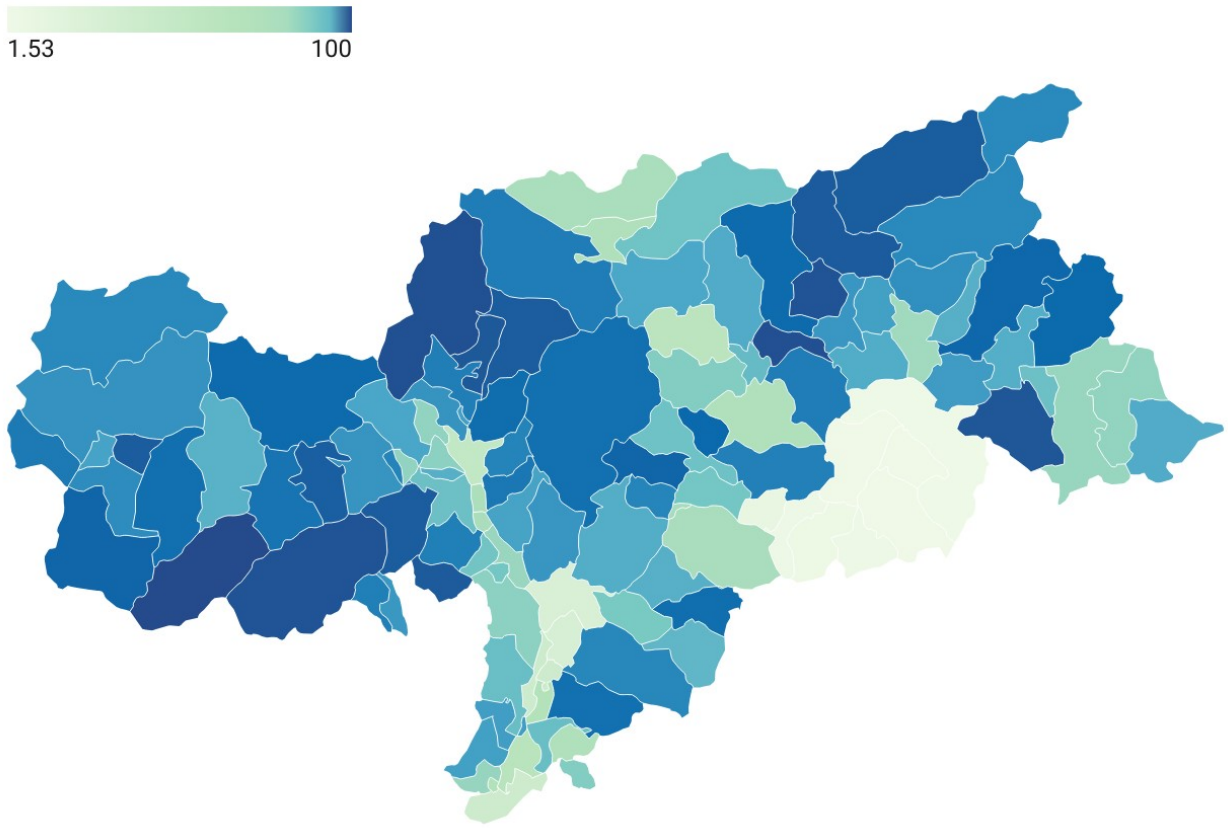
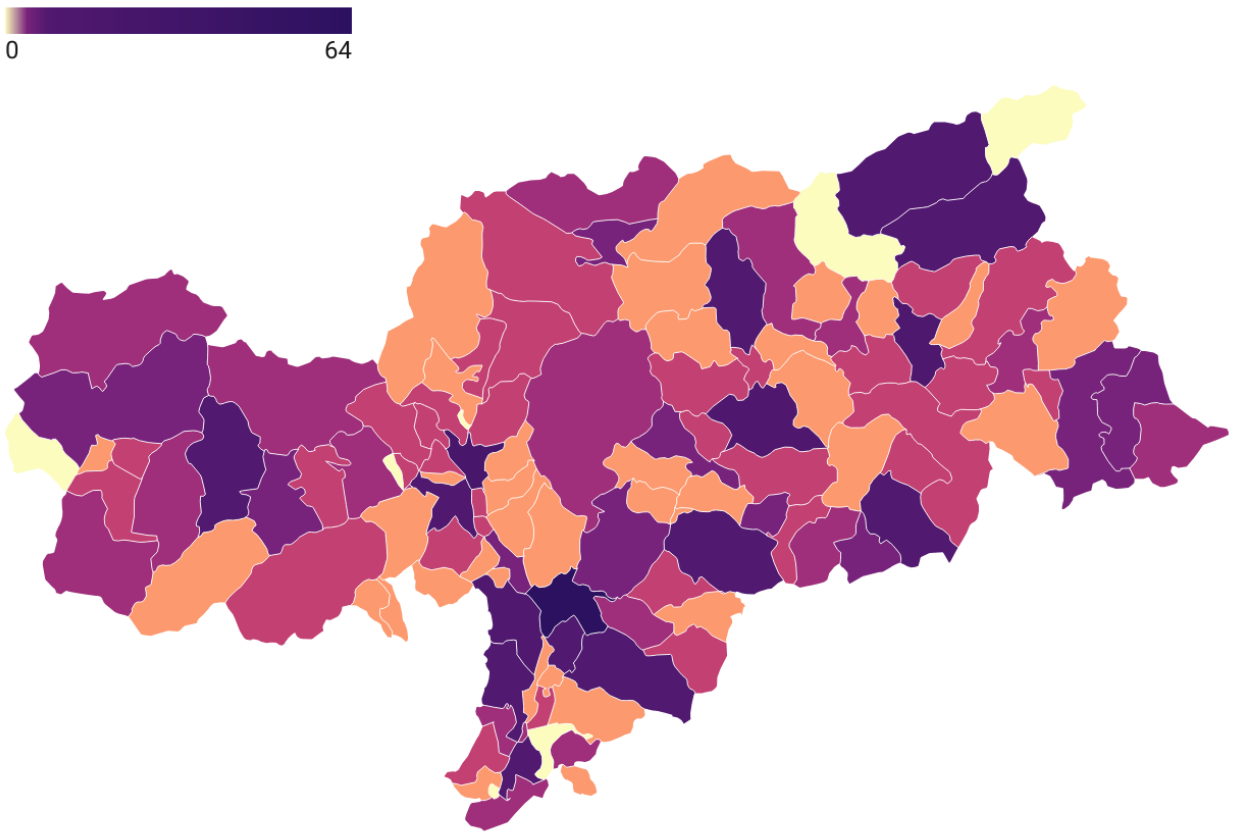
Figures

Figure 1: German speakers in South Tyrol



This map shows the percentage of German speakers in each municipality of South Tyrol as of 2011. The color intensity is based on the decile distribution. Source: ASTAT.

Figure 2: Bank branches in South Tyrol



This map shows the number of bank branches in South Tyrol in each municipality. The color intensity is based on the decile distribution. Source: Bank of Italy.

Tables

Table 1: Summary statistics: banks' germanicity and security type percentages

	N	Mean	SD	Min	Max
Germanicity	61	0.688	0.211	0.023	0.991
BTP	61	0.081	0.126	0.007	0.783
OtherBonds	61	0.773	0.204	0.079	0.962
Stocks	61	0.050	0.069	0.004	0.392
Mutual Funds	61	0.051	0.111	0.000	0.747
ETF	61	0.004	0.009	0.000	0.063

This table shows the summary statistics for the banks' germanicity index and security type percentages. The latter is calculated as the average percentage of various security types in the total assets under custody for each bank in our sample over the entire period. N indicates the number of banks in our analysis. *Germanicity* is an index to proxy the importance of German-speaking clients for each bank, computed based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. *BTP* refers to Italian government bonds, *OtherBonds* to other types of bonds, *Stocks* to individual stocks, and *Mutual Funds* and *ETF* to various types of mutual funds and ETFs.

Table 2: Percentage of government bond holdings before and after the crisis

Sample	(1) Non-German	(2) German	(3)
	Mean	Mean	(2)-(1)
BTP % before the crisis	8.97%	6.42%	-2.55%
BTP % after the crisis	11.45%	7.93%	-3.51%
Increase in the difference after the crisis			0.96%
Number of banks	19	42	

This table shows the average percentage of *BTP* (Italian government bonds) in the total assets under custody from the banks on behalf of the households before and after the sovereign financial crisis. Additionally, it splits banks as either *German* or *Non-German*, based on their germanicity index. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. A bank is considered *German* if its index, calculated from deposits, exceeds 0.5.

Table 3: Investment in government bonds

	(1)	(2)	(3)	(4)	(5)
Dependent variable			Hold		
BTP×Germanicity×Crisis	-0.152***	-0.152***	-0.0942***	-0.081*	-0.108**
	(-5.434)	(-11.47)	(-6.120)	(-1.860)	(-2.449)
Germanicity×Crisis	0.042	0.042**	0.014	0.007	
	(1.458)	(2.582)	(0.817)	(0.149)	
BTP×Crisis	0.134***	0.134***	0.133***		
	(5.321)	(4.333)	(8.537)		
BTP×Germanicity	0.070	0.070			
	(1.008)	(0.884)			
BTP	0.233	0.233			
	(1.024)	(1.100)			
Germanicity	0.139*	0.138			
	(1.840)	(1.572)			
Crisis	-0.021				
	(-0.835)				
Observations	145,976	145,976	145,938	101,646	101,635
Adj. R-squared	0.046	0.046	0.031	0.401	0.399
Time FE	N	Y	Y	N	N
Bank-security type FE	N	N	Y	Y	Y
Security-time FE	N	N	N	Y	Y
Bank-time FE	N	N	N	N	Y

Panel A. This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively. In unreported results, we verified that the outcomes of Columns 1-4 are qualitatively similar when we also include the singleton observations.

Dependent variable	(1)	(2) Hold	(3)
BTP×Germanicity×Crisis	-0.108**	-0.069**	-0.153**
	(-2.449)	(-2.586)	(-2.704)
Observations	101,635	101,635	101,635
Adj. R-squared	0.399	0.399	0.399
Germanicity Proxy	d50	dmedian	dcont
Security-time FE	Y	Y	Y
Bank-time FE	Y	Y	Y
Bank-security type FE	Y	Y	Y

Panel B. This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. In column 1, *Germanicity* is a binary variable that is set to one when the index computed using deposits exceeds 0.5, and is zero otherwise (*d50*). In column 2, it is a dummy variable taking the value one when the germanicity index is greater than the median (*dmedian*). In column 3, *Germanicity* is the continuous index (*dcont*). This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable				Hold			
BTP×Germanicity×Crisis	-0.101*	-0.067**	-0.124**	-0.120**	-0.139***	-0.071*	-0.178**
	(-1.961)	(-2.494)	(-2.377)	(-2.655)	(-2.980)	(-1.860)	(-2.530)
Observations	101,635	101,635	101,635	101,635	101,635	101,635	101,635
Adj. R-squared	0.399	0.399	0.399	0.399	0.399	0.399	0.399
Germanicity Proxy	b50	bmedian	bcont	gname	m50	mmedian	mcont
Security-time FE	Y	Y	Y	Y	Y	Y	Y
Bank-time FE	Y	Y	Y	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y	Y	Y	Y

Panel C. This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. In column 1, *Germanicity* is a binary variable (*b50*) that is set to one when the index computed using branches exceeds 0.5, and is zero otherwise. In column 2 it is *bmedian*, a dummy equal to one when the germanicity index is greater than the median. In column 3 it is *bcont* which represents the continuous index, and in column 4 it equals *gname* which is a classification based on the bank's name. In columns 5–7, we again compute the germanicity index based on deposits, but this time using municipalities instead of LLMAs to weight the index. In column 5, *Germanicity* is a binary variable (*m50*) set to one when the index exceeds 0.5 and zero otherwise. In column 6, we consider *mmedian*, a dummy variable equal to one when the germanicity index is greater than the median. In column 7, we consider *mcont*, the continuous version of the index. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Investment in other securities

	(1)	(2)	(3)
Dependent variable		Hold	
MutualFunds×Germanicity×Crisis	0.031		
	(0.400)		
Stocks×Germanicity×Crisis		-0.072	
		(-0.950)	
Bonds×Germanicity×Crisis			0.128
			(1.630)
Observations	87,529	87,529	87,529
Adj. R-squared	0.372	0.372	0.372
Security-time FE	Y	Y	Y
Bank-time FE	Y	Y	Y
Bank-security type FE	Y	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *MutualFunds* is a dummy equal to one if the security is a mutual fund. *Bonds* is a dummy equal to one if the security is a bond. *Stocks* is a dummy equal to one if the security is a stock. BTPs are excluded from the samples. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Investment in Italian securities and home bias

	(1)	(2)	(3)	(4)
Dependent variable		Hold		
ItaISIN×Germanicity×Crisis	-0.304			
	(-1.690)			
ItaOtherBonds×Germanicity×Crisis		-0.174		
		(-0.440)		
GermISIN×Germanicity×Crisis			-0.143	
			(-1.490)	
ForeignISIN×Germanicity×Crisis				-0.242
				(-1.440)
Observations	87,529	87,529	87,529	87,529
Adj. R-squared	0.374	0.374	0.372	0.373
Security-time FE	Y	Y	Y	Y
Bank-time∼FE	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y

This table reports OLS estimates. The dependent variable, *hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *ItaISIN* is a dummy equal to one if the security has an Italian ISIN. *ItaOtherBonds* is a dummy equal to one if the security has an Italian ISIN and it is a corporate bond (i.e., a bond not issued by the government). *GermISIN* is a dummy equal to one if the security has an ISIN code from Germany, Austria or Switzerland. *ForeignISIN* is a dummy equal to one if the security has an ISIN code from any country except Italy, Germany, Austria or Switzerland. BTPs are excluded from the samples. For *Germanicity*, we define a binary variable (*d50*) that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Confounders of Germanicity - demography and geography

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable				Hold			
Germanicity×BTP×Crisis	-0.085*	-0.109**	-0.133**	-0.103**	-0.110*	-0.099*	-0.173***
	(-1.750)	(-2.710)	(-2.140)	(-2.490)	(-1.860)	(-1.890)	(-2.590)
Income×BTP×Crisis	0.063*						0.144
	(2.000)						(1.930)
Wealth ×BTP×Crisis		0.004					-0.007
		(0.080)					(-0.140)
Educ ×BTP×Crisis			-0.040				-0.107
			(0.355)				(-1.650)
Old ×BTP×Crisis				-0.019			0.079
				(-0.490)			(0.850)
Distance×BTP×Crisis					-0.002		-0.107
					(-0.05)		(-1.320)
PrimaryTerz×BTP×Crisis						-0.015	0.068
						(-0.270)	(1.620)
Observations	101,635	101,635	101,635	101,635	101,635	101,635	101,635
Adj. R-squared	0.399	0.399	0.399	0.399	0.399	0.399	0.399
Security-time FE	Y	Y	Y	Y	Y	Y	Y
Bank-time FE	Y	Y	Y	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y	Y	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. *Income*, *Wealth*, *Educ*, *Old*, *Distance*, and *PrimaryTerz* are binary variables, each equal to one if the banks' clients' respective characteristics— income, wealth, education level, age, distance to the border, and working in the primary sector rather than the tertiary sector — are higher than the median, and zero otherwise. Standard errors are clustered at bank and security type levels. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table 7: External factors - steering

	(1)	(2)	(3)	(4)	(5)
Dependent variable			Hold		
ActiveBanks×BTP×Crisis	-0.041		-0.047*		-0.051
	(-1.430)		(-0.180)		(-1.480)
BankBTP×BTP×Crisis		0.007		-0.016	0.008
		(0.250)		(-0.540)	(0.210)
BTP×Germanicity×Crisis			-0.108**	-0.109**	-0.106**
			(-2.440)	(-2.390)	(-2.290)
Observations	95,346	95,346	95,346	95,346	95,346
Adj. R-squared	0.403	0.403	0.403	0.403	0.402
Security-time FE	Y	Y	Y	Y	Y
Bank-time FE	Y	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *ActiveBanks* is equal to one if the ratio of the total value of securities held in the bank's portfolio to its total assets is higher than the median. *BankBTP* is equal to one if the proportion of the value of BTPs in the bank's portfolio, relative to the total value of securities it holds, is higher than the median. Finally, *HighNeed* is equal to one if the amount of maturing domestic sovereign bonds in a particular quarter is above the country-specific median for the sample period. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table 8: External factors - absence of a government moral suasion effect

	(1)	(2)
Dependent variable	Hold	
Maturing Sovereign Bonds	Low	High
BTP×Germanicity×Crisis	-0.109**	-0.108**
	(-2.410)	(-2.340)
Observations	51,076	50,487
Adj. R-squared	0.397	0.390
Germanicity Proxy	d50	d50
HighNeed median	below	above
Security-time FE	Y	Y
Bank-time FE	Y	Y
Bank-security type FE	Y	Y

This table reports OLS estimates. Column 1 considers only the quarters when the amount of maturing domestic sovereign bonds is above the country-specific median for the sample period, while Column 2 considers only the quarters above the median. The dependent variable, Hold, represents the position (at market value and in logs) for security i, held by clients of bank j at time t. *BTP* is a dummy variable set to one if the security is an Italian government bond. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. T-stats are reported in parentheses below. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 9: Potential mechanisms: risk perceptions, trust, time preferences, debt preferences

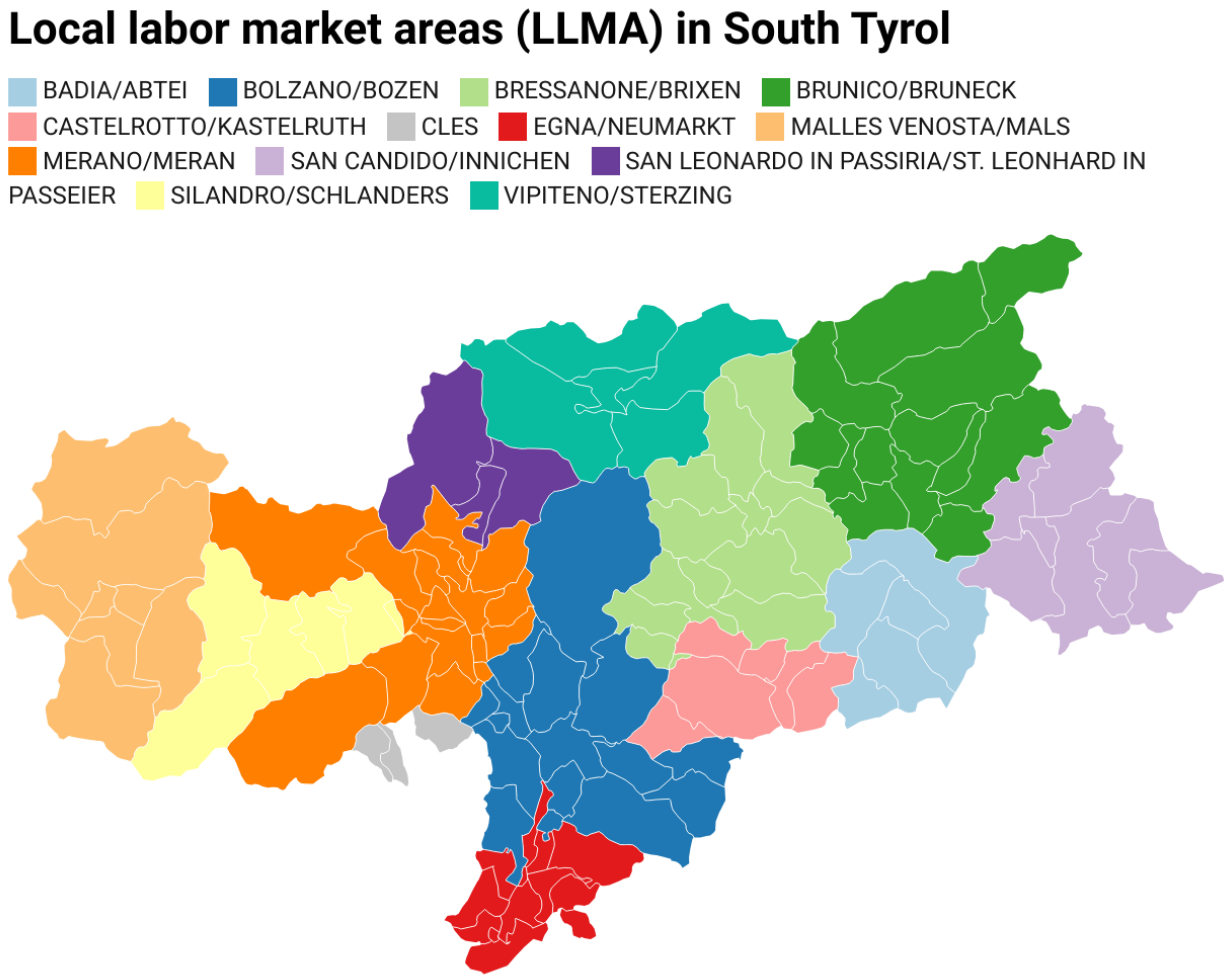
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Hold							
Subsample	RiskPref Low	RiskPref High	Trust Low	Trust High	TimePref Low	TimePref High	DebtPref Low	DebtPref High
BTP×Germanicity×Crisis	-0.121**	-0.050	-0.131*	0.098	-0.141**	-0.148**	-0.108	-0.113**
	(-2.210)	(-0.510)	(-1.820)	(1.210)	(-2.050)	(-2.060)	(-1.420)	(-2.400)
Observations	47,416	44,617	43,191	45,648	43,005	46,041	40,690	51,292
Adj. R-squared	0.399	0.407	0.401	0.412	0.416	0.438	0.417	0.398
Security-time FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank-time FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y	Y	v	Y	Y

This table reports OLS estimates. Column 1 focuses on banks whose clients have risk preferences below the sample median (risk-averse), while column 2 examines banks with clients' risk preferences above the sample median (risk-loving). Column 3 focuses on banks whose clients have trust in national institutions below the sample median, while column 4 examines banks with clients' trust above the sample median. Column 5 focuses on banks whose clients have time preferences below the sample median, while column 6 examines banks with clients' time preferences above the sample median. Column 7 focuses on banks whose clients have debt preferences below the sample median, while column 8 examines banks with clients' debt preferences above the sample median. The dependent variable, Hold, represents the position (at market value and in logs) for security i, held by clients of bank j at time t. *BTP* is a dummy variable set to one if the security is an Italian government bond. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. T-stats are reported in parentheses below. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Appendix

A Additional figures and tables

Figure A1: Local labor market areas (LLMA) in South Tyrol.



This map shows the 13 local labor market areas in South Tyrol. Source: ISTAT.

Table A1: Variable definitions

Variable Name	**Definition**
Hold	The position (at market value and in logs) for security i, for clients of bank j at time t.
BTP	A binary variable equal to one if the security is an Italian government bond
Germanicity	Index indicating the proportion of German-speaking clients in the bank's clientele
Germanicity (d_50)	A binary variable set to one if *Germanicity* is above 0.5
Crisis	A binary variable set to one starting from the second quarter of 2011
ItaISIN	A binary variable equal to one if the security has an Italian ISIN
MutualFunds	A binary variable equal to one if the security is a mutual fund
Stocks	A binary variable equal to one if the security is a stock
ItaOtherBonds	A binary variable equal to one if the security has an Italian ISIN and it is a corporate bond.
GermISIN	A binary variable equal to one if the security has an ISIN code from Germany, Austria or Switzerland
ForeignISIN	A binary variable equal to one if the security has an ISIN code from any country except Italy, Germany, Austria or Switzerland
Income	A binary variable equal to one if the banks' clients' income level is higher than the median
Wealth	A binary variable equal to one if the banks' clients' wealth level is higher than the median
Educ	A binary variable equal to one if the banks' clients' education level is higher than the median
Old	A binary variable equal to one if the proportion of elderly clients of the bank is above the median
Distance	A binary variable equal to one if the share of clients residing far from the border exceeds the median
Primaryter	A binary variable equal to one if the share of clients working in the primary sector, rather than the tertiary sector, exceeds the median
ActiveBanks	A binary variable equal to one if the bank's total value of securities held in the portfolio, relative to the bank's total assets, is higher than the median.
BankBTP	A binary variable equal to one if the value of BTPs in the bank's portfolio, relative to the total value of securities, exceeds the median.
HighNeed	A binary variable equal to one if the amount of maturing domestic sovereign bonds in a particular quarter is above the median for the sample period.
RiskPref	A binary variable equal to one if the banks' clients' risk preferences are higher than the median
Trust	A binary variable equal to one if the banks' clients' trust in national institutions is higher than the median
TimePref	A binary variable equal to one if the banks' clients' time preferences are higher than the median
DebtPref	A binary variable equal to one if the banks' clients' debt preferences are higher than the median
ZDF	A binary variable equal to one if the ZDF viewership index of the banks' clients exceeds the median
ForTV	A binary variable equal to one if the bank has a viewership index for major foreign TV channels that exceeds the median

Table A2: Descriptive statistics

	N	Mean	SD	Min	Max
Hold	101,635	10.994	1.404	9.210	20.162
BTP	101,635	0.139	0.346	0	1
Germanicity	101,635	0.636	0.182	0.023	0.991
Germanicity (d_50)	101,635	0.711	0.453	0	1
OtherBonds	101,635	0.354	0.478	0	1
Stocks	101,635	0.316	0.465	0	1
MutualFunds	101,635	0.083	0.277	0	1
ETF	101,635	0.042	0.200	0	1
ItalianISIN	101,635	0.409	0.492	0	1
GermISIN	101,635	0.213	0.409	0	1
ForeignISIN	101,635	0.378	0.485	0	1
Income	101,635	0.511	0.500	0	1
Wealth	101,635	0.775	0.418	0	1
Educ	101,635	0.388	0.487	0	1
Distance	101,635	0.394	0.489	0	1
Old	101,635	0.493	0.499	0	1
PrimaryTerz	101,635	0.596	0.491	0	1
ActiveBanks	96,381	0.317	0.465	0	1
BankBTP	96,381	0.378	0.485	0	1
RiskPref	101,635	0.261	0.439	0	1
Trust	101,635	0.856	0.351	0	1
TimePref	101,635	0.495	0.500	0	1
DebtPref	101,635	0.557	0.497	0	1
ZDF_med	101,635	0.413	0.492	0	1
ForTV_med	101,635	0.431	0.495	0	1

This table displays the descriptive statistics of the variables used in our analysis. Hold represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* refers to Italian government bonds. *Germanicity (d_50)* is a binary variable set to one when the germanicity index exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. *OtherBonds* refers to other types of bonds, *Stocks* to individual stocks, and *Mutual Funds* and *ETF* to various types of mutual funds and ETFs. *Distance* is a binary variable equal to one if the distance index is above the banks' median. The definition of the other variables is in Appendix I.

Table A3: Descriptive statistics of bank-level proxies

	N	Mean	SD	Min	Lower quartile	Median	Upper quartile	Max
Germanicity	61	0.688	0.211	0.023	0.473	0.729	0.911	0.991
Income	61	18811.55	2079.62	13568.96	18686.89	19797.08	20035.28	20856.49
Wealth (in billion)	61	4.360	9.100	0.051	1.050	1.990	3.670	57.300
Educ	61	0.573	0.036	0.455	0.545	0.595	0.601	0.602
Old	61	0.150	0.019	0.112	0.137	0.157	0.169	0.171
Distance	61	64.701	19.055	19.375	57.000	75.515	76.375	85.333
PrimaryTer	61	0.155	0.073	0.101	0.104	0.122	0.154	0.342
RiskPref	61	0.049	0.073	0.000	0.012	0.027	0.048	0.407
Trust	61	0.809	0.029	0.756	0.801	0.802	0.834	0.878
TimePref	61	9.628	3.956	0.687	7.105	9.091	10.983	29.470
DebtPref	61	0.860	0.171	0.057	0.831	0.924	0.963	1
ActiveBanks	59	0.221	0.121	0.012	0.139	0.221	0.297	0.568
BankBTP	59	0.137	0.169	0.000	0.000	0.076	0.203	0.681
ZDF	61	34.863	7.352	19.600	35.000	36.100	39.800	43.400
ForTV	61	38.458	9.489	19.333	36.300	39.000	45.767	49.300

This table displays the descriptive statistics of the proxies at the bank level created in our analysis. *Germanicity* is an index to proxy the importance of German-speaking clients for each bank, computed based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the province. *Income* measures a weighted average of the income per capita in the areas where the bank operates, based on the geographic distribution of its deposits. *Wealth* measures, in billions, the sum of the amounts invested in securities and deposits by the bank's clients, and is used as a proxy for their financial wealth. *Educ* is a proxy for the level of education of the bank clients. We identified the percentage of the population that has obtained at least a high-school diploma and created an index at the bank level, similar to our approach for *Germanicity*. *Old* is a proxy for the share of elderly bank clients, approximated by the share of people aged over 75 in the areas where the bank operates, based on a weighted average of the geographic distribution of its deposits. *Distance* is calculated by weighting the distance in minutes to the nearest border for each municipality where the bank operates, according to the geographic distribution of the bank's deposits. *PrimaryTerz* is a proxy for the share of the bank's clients working in the primary rather than the tertiary sector. *ActiveBanks* measures the ratio of the total value of securities held in the bank's portfolio to its total assets. *BankBTP* measures the proportion of the value of BTPs in the bank's portfolio, relative to the total value of securities it holds. *RiskPref* approximates the risk preferences of the banks' clients, using the proportion of financial assets held by the bank as a custodian invested in stocks. *Trust* is an index approximating bank exposure to areas with high social capital, created from the voter turnouts where the bank operates, using the geographic distribution of the bank's deposit value as a weight. *TimePref* proxies the maturity preferences of the banks' clients by measuring the weighted average maturity (WAM) of bonds in the banks' client portfolios. *DebtPref* approximates the debt preferences of the banks' clients, using the proportion of financial assets held by the bank as a custodian invested in bonds. *ZDF* is an index to proxy how much the clients of each bank watch ZDF daily, while *ForTV* is an index to proxy how much the clients of each bank watch foreign TV daily.

Table A4: Absence of cultural home bias - further evidence

	(1)	(2)
Dependent variable	Hold	
AusGermISIN×Germanicity×Crisis	-0.146	
	(-1.570)	
AustrianISIN×Germanicity×Crisis		-0.106
		(-0.780)
Observations	87,529	87,529
Adj. R-squared	0.372	0.372
Security-time FE	Y	Y
Bank-time FE	Y	Y
Bank-security type FE	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *AusGermISIN* is a dummy equal to one if the security has an ISIN code from Germany or Austria. *AustrianISIN* is a dummy equal to one if the security has an ISIN code from Austria. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table A5: Alternative standard errors

	(1)	(2)
Dependent variable	Hold	
BTP×Germanicity×Crisis	-0.108*	-0.108**
	(-1.777)	(-2.009)
Observations	101,635	101,636
Adj. R-squared	0.399	0.399
	Bank	Bank ISIN
Security-time FE	Y	Y
Bank-time FE	Y	Y
Bank-security type FE	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. *i*s a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank, or at bank and ISIN levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table A6: Results without larger banks

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. Standard errors are clustered at bank and security type levels. In column 1 (2), we drop the observations belonging to banks in the highest and lowest decile (quintile) of total assets. In column 3 (4), we drop the observations belonging to banks in the highest and lowest decile (quintile) of the total amount of deposits held in South Tyrol. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent variable			Hold	
BTP*Germanicity*Crisis	-0.144***	-0.126***	-0.091**	-0.115***
	(-3.670)	(-3.070)	(-2.320)	(-2.840)
Observations	93,505	82,706	58,947	35,570
Adj. R-squared	0.399	0.399	0.399	0.399
Banks dropped	10% High-Low Total Assets	20% High-Low Total Assets	10% High-Low Deposits	20% High-Low Deposits
Security-time FE	Y	Y	Y	Y
Bank-time FE	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y

Table A7: Robustness to quartiles

	(1)	(2)
Dependent variable	Hold	
BTP×Germanicity×Crisis	-0.163***	-0.088**
	(-3.780)	(-2.160)
Observations	51,442	29,172
Adj. R-squared	0.375	0.399
Germanicity Proxy	dq4	bq4
Security-time FE	Y	Y
Bank-time FE	Y	Y
Bank-security type FE	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. *Germanicity* is a binary variable that is set to one when the index computed using deposits (*dq4*, column 1) or branches (*bq4*, column 2) exceeds the highest quartile of the distribution, and set to zero when it falls within the lowest quartile. The germanicity index proxies the importance of German-speaking clients for each bank. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Table A8: Confounders of Germanicity - risk preferences, trust, time preferences, and debt preferences

	(1)	(2)	(3)	(4)	(5)
Dependent variable			Hold		
Germanicity×BTP×Crisis	-0.111***	-0.101**	-0.113**	-0.120***	-0.126***
	(-2.930)	(-2.26)	(-2.320)	(-2.950)	(-3.100)
RiskPref×BTP×Crisis	0.066*				-0.013
	(1.780)				(-0.370)
Trust×BTP×Crisis		-0.010			-0.007
		(-0.150)			(0.130)
TimePref×BTP×Crisis			-0.028		-0.018
			(0.450)		(-0.560)
DebtPref ×BTP×Crisis				-0.120***	-0.185***
				(-2.950)	(-8.380)
Observations	101,635	101,635	101,635	101,635	101,635
Adj. R-squared	0.399	0.399	0.399	0.399	0.399
Security-time FE	Y	Y	Y	Y	Y
Bank-time FE	Y	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy equal to one if the security is an Italian government bond. *Germanicity* is a binary variable that is set to one when the germanicity index computed using deposits exceeds 0.5, and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. *RiskPref*, *Trust*, *TimePref*, and *DebtPref* are binary variables, each equal to one if the respective characteristics of the banks' clients—risk preferences, trust, time preferences, and debt preferences are higher than the median, and zero otherwise. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

B Dynamics of the effect of culture on BTP holdings

Understanding the dynamics over time is crucial for two reasons. First, the German-speaking population might have anticipated the crisis in their investment decisions, possibly influenced by the ongoing financial crises in the other "GIIPS" countries (Greece, Ireland, Portugal and Spain), which, like Italy, were frequently associated with public debt issues in the international press. Second, we aim to examine if the impact on government bond investments was more pronounced during the peaks of Italy's crisis.

Figure B1 illustrates the time-related dynamics of the differential effect in BTP holdings between banks serving predominantly German-speaking clients and others. No significant differences were observed in 2010, but a divergence began to emerge from early 2011 (*2011q1*), intensifying towards late 2011 (*2011q4*) and early 2012 (*2012q1*).

The IMF Staff Country Reports (2023) identify public debt, unconventional monetary policy, and political risk as major factors influencing Italian sovereign bond spreads in recent years, accounting for nearly two-thirds of spread movements. The trial of the Italian prime minister in early 2011 significantly impacted international media,[20] including those from German-speaking countries.[21] Greece's debt was bailed out in 2010, followed by Ireland's bailout in the last quarter of 2010, and with growing concerns about Portugal in the first quarter of 2011,[22] which was indeed bailed out in May 2011. The Italian political instability, combined with what was happening to the sovereign debt of comparable countries, might have served as a "wake-up call," signaling an increased risk in holding Italian government bonds. This is because political risk, a key determinant of the spread, can lead to government debt defaults (Eichler, 2014).

The crisis worsened post-onset, particularly when the Italian government collapsed under a fragile political situation, creating uncertainty about Italy's financial control (Hopkin,

[20] https://www.bbc.com/news/world-europe-12083491
[21] https://www.bild.de/politik/2011/sexueller-missbrauch/bams-beim-bunga-baby-16065934.bild.html
[22] https://www.theguardian.com/business/2011/mar/23/portugal-government-collapses-eu-bailout-looms

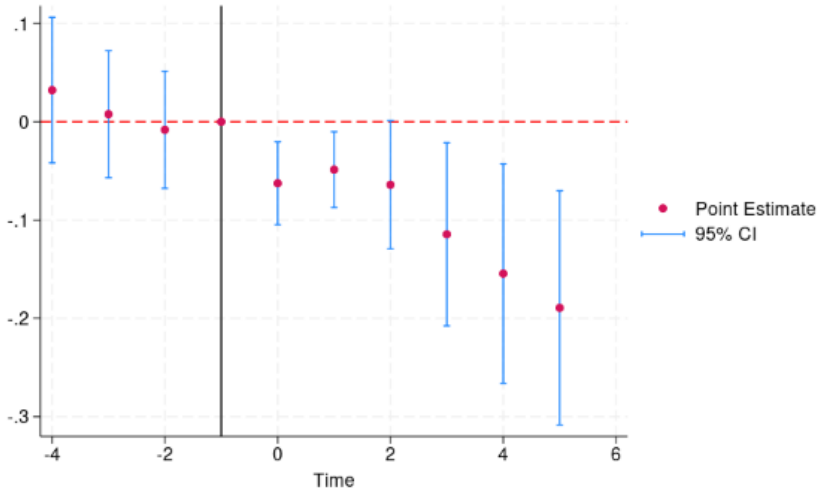
2012). A "technical" government was formed in late 2011 to improve fiscal stability as Italy was on the verge of fiscal implosion (Alesina et al., 2015), leading to the BTP-bund spread widening and Italian bond yields surpassing 7% in November 2011.[23]

In March 2012, Greece's second bailout required private creditors to accept a significant loss, equivalent to about 50% of value or 47% of Greek GDP (Lane, 2012). The funding through the European Financial Stability Facility and its successor, the European Stability Mechanism, was only sufficient for the bailouts of Greece, Ireland, and Portugal, and not enough to offer substantial support to Spain and Italy. This quarter saw a further downgrade in the rating of Italian bonds.[24]

To summarize, our findings in Figure B1, show a divergence beginning in the first quarter of 2011 (*2011q1*), coinciding with the rise in Italian political instability and concurrent financial turmoil in comparable countries due to their public debt crises. There was a further substantial increase in the divergence between banks with predominantly German-speaking clients and others towards the end of 2011 (*2011q4*), coinciding with the collapse of the Italian government and the installation of a technical government to improve the fiscal situation, and at the beginning of 2012 (*2012q1*), when Greece received a substantial bailout.

[23] https://money.cnn.com/2011/11/09/markets/bondcenter/italy_bond_yields/index.htm
[24] https://www.theguardian.com/business/2012/jan/13/eurozone-crisis-live-markets-italian-bond-sale

Figure B1: Dynamic Effect of the BTP Holdings.



This figure graphically displays the estimated coefficients of OLS regressions for BTP×Germanicity×Time. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy variable equal to one if the security is an Italian government bond. *Germanicity* is a binary variable (*d50*) that equals one when the Germanicity index computed using deposits exceeds 0.5 and is zero otherwise. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. The fixed effects and clustered standard errors employed are the same as those in Table 3, Panel B. The first quarter of 2011 is considered time 0 in the graphs.

C The role of the media

The influence of the media on investment decisions has been widely demonstrated (e.g., Barber and Odean, 2008; Fang and Peress, 2009; Engelberg and Parsons, 2011; Peress, 2014; Kaniel and Parham, 2017). In our setting, it is possible that the negative portrayal in Northern European media of how Southern European countries managed their fiscal budgets and public debt may have influenced German-speaking South Tyroleans' attitude towards investing in BTPs. This hypothesis is especially relevant considering that many German-speaking South Tyroleans routinely follow media sources from Germany and Austria, and given the evidence that both German and Austrian media provided ample coverage to the sovereign debt crisis, often relying on concerned, morally charged, and/or derogatory words to describe the situation of the countries affected (Bickes, Otten, and Weymann, 2014; Pühringer, 2019; Pursiainen, 2022).

To investigate the role of the media in our results, we retrieve survey data on the fraction of residents watching the major German-speaking TV channels. Focusing on TV influence is particularly relevant in our context given that 73% of residents of the region watch television on a daily basis, and 97% of those follow the TV news.[25] The data consist of the fraction of residents that watched the main broadcasting channels from Germany (ZDF) and Austria (ORF 1 and ORF 2) during 2005 in each of South Tyrol's seven administrative units defined as "comunità compensoriale".[26]

To measure the fraction of each bank's clients viewing foreign German-speaking TV channels, for each TV channel we calculate a weighted average following a similar approach as

[25] Source: ASTAT.

[26] Source: ASTAT. A "comunità compensoriale" comprises several municipalities, but does not map one to one with an LLMA. Obtaining more granular data on the geographical distribution of TV channel viewers is challenging, as these data are not usually public (see Durante, Pinotti, and Tesei, 2019).

before:

$$ForeignTV_j = \sum_{c \in C(j)} \frac{\text{Foreign TV channel daily viewers}_c}{\text{People watching TV regularly}_c} \times \frac{\text{Deposits value}_{c,j}}{\text{Total deposits value}_{C(j)}},$$

where $C(j)$ represents the set of all "comunitá comprensoriali" c in South Tyrol where bank j operates, and $ForeignTV$ stands, respectively, for ZDF viewers (the major German-speaking foreign channel) or for viewers of any of the three channels: ZDF, ORF 1, or ORF 2.

We then estimate our baseline regressions using $ForeignTV$ in lieu of the germanicity index.Table C1 presents the results of these estimations. In column 1, we focus on ZDF viewers and the media variable is a dummy taking the value one if the banks' share of clients viewing ZDF is larger than the median, while in column 2 the media variable takes a one if the banks' share of clients viewing any foreign German-speaking TV channel is larger than the median. Regardless of which proxy is used, frequently watching television from Germany or Austria might have played a role in the attitude towards BTPs during the sovereign crisis, since the sign and coefficient of the triple interaction are negative and significant. Hence, we cannot rule out that foreign media had a significant impact. This is also because there is a strong overlap between speaking German and watching more foreign TV from German-speaking countries.

One might then ask whether culture still plays a role among individuals not exposed to foreign media. In Table C1, Panel B, we replicate our Table 3, Panel B, considering only banks with clients who watched less foreign TV (ZDF or $ForTV$ below the median).[27] This table provides suggestive evidence that *Germanicity* might have played a significant role by itself, even among clients less exposed to foreign TV.[28]

[27]We cannot provide a meaningful analysis of the same kind for banks whose clients watch more foreign media, as Italian banks are underrepresented in that group, given that it is not common for Italians to watch foreign German-speaking media.

[28]We acknowledge that our main germanicity proxy, d50, has a negative coefficient which is statistically insignificant. Therefore, while we cannot entirely dismiss the influence of foreign media on German-speaking South Tyrolean retail investors' BTP investments, it would appear overly simplistic to attribute all the main results solely to this factor.

Table C1: External factors at play - The role of the media

	(1)	(2)
Dependent variable	Hold	
ForeignTV×BTP×Crisis	-0.198***	
	(-5.860)	
ForeignTV×BTP×Crisis		-0.200***
		(-6.010)
Observations	101,635	101,635
Adj. R-squared	0.399	0.399
TV proxy	ZDF_med	ForTV_med
Security-time FE	Y	Y
Bank-time FE	Y	Y
Bank-security type FE	Y	Y

This table reports OLS estimates. The dependent variable, *Hold*, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *ZDF_med* is set to one if the ZDF viewership index of banks' clients exceeds the median. Similarly, *ForTV_median* is defined based on whether the viewership index for major foreign TV channels from Austria and Germany, as watched in South Tyrol, surpasses the median. Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
	Hold					
BTP×Germanicity×Crisis	-0.110	-0.142**	-0.981***	-0.113	-0.138**	-0.978***
	(-1.590)	(-2.510)	(-2.870)	(-1.670)	(-2.560)	(-2.990)
Observations	56,588	56,588	56,588	54,323	54,323	54,323
Adj. R-squared	0.401	0.401	0.401	0.415	0.415	0.415
Germanicity Proxy	d50	dmedian	dcont	d50	dmedian	dcont
ForeignTV Proxy Sample	ZDF_med	ZDF_med	ZDF_med	ForTV_med	ForTV_med	ForTV_med
Security-time FE	Y	Y	Y	Y	Y	Y
Bank-time FE	Y	Y	Y	Y	Y	Y
Bank-security type FE	Y	Y	Y	Y	Y	Y

Panel B. This table reports OLS estimates. The dependent variable, hold, represents the position (at market value and in logs) for security i, for clients of bank j at time t. *BTP* is a dummy variable set to one if the security is an Italian government bond. In columns 1 and 4, *Germanicity* is a binary variable (*d50*) that is set to one when the index computed using deposits exceeds 0.5, and zero otherwise. In columns 2 and 5 it is *dmedian*, a dummy set to one when the germanicity index is greater than the median. In columns 3 and 6 it is the continuous germanicity index, *dcont*. This index proxies the importance of German-speaking clients for each bank, calculated based on the geographic distribution of banks' deposits and the distribution of the German-speaking population in the region. In columns 1-4, the sample includes banks where the ZDF viewership index of their clients is below the median (*ZDF_med*). Conversely, Columns 5-8 focus on banks with a viewership index for major foreign TV channels from Austria and Germany, as watched in South Tyrol, that falls below the median (*ForTV_median*). Standard errors are clustered at bank and security type levels. T-stats are reported below in parentheses.