Cultural Stereotypes of Multinational Banks

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Cultural Stereotypes of Multinational Banks[1]

Barry Eichengreen* and Orkun Saka**

Abstract

Using hand-collected data spanning more than a decade on European banks' sovereign debt portfolios, we show that the trust of residents of a bank's countries of operation in the residents of a potential target country of investment has a positive, statistically significant, and economically important association with its cross-border exposures. In identifying cultural stereotypes at the bank level, we show that corporate culture at bank headquarters is influenced by foreign subsidiaries for several reasons, including banks' tendency to hire internally across borders for high-level managerial positions. We therefore leverage the geography of multinational bank branch networks to construct a bank-specific measure of culture that differs across banks headquartered in the same country, at the same point in time, with regard to the same target country. This allows us to compare how sovereign exposures are affected by cultural stereotypes while ruling out confounding factors at country and country-pair levels. The effect of stereotypes is persistent over time, stronger for less diversified banks, and weaker for target countries whose bonds appear more frequently in bank portfolios. Cultural stereotypes are particularly salient when governments are hit by sovereign debt crises.

Keywords: cultural biases; stereotypes; trust; banks; sovereign debt

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1.Introduction

Financial markets, even more than other markets, run on trust and stumble in its absence. Complete contracts accounting for all conceivable contingencies are a textbook abstraction. Adjudication by courts is time consuming and unpredictable. For transactions to be sustained, counterparties must be trusted, as emphasized by Arrow (1974). This is why historically one observes a concentration of commercial and financial transactions among individuals with a common cultural background who share extra-economic links, values and trust (see e.g. Greif 1989, 1991). It is plausibly why investors, despite advances in technology leading to a proliferation of hard information, still underweight culturally distant foreign markets (Anderson et al. 2011) while overweighting firms whose CEOs share a common cultural background (Grinblatt and Keloharju 2001).

While the connections between trust and economic behaviour are general, such considerations apply with special force to international investments, and to investments in the bonds of foreign sovereigns in particular. Sovereign bonds are incomplete contracts, as amply demonstrated by the history of default, restructuring and repudiation. Multiple countries make for multiple courts with uncertain jurisdiction. Governments enjoy a degree of sovereign immunity, casting doubt on the existence of a judicial solution to default. Such considerations heighten reliance on trust as an alternative to legal contract enforcement. At the same time, social psychologists have documented that cultures and values, from which trust derives, differ across countries, on some dimensions modestly, on others dramatically (see e.g. Hofstede 2001 and House et al. 2004). Many differ more dramatically across countries than within them (World Values Association 2022), which again points to importance of trust in the context of international investment. Sovereign bonds tap into these cultural stereotypes (into how trustworthy the residents of one country view residents of another) in that they are directly associated with a national government and a nationality.

In this paper, we use hand collected bi-annual data on banks' investments in European sovereign debt to show that trust has an economically important impact on cross-border investments. Specifically, when residents of the country or countries where a bank operates have a high level of trust in residents of another country, the bank is more likely to hold claims on that other country. To our knowledge, this is the first evidence of the role of trust, rooted in cultural stereotypes, in bank lending to governments.[2] It is also the first evidence of the transmission of such cultural stereotypes via the operation of multinational branch networks.

As motivation, we consider the correlation between average levels of bilateral trust between countries on the one hand and banks' cross-border sovereign debt portfolios on the other. As in the related literature, we use Eurobarometer data on how much residents of one country trust the residents of another to measure average levels of bilateral trust. We control for other relationships between the bank's home country and the target country of sovereign investment, including physical, financial, informational, and legal proximity. The results confirm that average levels of trust are correlated with cross-border investment.

A limitation of such country-level evidence – which is why we describe it as a correlation and use it only as motivation – is that average levels of trust, relied on also in the earlier literature, are almost certainly correlated with unobserved characteristics of country pairs. To rule out confounding factors, we therefore develop a bank-specific measure of trust.[3] For this purpose,

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[2] In popular usage, the word "stereotype" is often invoked in derogatory context: a stereotype is a fixed image of a type of person but also an oversimplified and misleading image. We do not take a stance on the oversimplified and misleading part. What is important for our argument and analysis are the time-invariant nature of the image as well as its variation across different viewers. Alternative usage might be the word "bias," defined as a tendency to feel or show inclination for or against someone or something. However, this term is similarly invoked in derogatory context, as a tendency to prejudicially show inclination for or against someone or something. Again, we do not take a stance on the prejudicial part. Bordalo, Gennaioli and Shleifer (2018) use the somewhat more convoluted term "diagnostic expectations" to avoid these implications.

[3] We are aware of the problem of anthropomorphism – that banks, as financial institutions, do not have feelings such as trust. Rather, trust is a feeling or value expressed by bank employees and by executives and boards of directors to whom they report. We try to keep this distinction in mind in what follows,

we present a framework of banks as hierarchies. Cultural stereotypes of subsidiaries shape the soft information that subordinates transmit up the hierarchy to headquarters, where the broad parameters guiding portfolio investment decisions are set. They affect how that soft information is received by directors, because the latter share the same stereotypes, reflecting the extent to which banks hire and promote internally across borders, such that the composition of bank boards and officers reflects the geography of the bank's branch network. We provide empirical support for this framework by showing that multinational branch networks help predict the national composition of high-level managerial teams at bank headquarters.

Our central analysis focuses on banks with branches in multiple countries. We assign to branches of a bank operating in a country that country's level of bilateral trust in other countries. We aggregate this measure by calculating a weighted average, where weights are the share of host-country branches in the network of the bank. We repeat this for each target country of potential investment, across which a bank's bilateral trust differs. Our measure of trust is therefore specific to both the bank and the target country of potential investment.

Leveraging this banks-as-hierarchies approach and focusing on multinational banks have advantages from the point of view of identification. Trust in a particular target country can differ across multinational banks headquartered in the same country insofar as they have branches in different foreign countries or in the same foreign countries but with different weights. By focusing on this within-country-pair variation, we can rule out other omitted factors at the country-pair level. We can do so even when latent influences are time varying, since our strictest specification includes country-pair * time dummies, along with bank * time and target-country * time fixed effects. We consequently compare banks headquartered in the same country with respect to the same target country at the same point in time, thereby ruling out all country-level confounding factors.

Strategic decisions such as whether or not a bank should invest in a country are generally taken at bank headquarters. Portfolio managers working in the headquarters country or

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although for ease of exposition we sometimes refer to the "trust of a bank" toward a government or a country.

elsewhere are then responsible for implementing those decisions. Because we are concerned with investment decisions undertaken by headquarters, we focus our analysis on the extensive margin of sovereign exposures – whether or not a bank invests in the bonds of a country, as opposed to exactly how much it invests. We show that our bank-level measure of trust predicts banks' entry/exit decisions vis-a-vis sovereign debt of a country. [4] A one standard deviation rise in bank-level trust bias increases the probability of investing in a target country by 14 per cent. This is a large effect, accounting for one-third of the diversification gap (i.e., 42%) in banks' sovereign exposures. The effect is stable over a sample period spanning more than a decade. It is not only statistically significant and economically important but also persistent over time.

We show further that well diversified, relatively sophisticated banks are less likely to use trust as a determinant of their sovereign lending. Moreover, investments in target countries whose bonds are not frequently found in bank portfolios, about which hard information may be relatively scant, are more likely to be influenced by cultural stereotypes. Finally, we find that the impact of trust is substantially higher for target countries experiencing a sovereign debt crisis, when cultural stereotypes – and thus the role of trust – may become particularly salient.[5]

Our findings remain intact for alternative definitions of trust. They are not driven by domestic exposures, exchange rate fluctuations, observations for relatively weak target countries (in our setting Greece, Ireland, Italy, Portugal and Spain), or banks headquartered there. By flexibly controlling for the extent of branch penetration in the target country, we show that cultural stereotypes based on the geography of bank branches are not picking up the information-gathering role of branches. [6] By controlling for a weighted-average set of

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[4] All our main results and interpretations remain the same when we use the continuous (i.e., nominal) sovereign exposures as the outcome variable.

[5] One needs only recall assertions in the press during the Greek sovereign debt crisis of 2010, in Germany impugning the integrity of the Greek government and people and in Greece impugning the integrity and motives of the German counterparts. We return to this case immediately below.

[6] The existence of branches in a country may contribute to more bank lending to the government of that country insofar as bank branches are a mechanism for information acquisition and dissemination

characteristics at bank/target-country level, we rule out the possibility that our bank-level measure of trust is picking up other types of indirect financial, informational or political linkages that may be operating via host countries.[7] Finally, by using data from the European Central Bank's Single Supervisory Mechanism (SSM), we show that our results are not driven by the heterogeneity in local supervision of these banks.

Our setting, Europe, is an appealing laboratory for investigating these issues. It has a Single Market, meaning that there are few economic or regulatory barriers to cross-border investment for which one otherwise would have to control.[8] It has a European Banking Authority and a Single Supervisory Mechanism providing information on cross-border exposures and ensuring the consistent application of regulations and supervisory policies. Helpfully, levels of bilateral trust reported by residents of one European country in another vary widely.[9] Qualitative accounts from the euro crisis and the Greek sovereign debt crisis emphasize trust or lack thereof – of, inter alia, Germans in Greeks, and Greeks in Germans –

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within the bank (Saka, 2020). A bank with more branches in a country may have more information about that country, encouraging it to assume additional exposure. Our results are intact when we parametrically control for linear and non-linear effects of branch penetration or, more conservatively, when we focus only on foreign target countries where none of the compared banks has branch presence.

[7] These indirect relationships are constructed in the same manner as we measure the bank-level trust bias to a target country; that is, we take the host countries' attributes of interest (branch, merger, media or political relationship) and compute a weighted average for each bank/target-country pair by again using bank branches as weights.

[8] This is especially true for sovereign exposures, which is the focus of our paper. European banks are exempt from requirements to hold additional capital against their sovereign exposures to EU member states. European Systemic Risk Board (2015), p.15 describes the relevant history. Hence regulatory treatment of sovereign exposures that we use in our sample is mostly homogenous across countries and sample period.

[9] We know this not only from survey data from Eurobarometer but also from the Pew Research Center, which has similarly asked respondents from different EU countries how much they trust people from other European countries. We describe the Eurobarometer data more fully below. On the more limited Pew data, see Pew (2013).

as a factor complicating orderly resolution.[10] The fact that European banks held Greek government bonds, and that those holdings were concentrated in the portfolios of some countries' banks but not others, complicated efforts to resolve the crisis (Eichengreen 2015). If levels of bilateral trust had an effect on these investment decisions and thus on crisis-resolution efforts, it is important to recover their role.

Our findings have important implications for interpreting observed financial allocations. Because we are comparing banks from the same home country facing the same target country at the same point in time, and because we are focusing on the sovereign debt markets where lender-borrower interactions are not relational and default tends to be across the board, trust differentials lead to inefficiency in our setting. Since trust-induced changes in portfolio decisions have nothing to do with the fundamental risk of the target country but simply reflect cultural stereotypes, they are likely to represent divergences from optimal portfolio allocations.

Our results also have implications for how multilateral banks should think about the design of high-level managerial teams responsible for their cross-country investments. In particular, banks with branch networks that are geographically well diversified and whose management teams similarly are geographically well diversified are less likely to suffer from such biases. For a bank with a well-diversified branch network, the biases transmitted by different national branches cancel out and hence tend to zero overall. If cultural biases matter, diversity in bank

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[10] Thus, in March 2015 Reuters quoted German Finance Minister Wolfgang Schaeuble as saying that "the new Greek government (led by Syriza) had "destroyed all the trust that had been rebuilt" by its predecessors. A subsequent article by Copley (2015), also for Reuters, describes a German parliamentarian refusing to support financial assistance for Greece, saying "he has lost all trust in the Athens government…" For more see e.g. Farrell (2015). Fuller (2015) describes other EU countries prima facie lack of trust in Greece and ascribes this to the prevalence of cultural stereotypes about different nationalities.

management brings in a more balanced view of the potential investments and consequently more efficient portfolio allocation.[11]

Following a review of literature in Section 2, we describe our data and model in Sections 3 and 4. As motivation, Section 5 replicates and extends previous analyses showing that average country-level bilateral trust is correlated with cross-border transactions. In Section 6 we then develop a model of banks as organizational hierarchies to explain how trust bias among the employees of foreign branches is transmitted and influences decision making at corporate headquarters. In Section 7, we apply this framework and our bank-specific measure of trust bias and report our key findings. Section 8 discusses threats to identification and robustness checks, while Section 9 concludes.

2. Literature

Our paper is related to several literatures. First, there is research on the connections between trust and transactions. Hagendorff, Lim and Nguyen (2022) examine the corporate loan market and find that lenders whose CEO comes from an ancestral country characterized by higher levels of generalised trust charge lower interest rates on U.S. syndicated loans. Gennaioli, La Porta, Lopez-de-Silanes and Shleifer (2021) show that the incidence of claims and their dispute, rejection and payment in insurance markets is importantly affected by average levels of interpersonal trust in the country where the insurance is extended.

In the context of cross-border transactions, our focus here, Guiso, Sapienza and Zingales (2009) show, utilizing measures of trust based on survey data from early editions of Eurobarometer, that higher levels of trust at the country level have a positive impact on levels

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[11] A recent literature focuses on the gender diversity of boards and generally concludes that this is positively associated with firm performance. Arnaboldi et al. (2021) examine gender-diverse bank boards and find that greater diversity renders boards more effective in preventing misconduct. Karavitis et al. (2021) document that increases in board gender diversity reduce loan spreads, especially for bank-dependent firms. Cardillo et al. (2021) find that European banks with more gender-diverse boards were less likely to receive public bailouts in the Global Financial Crisis and Euro Area Crisis. We are not aware of a similar literature on the national diversity of bank boards.

of economic exchange such as trade, portfolio investment and foreign direct investment. Bloom, Sadun and Van Reenen (2012) show that greater trust leads to more decentralisation of multinational firms; this increases their productivity by helping them grow to a larger equilibrium size. Employing these same aggregate survey-data measures, Bottazzi, Da Rin and Hellmann (2016) show that the international investment decisions of venture firms are influenced by cultural trust, especially in the case of early-stage investments. Pursiainen (2022) finds that stock recommendations are biased in favour of firms in countries more trusted by residents of the equity analyst's home country.[12]

Similar patterns prevail in the case of banks' cross-border investment in sovereign bonds, as we show below. But our main analysis departs from these earlier studies, all of which measure average trust at the country level. We construct measures of trust at the individual bank level. We show that bank-specific bilateral trust importantly shapes bank lending to sovereigns even after controlling for unobservable factors that vary across country pairs and over time.[13]

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[12] This trust bias is stronger for "eponymous firms," cases where the firm name includes the name of its home country, something that presumably resonates with pre-existing cultural biases.

[13] A related literature investigates the determinants of public trust in banks and financial institutions. Analyzing survey data from the Netherlands, Jansen, Mosch and van der Cruijsen (2014) find that, in addition to negative media reports, falling stock prices and opaque product information negatively affect trust in banks. Knell and Stix (2015) find that trust in banks is negatively related to individuals' direct experience with bank failures. Fungacova, Hasan and Weill (2017) use data for 72 countries from the World Values survey to establish that women, the wealthy, the young, the religious, and individuals with pro-market economic views place most trust in banks. Other studies consider the consequences of such trust for individuals and banks themselves. Analyzing survey data from five Central European countries, Stix (2014) finds that individuals with less trust in banks have a stronger preference for cash relative to savings accounts. Looking across U.S. states, Saiedi, Mohammadi, Brostrom and Shafi (2020) show that individuals less trusting of banks hold fewer bank deposits and are more likely to participate in crowdfunding. Bertrand, Klein and Soula (2021) find that U.S. banks engage in more liquidity creation when they are regarded with high levels of trust, proxied in their study by Gallup Poll surveys asking respondents about their confidence in banks.

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Second, there is a literature on cultural attitudes and investment biases. Grinblatt and Keloharju (2001), cited in our introduction, find that investors are more likely to buy, hold and sell the stocks of firms located close by, that communicate in an investor's native language, and that have CEOs of the same cultural background.[14] Anderson et al. (2011), analysing institutionally managed portfolios in some 60 countries, find that managers from culturally distant countries invest less abroad and underweight culturally distant markets. Giannetti and Yafeh (2012) find that greater cultural distance between the countries of a borrower and lender (as constructed from measures in the World Values Survey) lead banks to offer borrowers smaller loans at higher interest rates. Mian (2006) shows that greater cultural and geographical distance between a foreign bank's headquarters and local branches depresses lending by the latter. Using data for an Indian bank, Fisman, Paravisini and Vig (2017) find that cultural distance between borrower and lender, as captured by religion and caste, reduces the quantity of credit and increases the incidence of default. Acccetturo, Barboni, Cascarano and Garcia-Appendini (2021), using data from the South Tyrol, show that firms are more likely to apply for loans from culturally- and linguistically-proximate banks.[15]

Our focus is specifically on trust as opposed to geographical distance, cultural distance or language. Still, we contribute to this literature by documenting the role of cultural stereotypes in bank lending and by highlighting the acquisition and diffusion of cultural traits through branch networks and managerial flows within multinational banks.[16] Banks in our setting acquire a corporate culture by adopting and combining the cultures of their branches (and

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[14] In line with our findings, such biases are weaker for more sophisticated financial institutions.

[15] In this paragraph we have focused on financial transactions. But, relatedly, Gorodnichenko, Kukharskyy and Roland (2015) analyse cultural firms rather than banks and find that cultural distance between a firm and its foreign suppliers creates an incentive for a firm to engage in arm's-length transactions (outsource) as opposed to integrating production.

[16] See Fisman and Miguel (2007) for how cultural norms spread when legal environment is muted; Fernández and Fogli (2009) for the diffusion of culture in the domains of individual work and fertility; and Ek, Gokmen and Majlesi (2022) for the cultural transmission of risk-taking behaviour in financial investments.

thus their employees), which reflects the cultures of their countries of residence. This corporate culture in turn shapes their decisions regarding lending to governments.

Third, there is an extensive literature on the determinants of banks' sovereign exposures. Broner, Martin and Ventura (2010) show that the value of government bonds may depend on which banks hold these assets, on the grounds that governments are less likely to default if domestic banks suffer adverse consequences. Sovereign bonds tend to move from foreign- to domestic-bank portfolios in times of crisis in anticipation of these incentives. Other scholars observe that governments engage in financial repression by forcing banks in their jurisdiction to hold domestic government bonds; in turn this aggravates home bias in banks' sovereign debt portfolios.[17] Undercapitalisation and risk shifting also may explain banks' sovereign exposures specifically in crisis periods (Acharya and Steffen, 2015; Crosignani, 2021). More broadly, information asymmetries have been shown to limit the diversification of banks' sovereign debt portfolios (Saka, 2020; De Marco, Macchiavelli and Valchev, 2021). Our paper points to an additional factor, not analysed before, that plays an important role in the composition of such portfolios in normal times and has an especially powerful effect in times of crisis.

3. Data

Our data on bank-level sovereign debt portfolios is from the European Banking Authority (EBA). EBA first provided these public disclosures in 2010 in response to the Eurozone debt crisis. Subsequently it provided information at the consolidated parent-bank level biannually (through mid-2021 at the time of writing). We collect these data from EBA website.[18]

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[17] Such "moral suasion" by governments toward domestic banks has been investigated in the context of the Eurozone debt crises (see, among others, Becker and Ivashina, 2017; Ongena, Popov and van Horen, 2019).

[18] And from various other related sources detailed in **Appendix A**. In particular, **Appendix Table A.1** documents the dates of each disclosure alongside information on how many banks were included and which year-quarters sovereign portfolio information relates to.

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Because banks open, merge and close, this involves manually tracing them over time.[19] The result is an unbalanced panel of 199 banks headquartered in 27 European countries across 22 points in time.[20] These data distinguish holdings of sovereign bonds of the governments of 30 European countries.[21] This is the only dataset in which a bank-level breakdown of sovereign debt portfolios can be systematically traced over time.[22]

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[19] The European banking industry went through a major consolidation during our sample period (Boer and Portilla, 2020). Hence, when banks in our sample merge, consolidate with a different parent bank, or go bankrupt, they drop from the sample, and new banks are added. We treat an entity as unchanged (even if its official name may change) unless it is acquired by another main entity or merges, creating an independent third entity. The exact definition of such transitions over time is not crucial for our identification strategy, however, because time variation becomes irrelevant when comparing parent banks within the same home country at the same point in time.

[20] Countries are Austria, Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden and the United Kingdom.

[21] Most disclosures provide the full country breakdown of each bank's sovereign debt portfolio for up to 200 countries. In order to establish consistency across disclosures, only the exposures to 30 European countries are included in the sample. These are Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom. Another reason for restricting target countries is that our main independent variable, cultural trust bias, is derived from Eurobarometer surveys and is only available across 15 of these European countries.

[22] An earlier version of this dataset (up to year 2015) is used in Saka (2020). Similar information can be found in the proprietary data set at the European Central Bank (see Ongena, Popov, and Van Horen, 2019). However, compared to EBA data, ECB cover banks from a smaller subset of countries (only for Eurozone) and provide only a broad classification of countries represented in sovereign debt portfolios (that is, domestic vs. foreign) instead of full country-breakdowns. Since our identification strategy builds on variation across foreign exposures, the EBA dataset is ideal for our setting.

We merge these bank-level data with country-level surveys of bilateral trust from Eurobarometer. This restricts the banks' home and target observations to the 15 European countries covered by the latter.[23] This matching results in an unbalanced sample of 159 banks whose debt portfolios can be observed over 22 different year-quarters. For the bank-level treatment, the sample further reduces to 108 banks, for which we can observe European branch networks on SNL Financial. A full list of these banks alongside the dates on which their sovereign portfolio information is available is in **Online Appendix E**. Bilateral trust measures between home and target countries can be found in **Appendix Tables A.5** and **A.6**.

For three reasons, we focus on a binary outcome variable indicating whether or not a bank has *any* positive exposure to a sovereign at a point in time.[24] First, because of the consolidated nature of EBA disclosures, we cannot distinguish between bonds purchased at headquarters and at subsidiaries. We therefore consider the extensive margin of sovereign exposures, since strategic decisions such as whether or not a bank should invest in a country are taken at bank headquarters. Second, there is some heterogeneity in sovereign debt valuation methods across disclosures, and some flexibility at the bank level in categorizing sovereign exposures as residing on the trading versus banking books, which in turn affects reported values.[25] Such flexibility could lead to self-reporting biases (Kaplow and Shavell 1994).[26] Third, since we do not observe currency denomination, exchange rate fluctuations can introduce variation in

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[23] These are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and United Kingdom. See **Appendix Table A.5**.

[24] As a robustness check, we also consider the intensive margin, employing the log of the nominal values (in million Euros) of sovereign exposures reported by banks, and obtain qualitatively similar results.

[25] For instance, direct sovereign exposures reported in the 2021 EU-wide transparency exercise contain the following four categories, each with a different accounting framework: financial assets held for trading, financial assets designated at fair value through profit or loss, financial assets at fair value through other comprehensive income, and financial assets at amortised cost.

[26] This could occur, for example, if more trusting banks strategically underreport their exposures to risky sovereigns during sovereign debt crises.

reported sovereign exposures in different currencies even in the absence of active investment decisions.

We give further details and describe the construction of other variables and data sources in **Appendix A**. Summary statistics are in **Appendix Table A.2**. In the sample with country-level treatment, the unconditional probability of exposure to a target country is 56%. Compared to a counterfactual with no frictions and full diversification in sovereign debt markets (unconditional mean = 1), this implies a diversification gap of 44%.[27] The corresponding gap for the bank-level sample is 42%, meaning that 42% percent of the time a bank has no exposure to the sovereign debt of a target country. These gaps are consistent with the idea that sovereign debt market is far from frictionless. There is room, in other words, for factors such as trust to explain variations in banks' sovereign debt portfolios.

4. Empirical Model

For motivation, we start by estimating a specification using country-level variation in bilateral trust:

$$\text{Sovereign Exposure}_{b,h,c,t} = \beta_1 \text{Country-level Trust Bias}_{hc} + \beta_2 X_{hc} + \beta_3 \gamma_{bt} + \beta_4 \mu_{ct} + \varepsilon_{bhct} \quad (1)$$

where *Sovereign Exposure*$_{bhct}$ is a dummy variable for whether or not bank b of home country h has any positive exposure to target country c at time t.[28] We estimate linear probability

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[27] That is, diversification gap can be considered as the difference between the case of full diversification and reality $(1 - 0.56 = 0.44)$. A simple asset pricing model with no frictions, such as Capital Asset Pricing Model (CAPM), would predict that the share of a sovereign exposure in each bank's debt portfolio should be proportional to the share of that sovereign's total debt in the sovereign debt market (Sharpe, 1964). By implication, this would require each bank to have at least some positive exposure to each sovereign in our sample, thus implying an unconditional probability of one.

[28] We construct the outcome variable using the "Gross Direct Long Exposures" definition reported across all EBA disclosures.

models, thereby focusing on headquarter-led entry/exit decisions in consolidated bank portfolios as well as minimizing potential measurement error in the self-reported exposure data.[29]

We define country-level bilateral trust as the share of respondents in home country h expressing "a lot of trust" in target country c.[30] We adjust these self-reported measures for country fixed effects, since some nationalities may be universally regarded as more trustworthy than others, and because respondents of some nationalities may universally trust more or less than others. In implementing this adjustment – in moving from country-level trust to *Country-level Trust Bias$_{hc}$* (the variable that appears in eq. 1) – we follow Guiso et al. (2009), Bloom et al. (2012) and Pursiainen (2021), running a gravity regression of bilateral trust for country pairs:

$$\text{Country-level Bilateral Trust}_{h,\,c} = \alpha_1\,\theta_h + \alpha_2\,\vartheta_c + \epsilon_{hc} \tag{2}$$

Residuals from this regression, after controlling for home country (θ_h) and target country (ϑ_c) fixed effects, capture the relative trust bias of home country h in target country c ($\epsilon_{hc} =$ *Country-level Trust Bias$_{hc}$*). The resulting measure is illustrated in **Appendix Table A.6**.

Our identification strategy can be visualised as in **Appendix Figure A.1**. Since we have multiple observations for each home and target country, we can include fixed effects to remove potential time-varying variation in these dimensions. However, because each bank's treatment status is determined by the pair-specific trust relationship between their home and target countries, we parametrically control for other confounding variations in this dimension.

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[29] This also helps with interpretation of our coefficients as marginal probabilities.

[30] The specific question in past editions of Eurobarometer is: "I would like to ask you a question about how much trust you have in people from various countries. For each, please tell me whether you have a lot of trust, some trust, not very much trust, or no trust at all." This question was included in various survey waves from 1970s to 1996. Following Pursainen (2021), we use the most recent survey in order to derive a time-invariant measure of cultural trust bias.

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The country-pair controls in *Equation (1)* (X_{hc}) include two sets of variables. Directional variables are *Bank Branches*$_{hc}$ which measures the total number of bank branches in target country c belonging to a parent bank from home country h;[31] *Bank Mergers*$_{hc}$ which is the total number of bank mergers between 1985 and 2008 in which a bank in home country h acquired a bank in target country c; and *Media Coverage*$_{hc}$ which records the frequency with which each target country or its citizens are mentioned in home country news headlines, divided by the total number of times the target country or its citizens are mentioned in any news headline in the sample. Non-directional controls are *Common Language*$_{hc}$ which takes the value of 1 if at least 9% of the population in both countries speaks the same language and 0 otherwise;[32] *Colonial Relationship*$_{hc}$, a dummy variable picking up pairs of countries in a colonial relationship at any time in the past; *Distance*$_{hc}$ which is log distance in kilometers between the capital cities of countries h and c; *Common Border*$_{hc}$ which is a dummy for pairs of countries sharing a common border; and *Common Legal Origin*$_{hc}$ which is a dummy for shared legal origins across countries.[33]

We include fixed effects in *Equation (1)* at the bank * time (γ_{bt}) and target-country * time (μ_{ct}) levels.[34] The former control for time-varying bank-level factors that influence all target country exposures of a bank at any point in time. If a bank shifts away from sovereign investments because it can lend more lucratively to corporates, for example, this will not affect our estimates so long as the shift is homogenous across sovereigns. The latter control for time-

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[31] Unfortunately, branch information cannot be derived historically, since SNL Financial only provides the most recent data available (as of February 2016).

[32] The threshold of 9% (imposed by Mayer and Zignago, 2011) is arbitrary; but we also experimented with an alternative 20% threshold without leading to a qualitative change in our results. We keep the former definition, since it is more likely to pick up the latent lingual relationships across countries.

[33] Construction of these variables and data sources are detailed in **Appendix A** and summary statistics are provided in **Appendix Table A.2**.

[34] Since banks in our sample never change their home countries, it is unnecessary to include a third set of fixed-effects at home-country * time level since such coarse variation is already absorbed by bank * time fixed-effects.

varying target-country-level factors affecting lending by all banks to a country at a point in time. If a country enters a crisis and its sovereign debt becomes riskier, for example, this will not affect our estimates if all banks change their behaviour vis-à-vis the newly risky country similarly. Our coefficient of interest (β_1) will not then be driven by overall bank or target-country characteristics.

Following this motivation, we estimate a bank-level specification:

$$\text{Sovereign Exposure}_{b,h,c,t} = \beta_1 \text{Bank-level Trust Bias}_{bc} + \beta_2 \text{Bank Branches}_{bc} + \beta_3 \gamma_{bt} + \quad (3)$$
$$\beta_4 \mu_{ct} + \beta_4 \lambda_{hc} + \varepsilon_{bhct}$$

where *Bank-level Trust Bias$_{bc}$* is constructed taking a weighted average of *Country-level Trust Bias* for each bank-target-country pair (*b, c*), where the weights are the share of host-country (*i*) branches in the branch network of the multinational bank:[35]

$$\text{Bank-level Trust Bias}_{b,c} = \sum_{i=1}^{n} \left(\text{Weight}_{b,i} \; x \; \text{C. L. Trust Bias}_{i,c} \right) \qquad (4)$$

Our identification strategy here can be visualised as in **Appendix Figure A.2**. We benefit from the variation across banks (i.e., HSBC vs. RBS) headquartered within the same home country (i.e., UK) facing the same target country (i.e., Austria) at the same point in time because these

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[35] For instance, if a bank has 50% of its branches in country A and 50% of its branches in country B, then its trust bias towards country C is the simple average of trust biases in countries A and B toward country C. Recall that, in line with the notion of relatively permanent cultural stereotypes, this measure is time-invariant and constructed by using a single snapshot of bank branch networks for each bank. Hence we do not have time variation in bank-level trust. That said, changes in branch networks tend to be very gradual. In addition, previous literature (e.g. Guiso et al. 2006) has emphasized the long-term stability of cultural stereotypes and used time-invariant measures to capture them (again see e.g. Guiso et al., 2009; Bloom et al., 2012; Bottazzi et al., 2016; Pursiainen, 2021).

multinational banks have subsidiaries in different countries (i.e., France and Ireland) and because residents of those host countries have different perceptions of the same target country.[36] Hence, including country-pair fixed effects (λ_{hc}) renders redundant country-level controls in *Equation (1)*. Saturating our specification further with home-country * target-country * time fixed effects (λ_{hct}) absorbs all types of time-varying country-level variation in our outcome variable.

We also control at the bank-target-country level for the number of branches each bank has in a target country (*Bank Branches$_{bc}$*). This separates out the information channel (and, more broadly, direct financial linkages between banks and sovereigns), as in Saka (2020). In additional analyses, we drop target countries of potential investment in which the compared banks have branches (i.e., UK, France and Ireland in **Figure A.2**) and control for indirect relationships between banks and target countries that may be sustained through host countries (e.g., HSBC -compared to RBS- being financially closer to Austria because France is better-linked with Austria than is Ireland).

We cluster standard errors by bank, which admits the possibility that the error term is correlated across target countries and time. Double clustering at country-pair and time levels or double clustering at country-pair and bank levels do not change the results.

5. Results using Country-Level Measures of Trust

Table 1 reports estimates of *Equation (1)*. The dependent variable is a binary variable for whether or not a bank has exposure to a target country at a point in time. Column 1 reports estimates with *bank * time* and *target-country * time* fixed effects but no additional country-level controls. Columns 2-9 add country-level controls in pairwise fashion to determine if any of these singlehandedly explains the effect of trust bias on sovereign exposures. Column 10 includes all control variables.

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[36] Domestic banks (i.e., Lloyds), on the other hand, do not add to our identifying variation as their treatment status only depends on the variation between home and target countries.

Column 1 shows a positive, statistically significant relationship between the trust bias of a bank toward a target country and the bank's probability of lending to the government of that country. Columns 2-9 confirm that the result is robust to controls. The effect is not obviously related to informational linkages or the geographical/historical/legal distance between countries, in other words.[37] Although point estimates shrink as controls are added, they remain uniformly significant at the 99 percent confidence level.[38] Column 10 controls for all of these linkages and confirms that bank-level trust still has a positive impact on banks' sovereign exposures.

It is still possible that omitted county-pair characteristics are influential in driving both cultural trust bias and sovereign exposures, creating a spurious statistical relationship between the two. We therefore follow the method of Oster (2019) to shed light on the importance of unobservables in generating the coefficients of interest in **Table 1**. **Appendix Table B.2** presents the Oster bounds. *Rmax upper bound* is defined as 1.3 times the R-squared in the specification that controls for all observables in **Table 1,** Column 10. The bottom row presents Oster's delta, which indicates the selection on unobservables relative to observables needed to fully explain the results by omitted variable bias. The delta value greater than 1 is reassuring: given the wide range of controls included in the models, it is implausible that unobserved factors are at least as important as the observables included in the specification with all controls.

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[37] **Appendix Table B.1** shows that, when estimated as a stand-alone predictor, each of these control variables are significant in predicting the probability of bank sovereign exposure in expected directions.

[38] It makes sense that the coefficient of interest shrinks as we add country-level controls. As Guiso et al. (2009) discuss, some of these control variables may themselves influence levels of trust between countries, or may be affected by such trust. For instance, it is not unreasonable to argue that physically distant countries may vest less trust in each other or countries that have a better relationship (i.e., trusting each other) are also more likely to cover each other's news in their media channels. High correlations reported in **Appendix Table A.4** between these variables and our measure of trust support these possibilities.

Home bias in general (French and Poterba 1991) and in the context of European sovereign debt markets specifically (Saka 2020) could still be an issue. Since survey respondents tend to trust residents of their own country more than others (see **Appendix Table A.5**), the estimated coefficients could be picking up home bias in investment occurring for other reasons.[39] In **Appendix Table B.3**, we therefore re-run the same regressions dropping the home-country exposures of each bank. The coefficients of interest are if anything even larger than in **Table 1**.

We also re-run these models substituting the log nominal value (in millions) of the banks' sovereign exposures for the binary indicator of any exposure. The results reported in **Table B.4** carry over when we use the full variation.[40]

6. Banks as Hierarchies

Why are the cultural biases of employees at its branches influential for a bank's investment strategy, whose broad parameters are set by board members and officers at bank headquarters?

An answer is that decisions at headquarters are shaped by information and personnel flows up the organizational hierarchy from branches to the C-suite and boardroom. As the Corporate Finance Institute (2021) writes, "Investment banks have a rigid and strict hierarchy that is comparable to a military organization, where each rank means a great deal…The typical hierarchy of investment banks is common to almost all investment banks, although non-US banks may have different job titles." A number of studies have examined the impact of these organizational hierarchies on banks' economic decision making. Liberti and Mian (2009) find that greater hierarchical and geographical distance between the information-

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[39] There is the possibility that trust itself might partially explain this home bias phenomenon; especially with regard to its cultural dimension (Grinblatt and Keloharju 2001).

[40] We additionally experiment with other ways of clustering standard errors. Our estimates remain significant at conventional levels in response to double clustering at country-pair and time levels (see **Appendix Table B.5**) or at country-pair and bank levels (see **Appendix Table B.6**).

collecting agent and loan-approving officer leads to less reliance on subjective information and more on objective information. Skrastins and Vig (2018), using information from a large bank in India, find that increased hierarchization of a branch reduces the volume of its credit extension, worsens loan performance, and leads to greater standardization of loan contracts. Motivation for these studies differs, but they have in common treating banks as hierarchies.

We follow this literature in modelling banks as hierarchies linking headquarters, where broad strategic decisions are made, with branches and subsidiaries, where information is gathered. **Appendix Figure A.3** provides a visual representation of the mechanisms we have in mind. Loan officers, portfolio managers, investment analysts and other subordinates in the countries in which the bank operates provide information to headquarters. Headquarters, which in practice means the CEO, the board and the investment committee, is then responsible for making broad strategic decisions about the contours of the investment portfolio. Those inputs are colored by the trust subordinates display toward countries of potential investment. Those inputs are aggregated and assessed by the bank's top officers, after which guidelines for the bank's investment decisions are established.

For our model to have explanatory power, the views and analyses of subordinates employed in foreign subsidiaries must be colored by the cultural stereotypes displayed by residents of that country. Employees of a foreign subsidiary are residents of the country in question and tend also to be citizens of that country. This motivates imputing to them the cultural attitudes of residents of that country. In practice, cultural stereotypes among the employees of foreign subsidiaries can influence decisions made at headquarters indirectly, through disembodied information flows transmitted via internal reports, meetings, phone calls and other types of communication. We cannot test for this mechanism formally, though, since we lack the data on such information flows for banks in our sample.

The cultural stereotypes of employees of foreign subsidiaries can also affect decisions at headquarters directly, through personnel flows that shape the composition of high-level managerial teams. Specifically, corporate culture in bank headquarters may be shaped by the tendency of banks to hire and promote internally, including across borders, for high-level

managerial posts.[41] Given this tendency toward internal promotion, the more branches and employees a bank has in a country, the more likely that this nationality will be represented at directorial/managerial levels at the bank's headquarters, other things equal.[42]

To provide empirical support for this mechanism, we gathered data from *BankFocus* on current and former directors and managers employed in the headquarters of the banks in our sample.[43] We then estimated the following specification at bank-target-country level:

$$\text{Nationality at HQ}_{b,h,c} = \beta_1 \text{Bank Branches}_{bc} + \beta_2 \gamma_b + \beta_3 \mu_c + \beta_4 \lambda_{hc} + \varepsilon_{bhct} \tag{5}$$

where Nationality at $\text{HQ}_{b,h,c}$ indicates whether the bank b headquartered in country h has (or has ever had) any directors or managers with the nationality of the target country c.

Results are in **Table 2**, where each panel uses a different measure of the bank branches in target countries. They all support our conjecture that managerial teams in multinational banks disproportionally come from countries where these banks have subsidiaries/branches. A one-

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[41] To cite one data point, UBS filled more than a third of its vacancies internally in 2015 (Butcher, 2016). Chen (2020) argues that this reliance on internal promotion is rational for banks because the existence of promotion incentives is associated with improved bank performance.

[42] As illustrated in **Appendix Figure A.3**, one can also imagine that the decision of whether or not to invest in the sovereign debt of a country is delegated to portfolio managers in different subsidiaries. Our discussions with individuals working in multinational banks indicates that this is not the case. The literature discusses cases where bank subsidiaries/branches are able to set their own deposit rates (Dlugosz 2017), hire their own tellers, award promotions to their own employees, pick bank hours, and design the process for selling new investment products to retail customers (Nagar 2002), but not to determine the composition of the bank's sovereign debt portfolio, especially when it comes to entry/exit decisions from a particular sovereign which is the focus of our paper.

[43] Although we can trace individuals' names across all banks included in our sample, we can see directors' and managers' nationalities only for a subset of banks, which is why the sample for this part of the analysis is smaller than that which follows.

standard deviation increase in log number of branches in a target country is associated with 8.4% rise in the probability of that country being represented among employees at headquarters. This association is sizable and corresponds to one third of the mean for the outcome variable.[44] In **Appendix Tables C.3** and **C.4**, we restrict the sample of employees only to senior managers (i.e., the executive board, board of directors and senior management). In **Appendix Table C.5** and **C.6**, we restrict the sample only to the first (i.e., main) nationalities of the employees.[45] And in **Appendix Table C.7** and **C.8**, we restrict it to the current managers (as of November 2022).

These results support the assumption that banks hire and promote from within, so that the national composition of its staff will affect the national composition of its board of directors, and that cultural stereotypes coloring information transmitted by subordinates will be received by directors with broadly similar cultural traits and biases.

7. Results using Bank-Level Measures of Trust

We turn now to our key results. **Table 3** reports estimates of *Equation (3)* using bank-level measures of bilateral trust. Column 1 reports results with the same fixed effects as in **Table 1** but without other country-level controls. Column 2 renders the controls redundant by adding a full set of *home-country * target-country* fixed effects. Columns 3-4 include controls for branch linkages between banks and target countries, both linear and non-linear. Column 5 saturates the model with *home-country * target-country * time* fixed-effects, non-parametrically controlling for variation at the home and target-country levels. This limits the comparison to banks headquartered in the same country with exposures to the same government at the same point in time. It thereby enables us to disentangle the effect of bank lending supply, our concern here, from demand-side factors in the countries to which banks lend.

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[44] In **Appendix Table C.1**, we restrict our sample only to foreign target countries; and in **Appendix Table C.2**, we double-cluster the standard errors by country-pair and bank. Our interpretations are supported in both cases.

[45] This is to make sure that our measure captures only local people from target countries, rather than expats who may have nationalities both from home and target countries.

Estimates of the effect of bank-specific trust bias in **Table 3** are positive and statistically significant across all specifications. The baseline estimate in Column 1 is slightly larger than that in **Table 1;** however elasticities (in response to one std. dev. change) are approximately equal (i.e., 12%) in both cases. Point estimates grow still larger as we add controls such as the number of bank branches, and when we include country-pair fixed effects to capture other unobservables affecting investment. The specification in Column 5 flexibly controls for all types of country-level unobservable factors by allowing them to vary over time.[46] A one standard deviation rise in bank-level trust bias now increases the probability of investing in a target country by 14 per cent. This is a large effect, accounting for one-third of the diversification gap (i.e., 42%) in banks' sovereign exposures.

In **Figure 1**, we plot the coefficients from separate estimates of *Equation (3)* over all sub-periods. The positive effect of bank-level trust bias, whether measured as binary (Panel A) or continuous (Panel B), is significant and stable over time despite the changes in bank coverage, consistent with the intuition that cultural biases are persistent.[47] These findings also rule out the concern that our estimates are driven by Eurozone crises in the early part of our period.

Appendix Table D.4 explores additional ways in which cultural stereotypes may affect banks' sovereign portfolios. First, we compute the number of countries to which a bank has positive

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[46] Note that including *home-country*target-country*time* fixed effects in our specification also shields our estimates against the possibility of home bias (i.e., banks generally holding higher sovereign debt of their home countries) even when such bias is heterogenous across countries and varying over time. Our estimates remain significant at conventional levels in response to double clustering at country-pair and time levels (see **Appendix Table D.1**) or at country-pair and bank levels (see **Appendix Table D.2**).

[47] The reduction in the size of the coefficients in the period 2016 to 2018 confirms that the loss of granularity (due to changing reporting requirements during this period) in banks' sovereign exposures makes it more difficult to identify the effect of trust. EBA directly used regulatory FINREP reports during this period, which led to some banks not disclosing the country-breakdown of their sovereign exposures at all or reducing the granularity in these exposures (i.e., categorizing exposures below a certain threshold under the name "other countries"). See the discussion in **Appendix A** for more details. In line with **Figure 1**, our point estimate in Column 5 of **Table 3** becomes approximately 12% larger when we drop FINREP disclosure dates from our sample (see **Appendix Table D.3**).

exposures and average it over time for each bank. This allows us to calculate a time-invariant measure of diversification and separate high- and low-diversification banks by choosing the median bank as a threshold. Column I shows that banks whose investment portfolios are widely diversified across countries are less likely to allow trust bias to affect their lending decisions. More widely diversified banks may be more sophisticated and have more sources of hard information. These findings are thus consistent with previous evidence that sophisticated investors are less likely to exhibit cultural biases (Grinblatt and Keloharju, 2001). Additionally, trust appears to be less important for target countries whose bonds are frequently present in bank portfolios (Column III), an example being Germany.[48] This is consistent with evidence that familiarity may mitigate the role of trust in financial decisions (Pursiainen, 2022).

Overall, this is evidence that the institutional culture of multinational banks, and specifically the trust of employees toward countries of potential investment, shapes investment decisions above and beyond the influence of other factors emphasized in earlier literature. It is consistent with the notion that branch networks and the national stereotypes associated with residents in their locations help to shape this collective institutional culture.

8. Threats to Identification and Robustness

Here we consider potential threats to identification and provide additional analyses and robustness checks.

8.1 Endogeneity of branching decisions

A concern for our analysis is the endogeneity of banks' decisions to establish or expand branch networks to other countries, since the bank-level drivers of such expansion might also drive the decision to invest in the sovereign bonds of a bank's home country. Greek banks may expand their German operations, for example, because of their doubts about the attractiveness

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[48] We split our sample into above/below median countries by calculating the average time-invariant frequency with which target countries are present in the portfolios of the banks in our sample.

of Greek government securities. In this case, we will observe that the low level of trust imputed to the German branch managers of the Greek bank branch is correlated with low levels of investment in Greek bonds, and infer that the stereotypes of German branch managers lead to low investment in Greek bonds. But in fact, the link lies in the low quality of Greek government bonds perceived by managers at the bank's Greek headquarters. We eliminate this concern by dropping all headquarter-country observations. The results, in **Appendix Table D.5,** remain intact when we compare bank exposures only to foreign target countries. The estimated effects of cultural bias are if anything larger than before.[49]

8.2 Bank bias versus regulator bias

Alternatively, we may be picking up the impact of cultural stereotypes of bank regulators as opposed to bank decision makers. Regulators may discourage banks under their purview from investing in countries in which they have little trust. Or they may discourage banks from investing in foreign government bonds as a way of encouraging them to invest in their own country's government bonds. Reassuringly for our interpretation, we obtain the same results, as shown in **Appendix Table D.6**, when we limit the sample to banks that are overseen by the EU's Single Supervisory Mechanism (SSM). The SSM, housed in the ECB in Frankfurt, currently supervises the largest 140 banks; the same supervisors apply the same rules and scrutiny to all of them.[50] Focusing on banks supervised by the SSM thus rules out the alternative hypothesis that we are picking up the cultural stereotypes of national bank supervisors as opposed to bankers themselves.

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[49] Note that this further shields our estimates from the influence of home bias (i.e., banks generally holding higher sovereign debt of their home countries). Although the specifications in **Table 3** control for home bias at the country level by including country-pair specific fixed effects, one can imagine different degrees of home bias across different banks headquartered in the same country.

[50] Since SSM started its operations in 2014, there has been limited time variation in terms of the number and identity of systemically significant banks that it supervises; our results in **Appendix Table D.6** take this time variation into account.

8.3 Trust vs. direct financial linkages

Including the number of bank branches does not affect the key results in **Table 3**, as noted.[51] Still, it is conceivable (despite our parametric controls) that a measure of bank-specific trust bias based on bank branches could be picking up not the effect of trust but, rather, financial linkages with the target country of potential investment resulting from branch presence. Relatedly, the same factors that convince a bank to expand its branch network to a country may lead it to purchase more sovereign debt of that country.

Appendix Table D.8 therefore excludes target countries where a bank has any branch presence, shutting down this channel.[52] These estimates compare banks headquartered in the same country with regard to the same target country, but only when none of the banks in question has branch presence in that target country. The estimated effect is larger, not smaller, than before when we limit the sample in this way. Insofar as a bank's branch expansion decision to a foreign country is *ex ante* orthogonal to its investment in the government bonds of third countries, the results point to a causal relationship between bank-level trust and that bank's sovereign exposures.

8.4 Trust vs. indirect financial/informational linkages

The fact that multinational banks operate in multiple countries may not only lead them to adopt the cultural traits of these countries but also help them to gain access (via their host

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[51] The fact that coefficients on this variable have the opposite sign from that suggested by the information-transmission mechanism could be due to the fact that they themselves are influenced by bank-specific trust. We explore this possibility in detail in **Appendix Table D.7**, where we estimate a specification at bank/target-country level to test for the effect of bank-level trust bias on bank branches. Indeed, trust seems to have positive, significant and robust association with branch expansion decisions of banks. Furthermore, the previously negative relationship between branches and sovereign exposures disappears when we use a continuous dependent variable instead of a binary indicator (see **Appendix Table D.10**).

[52] Note that this includes all types of bank presence in a country whether it is via subsidiaries or single branches.

countries) to the information or financial linkages about other target countries. Including country-pair-level fixed effects does not rule out the possibility that banks combine information from multiple countries and thus that bank branch networks play a role in aggregating cross-country information channels at the bank level.

In **Appendix Table D.9**, we construct a measure of these indirect linkages, using the three directional country-level variables employed as controls in the previous section: branches, mergers and media coverage. In addition, we include a non-directional proxy for political relationships between home and target countries.[53] We construct these proxies in the same way as for bank-level trust bias, using a weighted average of host-country characteristics to aggregate them at the bank-target-country level (à la *Equation (4)*).

When used as controls, none of these variables is statistically significant. Point estimates for the effect of trust are unchanged, confirming the presumption that it is not indirect information or other relationships that bank branches provide but rather the cultural stereotypes that matter for a multinational bank's sovereign portfolio.

8.5 Defining the dependent variable as log nominal sovereign exposures

Section 5 showed that, when using country-level aggregate data on bilateral trust, we obtained the same results when substituting the value of sovereign exposure for a binary indicator for the existence of any such exposure. **Appendix Table D.10** shows that the same is true when using our bank-specific measure of trust.

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[53] In line with recent political science literature, this constitutes a measure of political proximity based on the similarity of voting patterns of individual countries in the United Nations General Assembly. A priori, we did not expect the political relationships to matter a great deal in our setting, which focuses on a set of countries that already form a political grouping and monetary union. Political proximity among these countries is very high and clearly visible in **Appendix Table A.2** (the mean of the relevant variable is 0.93 -in a range between minus 1 to plus 1- and std. deviation is only 0.06). Nonetheless we include it as a relevant control in the following analysis for the sake of being transparent. See **Online Appendix A** for the construction and the data source of this variable.

8.6 Currency fluctuations

Currency fluctuations change the value of sovereign bond portfolios independent of active investment decisions. In addition, the presence or absence of exchange rate risk could affect the decision to invest, thus the extensive margin of banks' sovereign exposures. Eurozone-headquartered banks may be inclined to invest in the bonds of Eurozone governments while refusing to invest in the domestic currency bonds of other countries that are subject to exchange risk.

In **Appendix Table D.11,** we therefore include only banks headquartered in the Eurozone and target countries of investment that also are members of the Eurozone. Prior results carry over, whether we define the dependent variable as a binary (zero versus any positive exposure) or instead as the log of the nominal exposure amount (see **Appendix Table D.12**).

8.7 Weak sovereigns

Banks situated in the Eurozone's crisis countries – Greece, Italy, Ireland, Portugal and Spain – were subject to financial problems toward the beginning of our sample period. This could have affected banks' investment decisions, since investing in the bonds of their sovereigns was especially risky. We therefore exclude both banks headquartered there and their governments as targets for cross-border investment. There is again little change in our results (**Appendix Table D.13)**.

8.8 Different ways of measuring trust

We experiment with different ways of measuring trust. In **Appendix Table D.14**, we consider raw levels of bilateral trust measured as the proportion of people in a country with "high trust" toward another country (see **Appendix Table A.5**) instead of the residuals from a gravity regression (i.e., trust bias; see **Appendix Table A.6**). **Appendix Table D.15** substitutes the continuous cultural trust bias proxy employed in Guiso et al. (2009), which uses the full variation in survey respondents' answers, where levels of trust can range from 1 (i.e., "no trust

at all") to 4 (i.e., "lot of trust").[54] In **Appendix Table D.16**, we use the Guiso et al. (2009) proxy in levels without the computing the residuals as in *Equation (2)*. The results carry over.

8.9 Does trust matter more during sovereign debt crises?

It could be that the cross-border investment behaviour of multilateral banks was different in the first half of our sample (up through 2015), owing to the effects of the Eurozone sovereign debt crisis. In **Appendix Table D.17**, we focus on this earlier part of the sample. We identify countries and time periods most affected by the crisis using two proxies: bond spreads and CDS spreads. We create two binary indicators for when countries are affected by the crisis: when the yield spread for the target country is at least 400 basis points above Germany's, and when its CDS spread is at least 300 basis points (both following Brutti and Saure 2016). We find that bank-level trust bias matters more when a country experiences a sovereign debt crisis. This remains true even when we control for the interactions between bank branch connections and crisis indicators.

9. Conclusion

Individuals vary in the trust they place in residents of different countries. This variation has been shown, using aggregate country-level data, to affect a range of cross-border transactions. Here we consider how these cultural stereotypes or biases influence the investment decisions of multinational banks. Building on the geography of branch networks, we develop a bank-specific measure of these cultural stereotypes. This allows us to compare the sovereign exposures of banks headquartered in the same country, at the same point in time, with regard to the same target country, thus ruling out omitted factors at the country and country-pair level that may have confounded previous analyses.

Using a hand-collected dataset on the sovereign bond portfolios of these same multinational banks, we then show that the trust of residents of a bank's home country in residents of the country that is a potential target for investment has a positive, statistically significant and

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[54] See **Appendix Table A.2** for descriptive statistics of these alternative trust measures.

economically important effect on its cross-border sovereign exposures. This is the first evidence of the importance of cultural biases or stereotypes for bank lending to governments. It is also the first analysis of the acquisition and transmission of such biases via the operation of multinational bank branch networks.

We show further that well diversified, relatively sophisticated banks are less likely to have their sovereign lending affected by trust biases. In addition to making less use of soft information colored by trust, banks that are well diversified in terms of their branch networks and hence the nationality of their investment teams are less likely to suffer from such biases. For a bank with a well-diversified branch network, the overall bias transmitted by different national branches will tend to zero. Since trust bias can take on both positive and negative values, the pluses and minuses will tend to cancel out as more and more nationalities are represented in the decision-making processes of multinational banks.

Our findings have important implications for evaluations of the operation of financial markets. Because we are comparing banks from the same home country investing in the same target country, and because we are focusing on the sovereign debt markets, where lender-borrower interactions are not relational and default is rarely selective, we can conclude that trust differentials affecting portfolio composition lead to inefficient allocations. The changes in investment they produce have nothing to do with the fundamental risk of the target country and cause distortions in banks' portfolio management decisions.

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Figure 1: The Impact of Bank-level Trust Bias over Sub-Sample Periods.
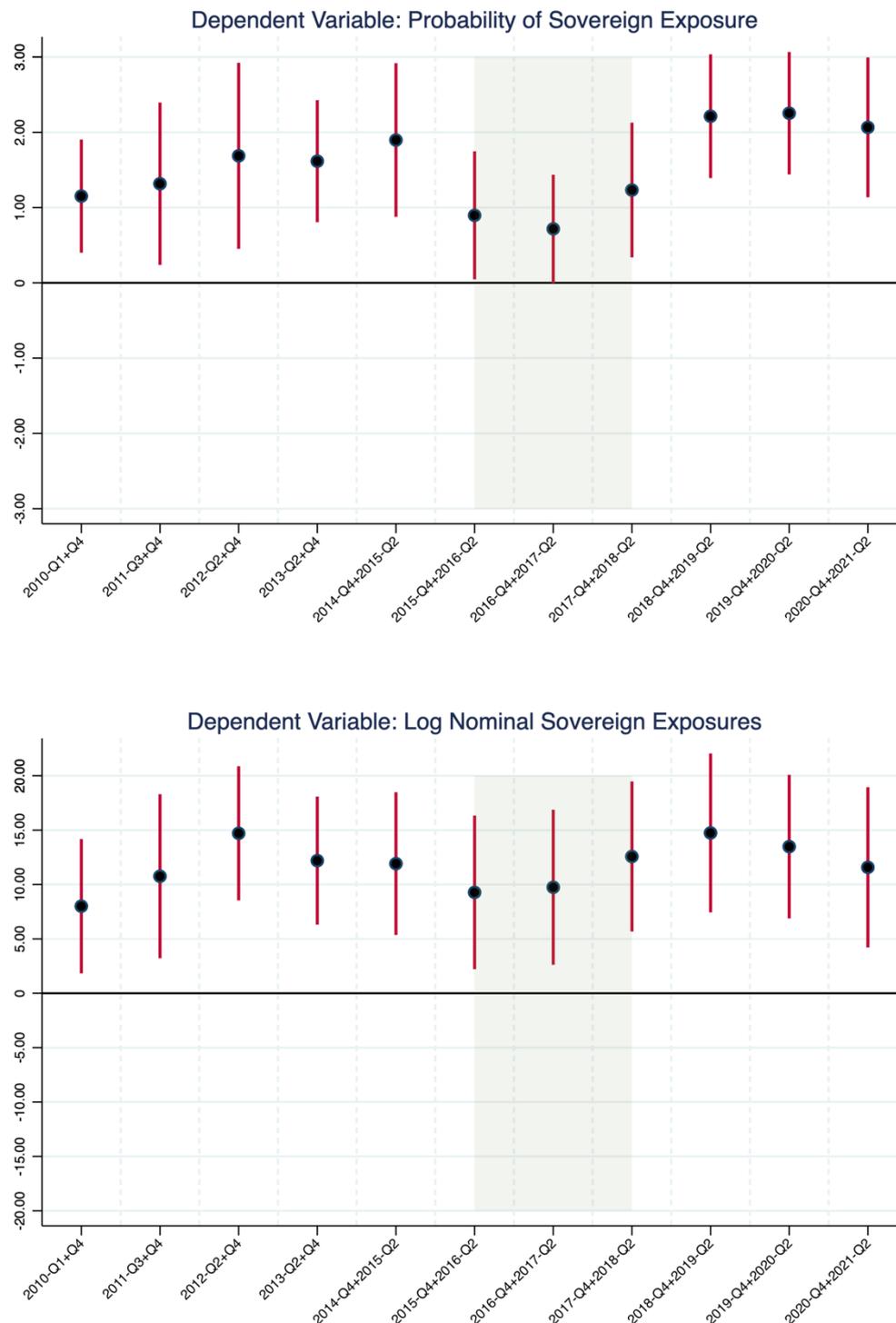
Note: This figure shows estimates for the coefficient of bank-level trust bias separately for 11 distinct sub-sample periods. Dependent variables are the probability of sovereign exposure (upper panel) and log nominal sovereign exposures (lower panel). Shaded areas indicate sub-periods during which EBA reported sovereign exposures based on regulatory FINREP data that restrict the level of granularity disclosed in banks' sovereign debt portfolios. The specification is Column 5 of Table 3. Only the estimated coefficient on *Bank-level Trust Bias* is plotted. Confidence intervals are at 90% significance level. Source: EBA, CEBS, Eurobarometer and SNL Financial.

Table 1: The Impact of Country-Level Trust Bias on Probability of Sovereign Exposure

Outcome ➜	(1) Sovereign Exposure	(2) Sovereign Exposure	(3) Sovereign Exposure	(4) Sovereign Exposure	(5) Sovereign Exposure	(6) Sovereign Exposure	(7) Sovereign Exposure	(8) Sovereign Exposure	(9) Sovereign Exposure	(10) Sovereign Exposure
Country-level Trust Bias	1.093*** [0.085]	1.163*** [0.101]	1.230*** [0.100]	0.560*** [0.118]	0.848*** [0.096]	0.913*** [0.110]	0.673*** [0.128]	0.901*** [0.075]	0.902*** [0.086]	0.429*** [0.131]
Country-level Bilateral Bank Branches		-0.003 [0.002]								-0.002 [0.003]
Country-level Bilateral Bank Mergers			-0.335*** [0.115]							-0.659*** [0.174]
Country-level Bilateral Media Coverage				0.558*** [0.119]						0.516*** [0.171]
Country-level Common Language					0.116*** [0.027]					0.038 [0.039]
Country-level Colonial Relationship						0.087** [0.036]				-0.200** [0.077]
Country-level Distance							-0.028*** [0.007]			-0.044*** [0.016]
Country-level Common Border								0.089*** [0.022]		0.011 [0.021]
Country-level Common Legal Origin									0.082*** [0.026]	0.050** [0.024]
Bank x Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Target Country x Time FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,409	27,409	27,409	27,409	27,409	27,409	27,409	27,409	27,409	27,409
Adjusted R^2	0.478	0.478	0.479	0.486	0.480	0.478	0.481	0.481	0.481	0.494

Notes: The table summarizes the results of *Equation (1)* estimated with varying sets of control variables over the full sample period 2010-Q1 to 2021-Q2. Dependent variable is *Sovereign Exposure*, defined as a dummy variable indicating any positive exposure of a bank toward a target country at a point in time reported in EBA and CEBS disclosures. *Country-level Trust Bias* is computed for each home-target country pair as the residuals from a gravity model of trust (see *Equation (2)*) in which trust is defined as the portion of individuals in home country who expresses "a lot of trust" towards target country, measured via Eurobarometer surveys. For the specific definitions and data sources of control variables, see **Appendix A**. Robust standard errors are clustered at the bank level and reported in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2: The Impact of Bank-level Branch Networks on Nationalities of Directors/Managers at Bank Headquarters

Outcome ➜	(1) Nationality at HQ	(2) Nationality at HQ	(3) Nationality at HQ	(4) Nationality at HQ	(5) Nationality at HQ
Bank Branches in Target Country	0.278*** [0.043]	0.281*** [0.042]	0.157*** [0.024]	0.156*** [0.024]	0.121** [0.053]
Adjusted R^2	*0.082*	*0.106*	*0.350*	*0.384*	*0.480*
Log of Bank Branches in Target Country	0.110*** [0.008]	0.111*** [0.008]	0.074*** [0.009]	0.071*** [0.010]	0.046*** [0.014]
Adjusted R^2	*0.205*	*0.222*	*0.408*	*0.432*	*0.493*
Share of Bank Branches in Target Country	1.105*** [0.087]	1.105*** [0.087]	0.590*** [0.096]	0.590*** [0.096]	0.682** [0.282]
Adjusted R^2	*0.129*	*0.155*	*0.360*	*0.394*	*0.483*
Bank FEs	No	Yes	No	Yes	Yes
Target Country FEs	No	No	Yes	Yes	No
Home Country x Target Country FEs	No	No	No	No	Yes
Observations	660	660	660	660	600

Notes: The table summarizes the results of *Equation (5)* estimated with varying sets of fixed effects over a subset of banks included in EBA and CEBS disclosures. Each panel represents a separate estimation. Dependent variable is *Nationality at HQ*, defined as a dummy variable indicating whether the nationality of a target country is (or has ever been) represented among the employees of the bank at headquarters, extracted from BankFocus. *Bank Branches* measures the number of bank branches (in thousands) that the bank owns in the target country. *Log of Bank Branches* measures the logarithmic number (x+1) of bank branches (in thousands) that the bank owns in the target country. *Share of Bank Branches* measures the bank branches that the bank owns in the target country divided by the total number of bank branches it owns across all target countries. All branch-related information is from SNL Financial. For the detailed construction of the data, see **Appendix A**. Robust standard errors are clustered at the bank level and reported in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: The Impact of Bank-level Trust Bias on Probability of Sovereign Exposure

Outcome ➜	(1) Sovereign Exposure	(2) Sovereign Exposure	(3) Sovereign Exposure	(4) Sovereign Exposure	(5) Sovereign Exposure
Bank-level Trust Bias	1.353*** [0.110]	1.757*** [0.329]	1.604*** [0.301]	1.630*** [0.300]	1.562*** [0.310]
Bank Branches in Target Country			-0.090*** [0.027]	-0.153*** [0.053]	-0.163*** [0.056]
Bank Branches in Target Country (squared)				0.014 [0.011]	0.016 [0.012]
Bank x Time FEs	Yes	Yes	Yes	Yes	Yes
Target Country x Time FEs	Yes	Yes	Yes	Yes	No
Home Country x Target Country FEs	No	Yes	Yes	Yes	No
Home Country x Target Country x Time FEs	No	No	No	No	Yes
Observations	23,760	23,760	23,760	23,760	21,615
Adjusted R^2	0.487	0.586	0.588	0.588	0.551

Notes: The table summarizes the results of *Equation (3)* estimated with varying sets of fixed effects and control variables over the full sample period 2010-Q1 to 2021-Q2. Dependent variable is *Sovereign Exposure*, defined as a dummy variable indicating any positive exposure of a bank toward a target country at a point in time reported in EBA and CEBS disclosures. *Bank-level Trust Bias* is computed for each bank-target country pair as the branch-weighted average (see *Equation (4)*) of the residuals from a gravity model of trust (see *Equation (2)*), where trust is defined as the portion of individuals in home country expressing "a lot of trust" towards target country, measured via Eurobarometer surveys. *Bank Branches* measures the number of bank branches (in thousands) that the bank owns in the target country. All branch-related information is from SNL Financial. For the detailed construction of the data, see **Appendix A**. Robust standard errors are clustered at the bank level and reported in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.