Financial Consequences of the Belt and Road Initiative

Mehmet I. Canayaz[*]

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Abstract

China's Belt and Road Initiative (BRI) aims to create economic corridors encompassing two-thirds of the world's population and 40% of global GDP. Using the inauguration of a railway tunnel between Europe and Asia as a quasi-natural experiment, I demonstrate that countries gaining access to BRI's freight routes issue significant amounts of high-yield debt. This debt is largely absorbed domestically, reallocating capital away from firms without translating into infrastructure investment. State-owned enterprises appear insulated from tightening financial conditions. I document mechanisms involving political alignment with China, exposure to trade-policy uncertainty, and topographic fit based on historical Orient Express routes.

Keywords— Belt and Road Initiative, Sovereign Debt, Leverage
JEL-Codes— F30, F40, H63, G15, G32

1 Introduction

The Belt and Road Initiative (BRI), commonly referred to as China's Marshall Plan or the New Silk Road, aspires to connect China with Western Asia, Europe, and Africa through a network of overland and maritime trade corridors. As of 2024, it encompasses 151 countries along its corridors, representing two-thirds of the world's population and 40% of the global GDP.[1] BRI access is projected to decrease freight times by 12%, while increasing trade and income by 9.7% and 3.4%, respectively.[2] These improvements necessitate financing for an unprecedented $8 trillion in investments, setting the BRI apart as the largest infrastructure project in history.[3] Surprisingly, prior research has overlooked the financial consequences of the BRI on countries situated along its corridors, many of which have inadequate infrastructure and are likely to require considerable financing relative to the size of their economies.

This paper is the first to investigate how gaining access to the BRI's trade corridors influences public and private financing. If BRI access leads to increased public debt that is absorbed locally, it may reduce the availability of private credit (Demirci et al., 2019; Huang et al., 2020). Conversely, if corridor nations secure loans or development aid (e.g., from China (Kaplan, 2021)), public borrowing needs might decrease, thereby freeing up resources for corporate debt issuance (Williams, 2018). Overall, the net impact of BRI access on public and corporate financing is nontrivial and warrants careful empirical investigation.

Untangling the causal effects of BRI access is however challenging due to the deliberate

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[1]See, e.g., https://on.cfr.org/3FnqdDf and https://bit.ly/48vMThc.

[2]The BRI has the potential to significantly lower China's reliance on ocean-trading routes such as the South China Sea, and allow China to relocate some of its production from coastal cities, where labor costs are growing rapidly, to more affordable inland locations that are geographically closer to Europe and the Middle East. See https://bit.ly/3A41mRe for more on BRI-driven efficiency gains.

[3]See, e.g., https://bit.ly/3K7afOR.

planning involved in establishing the BRI's trade routes. To navigate this, I use the inauguration of Marmaray, a subway service beneath the Bosporus Strait, positioning Eastern European countries on the BRI's main railway corridor along the Ancient Silk Road, as a quasi-natural experiment. My empirical strategy involves comparing European countries to the east and west of Budapest, Hungary, before and after Marmaray commenced operations. This comparison is useful because, post-Marmaray, countries east of Budapest gained, for the first time, direct access to an effective railway corridor with China, while those to the west already had access through the Trans-Siberian Railway.

The launch of Marmaray provides an optimal setting to estimate directional effects of BRI access. First, Marmaray was designed primarily to alleviate traffic congestion on the bridges over the Bosporus, without an intention to impact financing in Europe. Turkey's neighboring countries had little to no impact on its financing or construction and, in fact, they themselves were deficient in freight infrastructure.[4] Second, as Marmaray was announced nine years before the BRI, it is unlikely that its development was significantly influenced by the BRI.[5] Third, the construction timeline and opening date for Marmaray were primarily shaped by unprecedented archaeological discoveries and one of the largest urban excavations in history, rather than by economic motives or predictable events. Aligning financing decisions with Marmaray's completion therefore presented significant challenges.

I employ a difference-in-differences methodology to estimate the effects of BRI access on countries acquiring it after Marmaray's inauguration. My analysis reveals that post-BRI access in 2013, the public debt to GDP ratios in treated countries increased by 10.39%.

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[4]Marmaray was financed by the Japan International Cooperation Agency (JICA) and the European Investment Bank (EBI). Turkey's neighbors do not have a substantial presence in these institutions.

[5]The idea of constructing a subway tunnel beneath the Bosporus was first proposed in 1860. See https://bit.ly/3CiRZQA for more information.

Data sourced from Refinitiv indicates that sovereign debt issuance in these nations tripled to \$410 billion between 2013 and 2021, representing 51% of the region's GDP as of 2012. On the other hand, Chinese financial assistance—encompassing loans, credit, grants, and other forms—has seen a marginal increase of 0.18% relative to GDP in treated countries. This increase is statistically insignificant, underscoring that the financing from China pales in comparison to that sourced from sovereign debt markets. Concurrent with the sharp increase in public debt issuance, there is a notable decline of 14.18% in the ratio of total corporate loans and debt to GDP, coupled with a 12.77% reduction in publicly-traded firms' overall debt-to-assets ratio at the national level.

My findings indicate that the estimated effects of BRI access are unique to the treated countries, with no observable spillover effects on control or nearby countries. The trends observed in the control countries lend strong empirical support to the observable counterpart of the parallel trends assumption and remain largely unaffected by the Marmaray intervention. Furthermore, placebo tests on countries geographically close to the treatment group, but with access to the same railway corridor to China without the need for Marmaray, produce statistically and economically insignificant results. The consistency and validity of the main findings also persist after excluding the "PIIGS" countries (Portugal, Ireland, Italy, Greece, and Spain), which were embroiled in the European Sovereign Debt Crisis that started four years prior to the inauguration of Marmaray.

I investigate investor composition in European sovereign debt markets to shed light on by whom newly-issued public debt by treated countries is absorbed (Arslanalp and Tsuda, 2014a,b). My findings reveal a 12.55% increase in the share of domestic debt owned by local banks and non-bank financial institutions, while foreign entities, comprising foreign

banks, non-bank investors, and central banks, demonstrate negligible inclination towards the sovereign debt offerings of treated countries. This finding indicates that the European Central Bank's Asset Purchase Program (APP) is not the primary mechanism for absorbing sovereign debt issued by treated countries. Furthermore, I find that the yields on new public debt issued by treated countries rise by 1.24% to 1.33% post-BRI access. Meanwhile, yields on newly-issued corporate debt in these countries also rise by 1.28% to 1.71%. Together, these findings suggest that BRI-induced sovereign debt may heighten competitive pressures for local firms pursuing financing in domestic debt markets.

I complement the above analyses by exploring corporate financing decisions of firms from countries that secure BRI access with those from control countries, before and after the launch of Marmaray. My analysis reveals that firms that gain BRI access exhibit reductions of 5.08% in total debt, 2.38% in long-term debt, 2.67% in non-convertible debt, and 1.84% in short-term debt, post-BRI access. I observe substantial effect heterogeneity among firms. I show that large amounts of public borrowing affect state-owned enterprises (SOEs) differently than private firms. In particular, non-SOEs are disproportionately affected by tighter credit conditions in BRI countries with high public debt issuance, whereas SOEs remain largely unaffected. Reductions in corporate debt issuance are also stronger for larger firms, older firms, and firms with higher financial constraints. Furthermore, firms, predominantly those in countries with facile access to equity issuance or loans, demonstrate a preference for even less debt, taking advantage of alternative financing strategies. These results are robust to controlling for firm characteristics along with firm and industry-year fixed effects, capturing unobserved industry-year shocks, including shifts in the competitive landscape due to changing international trade routes.

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My findings reinforce the notion that gaining BRI access prompts governments to issue sovereign debt, predominantly absorbed within local markets, thereby reallocating capital away from firms, which typically deploy resources more efficiently than governments. Next, I examine what governments do with newly-raised funds. Specifically, I study whether the funds are funneled into relatively more productive channels such as R&D, manufacturing or education, or relatively less productive channels such as collective consumption. In doing so, I observe a 5.80% increase in total social payouts, predominantly due to a 2.52% rise in government employee wages and a 2.40% increase in collective consumption. In contrast, there is an absence of substantial improvement in fixed capital formation, implying a lack of significant investments in infrastructure. In particular, there is no prominent increase in road, air, and sea infrastructure investments, with only a 0.10% rise in railway investments by general governments and 0.80% rise in transportation expenditures by local governments.

To determine whether the above results are driven by BRI access rather than a confounding variable, and to provide mechanisms through which BRI access impacts financial outcomes at both country and firm levels, I employ four supplemental analytical strategies. In my first supplementary strategy, I examine the incremental impact of a country's political alignment with China through official membership in China's BRI program. My findings suggest that countries with both Marmaray access and active BRI membership display a notable 8.76% increase in their government debt to GDP ratio. Simultaneously, these countries experience significant reductions in corporate loans and debt to GDP by 11.75% and in total corporate debt to assets by 11.50%. Importantly, European countries that are affiliated with the BRI program but did not gain direct access to the BRI corridors made accessible by Marmaray exhibit no significant economic or statistical effects in these variables.

The second strategy utilizes time series data to examine effect heterogeneity stemming from China-induced uncertainty. My analysis shows that an increase in the China Trade Policy Uncertainty (TPU) index, as described by Davis, Liu, and Sheng (2019), and countries' BRI program membership significantly impact corporate financing decisions. A one standard deviation increase in China's TPU index, for example, leads to a 4.22% decrease in corporate debt issuance. Furthermore, China's TPU exhibits no significant effect on treated firms prior to Marmaray's inauguration, suggesting that the observed effects on corporate debt likely stem from Marmaray-induced risks associated with China, rather than from the broader dynamics of China's trade policy.

In my third supplementary strategy, I leverage topographic variation among European countries based on the pathways of the historic Orient Express (OE), an iconic train service from Paris to Istanbul that operated from 1883 to 1977. OE's routes offer a unique approach to pinpoint countries that are more likely to be influenced by accessing BRI's freight networks, particularly due to their less mountainous terrain—a key factor in the OE's route selection in the 1880s. These countries are more likely to prioritize freight movement via Marmaray towards the East compared to their neighbors with large mountainous regions.[6]

Incorporating this topographic variation enables me to utilize a triple-difference framework that facilitates comparisons among treated countries before and after BRI access, instead of solely relying on the trends in control countries. My findings reveal that treated countries along the OE routes experience significant changes in their financial landscapes post-BRI access: their public debt increases by 13.23% and corporate loans and debt de-

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[6]See https://bit.ly/3JEtuzE for a comparison of the mountainous regions between Bosnia and Greece, contrasted with the relatively flat areas extending from Croatia through Bulgaria to Turkey. The map of the Orient Express can be viewed at https://bit.ly/3JAr84U.

crease by 19.48%. This finding is robust to controlling for major historical events that could potentially introduce confounding—such as the Russo–Turkish War and the Treaty of Berlin—particularly if their long-term effects coincide with the timing of BRI access. The results are further supported by a tighter diff-in-diff framework focusing solely on the subsample of treated and control countries along the OE pathways. Moreover, in subsample tests where treated and control countries outside the OE network are compared, the BRI effects are much less pronounced, suggesting that the estimated effects in the paper are driven by BRI access, rather than by factors unrelated to freight.

The fourth strategy employs synthetic difference-in-differences (SDID) regressions based on Arkhangelsky, Athey, Hirshberg, Imbens, and Wager (2021). This approach involves creating synthetic controls using observable characteristics. While the main analyses in the paper offer robust evidence supporting the observable counterpart of the parallel trends assumption, thereby countering potential bias from Marmaray anticipation, the SDID approach further validates this by generating counterfactual units that satisfy the parallel trends assumption by construction. The SDID estimates show a 10.16% increase in government debt to GDP ratio, an 11.90% decrease in corporate loans and debt to GDP ratio, a 10.20% increase in domestic demand for public debt, a 1.21% rise in sovereign yields, and a 10.14% decrease in total corporate debt to the book value of assets ratio.

Collectively, the above findings provide tangible mechanisms for the significant and multifaceted influence of BRI access on the economic environment along the BRI corridor. For confounding factors to impact the paper's primary conclusions significantly, they would need to strongly correlate with the China TPU index, topographic factors and OE railway network design from the 1880s, as well as countries' BRI program membership patterns, while

also accounting for several other patterns documented in the paper. These include effect dynamics and heterogeneity in public and corporate debt issuance.

Previous analyses and media coverage of the BRI have often portrayed China's overseas financing as a distinctive form of "patient capital," characterizing it as a strategic asset for global commercial opportunities (Kaplan, 2021). In this paper, I also investigate China's loans and grants to BRI countries. However, my findings diverge from conventional wisdom as I reveal that BRI access leads to a substantial increase in public debt issuance, significantly surpassing the volume of financial assistance provided by China. This is the first study to highlight that nations located along the BRI's corridors, representing large portions of global GDP and population, assume considerable financial risks by accruing sizable BRI-induced debt. Interestingly, this debt fails to stimulate infrastructure investment; instead, it appears to be directed towards collective consumption, leading to a crowding-out effect on corporate debt issuance.

Another strand of literature this paper aligns with examines the corporate consequences of public debt issuance. Huang et al. (2020) discern that an increase in local public debt in China from 2006 to 2013 deterred private investments in respective Chinese cities by prompting banks to constrict credit availability to local businesses. While my analysis considers a comparable economic magnitude of debt issuance, it pertains to public debt issued outside China but linked to the BRI. Nonetheless, my findings also mirror a crowding-out narrative. Another related study by Demirci et al. (2019) examines how sovereign debt impacts corporate financing choices across 40 countries from 1990 to 2014. Their results indicate that domestically-financed government debt adversely affects corporate leverage. My results corroborate their findings, emphasizing that public debt issuance stifles corporate debt is-

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suance, with local investors predominantly absorbing the former. That said, my research question is not on the influence of public debt on corporate debt. I explore how BRI access impacts public and private debt.

This paper contributes to the literature on sovereign debt issuance and trade, as well. Papers on sovereign debt issuance argue that governments trade off costs of making timely debt payments against external and internal costs (Bulow and Rogoff, 1989; Gibson and Sundaresan, 2005; Serfaty, 2021). The external costs include distortions in country reputation (Eaton and Gersovitz (1981)), international trade (Bulow and Rogoff (1989), Gibson and Sundaresan (2005), and Rose (2005)) and asset seizures. Internal costs include the transmission of sovereign risk to the private sector (Lee, Naranjo, and Sirmans (2016)), distortion of bank balance sheets (Gennaioli, Martin, and Rossi (2014)) and firm activity (Almeida, Cunha, Ferreira, and Restrepo (2017a), and Williams (2018)). I extend this literature by presenting novel evidence on the BRI's consequences. Consistent with the literature, I observe that nations with increased access to trade routes tend to amass more debt. Additionally, I find an upswing in sovereign yields following BRI access, shedding light on BRI-induced risks not previously documented in the literature, as seen in works by Lee, Naranjo, and Sirmans (2016), Chernov, Schmid, and Schneider (2020), Duffie, Pedersen, and Singleton (2003), and Du, Pflueger, and Schreger (2020).[7]

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[7]This paper also contributes to the broader literature on the economics of mobility. Previous papers in this literature show that railroads decrease transportation costs (Donaldson (2018)), influence the distribution of economic activity (Jedwab and Moradi (2016)) and impact industrial and agricultural activity (Donaldson and Hornbeck (2016) and Baum-Snow et al. (2017)). Furthermore, highways impact trade (Duranton et al. (2014)), industrial output (Faber (2014)), and manufacturing activity (Ghani et al. (2016)). Hummels and Schaur (2013) show that each day in transit is equivalent to an ad valorem tariff of 0.6% to 2.1%, and Djankov et al. (2010) find that each day a product is delayed prior to being shipped reduces trade by more than 1%. Eaton and Kortum (2002) examine the role of trade in spreading the benefits of new technology. Autor et al. (2013) examine the effect of rising Chinese import competition on US local labor markets and find that rising imports cause higher unemployment, lower labor force participation, and reduced wages in local labor markets that house import-competing manufacturing industries. My findings complement findings of these

2   Hypothesis Development

This section formulates hypotheses regarding the potential impact of BRI access on financial outcomes. Section 2.1 explores the links between BRI access and public debt issuance. Section 2.2 delves into the relationship between BRI access and financing costs, while Section 2.3 investigates how BRI access could affect private debt issuance.

2.1   BRI Access and Public Debt Issuance

This subsection outlines two primary hypotheses concerning the effect of BRI access on public financing, setting them against the null hypothesis that BRI access has no observable effect. The first hypothesis posits that countries, upon BRI access, may prefer direct Chinese loans, bypassing local markets and potentially lowering their public debt issuance (Malik et al., 2021). An alternative hypothesis suggests that countries might opt for market loans over Chinese financial assistance, either from preference or due to constraints on China's capacity to fully finance corridor countries, consequently increasing public debt issuance (Serfaty, 2021). In summary, these hypotheses present opposing predictions regarding the influence of BRI access on public debt issuance.

A dimension of complexity is added by China's widely recognized strategy of seizing assets for unpaid loans (Kaplan, 2021), which may deter governments from excessive dependence on Chinese funds. Given the inherent unenforceability of public debt contracts, which allows for default with limited backlash (Roos, 2019), populist or corrupt governments may find

papers by highlighting effects of BRI access on financial outcomes at country and firm levels. Allen and Arkolakis (2014) find that that geographic location accounts for 24% of the observed spatial distribution of income. Redding and Sturm (2008) provide evidence on the causal importance of market access for economic development, and Glaeser and Mare (2001) study the relevance of geographic location on labor productivity and wages.

public debt issuance more appealing, especially if they intend to allocate funds toward social payouts instead of infrastructure projects, or to safeguard against potential asset seizures.

2.2 BRI Access and Financing Costs

If BRI access provides better trade opportunities and improved growth prospects (Frankel and Romer, 1999; Alcalá and Ciccone, 2004), it could reduce borrowing costs for corridor countries. Under this hypothesis, one could expect a reduction in primary market sovereign yields if corridor countries choose to issue public debt after BRI access. Alternatively, a second hypothesis suggests that higher dependence on China could introduce new sources of risk (Goodman, 2023). These could originate from supply chain vulnerabilities, political risks, or uncertainties inherent to the BRI itself. In summary, under this counter hypothesis, one might anticipate a surge in sovereign yields post BRI access. The net effect of BRI access on sovereign yields is therefore not immediately clear ex-ante.

Notably, the success of the BRI also hinges on the synergistic collaborations of countries along its pathway. While drawing a causal graph of BRI-related risks is challenging, it is plausible that such risks are interconnected with China's overall trade policy uncertainty. This suggests that, under the second hypothesis, sovereign debt markets could price China's trade policy uncertainty, potentially influencing corporate financing decisions, as well.

The hypotheses above operate under the assumption that BRI access will prompt an economically meaningful increase in public debt issuance. However, if BRI access leads to more Chinese financial assistance rather than an increase in public debt, as suggested by the first hypothesis in Section 2.1, then the role of sovereign yields could become less prominent. In this scenario, the specific contractual agreements forged between corridor

economies and China gain importance. These contracts might not only entail interest rates but also depend on the terms articulated in buyer's or seller's credit agreements, grants, debt forgiveness, among others. Furthermore, official enrollment in the BRI program could mediate the impact of BRI access on borrowing costs and other related arrangements.

2.3   BRI Access and Corporate Debt Issuance

Considering the substantial economic scale of the BRI, it is likely that the effects of gaining access to it extend beyond influencing sovereign financing, also impacting corporate financing strategies significantly. This subsection introduces two main hypotheses, each paralleling previously posited hypotheses in Section 2.1. The first hypothesis is a derivative of the initial proposition in Section 2.1, which predicts a potential increase in corporate debt issuance, attributable to alternative public financing avenues such as Chinese loans, grants, or credit lines following BRI access. With governments possibly retracting from local debt markets due to these alternative resources, more capital might remain accessible for firms (Williams, 2018). Consequently, this scenario implies a potential crowding-in effect of BRI access.

The second hypothesis emerges from the second proposition in Section 2.1, which predicts increased public debt issuance. If governments intensify borrowing within domestic markets, this could heighten competition for capital, constraining firms' access to finance in local markets (Demirci et al., 2019; Huang et al., 2020). This scenario also underscores the significance of alternative financing channels——e.g., ease of equity issuance, access to international debt markets, or availability of bank loans—— and relevant firm characteristics such as financial constraints, size, age, and government connections. These attributes could magnify the crowding-out effects of BRI access on firms.

This also leads to an important alternative narrative: treated countries may observe China engaging in infrastructure projects within their borders, primarily employing and paying Chinese firms for the execution. This dynamic could lead local firms to decrease debt issuance, attributed not just to the crowding-out effects of public debt but also to the lack of project opportunities due to the dominance of Chinese firms. If this scenario holds, we would not anticipate effect heterogeneity in corporate debt issuance. Specifically, if local firms' financing needs diminish because they aren't securing projects, there should not be a further reduction in debt issuance, when alternatives like equity issuance or new loan options become readily available. Ultimately, the prevailing effect of the two opposing hypotheses above remains uncertain, warranting empirical examination.

3   Background on the Marmaray Project

This section sheds light on the Marmaray project and explains its crucial role in this paper's identification strategy, particularly in determining treatment and control groups of countries in relation to BRI access. In 2004, to combat Istanbul's pronounced traffic problems, the Turkish government unveiled plans for a 3 km subway tunnel beneath the Bosporus Strait, aiming to link Europe and Asia with underground railways. Illustrated in Panel A of Figure 1 and Appendix Figure A1, the tunnel, positioned 60 meters deep and set 19 km away from the seismic fault line, merged the metro systems of the Asian and European sides of Istanbul under the name "Marmaray."

The urgency of the Marmaray project was starkly highlighted by a five-year study which found that Istanbul residents, on average, dedicated a staggering 3.5 years of their lives to

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traffic congestion (Gürsoy, 2017).[8] Despite its urgency, the endeavor turned into one of history's most significant urban excavations, leading to monumental archaeological findings that complicated its construction timeline.[9] Notably, these archaeological findings were difficult to locate beforehand. The tunnel's depth and station placements were determined by geological and seismic considerations, and not by potential archaeological sites, especially given that the existing railway service in the vicinity was entirely above ground at the time (Sakaeda (2005)). While the project was initially slated for completion in 2008, the unforeseen excavations pushed the inauguration of the tunnel to late October 2013.[10] This timing notably coincided with President Xi Jinping's announcement of the BRI during his visit to Kazakhstan.

Using hand-collected data from Turkish State Railways (TCDD), Appendix Figure A2 depicts the yearly railway passenger counts for both Asian and European sections of Istanbul's railway system from 2010 to 2020. Once operational, Marmaray swiftly grew in usage. Within a short span, its yearly patronage surged to 50 million, approximating the combined usage of the previously separate Asian and European railways in Istanbul prior to the 2013 renovations. Over the ensuing years, the inauguration of new subway stations eliminated the need for passengers to resort to express bus services to previously-opened subway stations. Moreover, the introduction of high-speed rail lines, clocking in at 250 km/h (or 155 mph), extended first to Ankara and subsequently to Sivas in Eastern Turkey, amplifying Marmaray's user base. By 2019, Marmaray served 125 million passengers, and even amid

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[8]This was most evident on Istanbul's bridges, frequently leading to gridlocks even at midnight. An in-depth view can be found in the TV interview at https://bit.ly/3b9e1KB, with further insights on Istanbul's traffic challenges available at https://bit.ly/3zGAmZl.

[9]For details on the archaeological discoveries, refer to Section B and https://bit.ly/3Q1cd4N. Information on construction delays can be found at https://bit.ly/3zkevpf and https://cnn.it/3PVSdAU.

[10]For more details, see https://bit.ly/3Jj0jBs.

the 2020 pandemic, it catered to over 75 million.

Marmaray's significance extends far beyond just linking the European and Asian parts of Istanbul. It serves as a crucial link, granting Eastern European nations swift access to a modern freight network that directly ties them to China, because it facilitates passenger transit during daytime hours and switches to freight transport at night or when there were no passenger services. Figure 1 illustrates how Marmaray's prime location offers countries to the east of Budapest, Hungary, and to the west of Istanbul, Turkey, immediate connectivity to the BRI's predominant trade corridor along the historic Silk Road.[11] This strategic link reduced the freight times between China and Eastern Europe from a lengthy month to just 12 days, whereas the transit times to Western Europe from China saw no significant change, averaging about 18 days.[12] Panel B of Figure 1 shows the Ancient Silk Road connecting China and Istanbul. A comparison of Panels A and B reveals the remarkable similarities between the New Silk Road and its ancient counterpart.

Exploiting the variation in geographic locations relative to Budapest and Istanbul, I classify Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Hungary, Kosovo, Macedonia, Moldova, Montenegro, Romania, Serbia, and Slovenia into a treatment group, with the remaining European nations constituting the control group. This allocation to treatment and control categories is graphically illustrated in Figure 2. As shown, treatment designation

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[11]As the BRI program further expanded in Asia, 2019 marked the year when the first Chinese freight train ventured through Marmaray en route to Europe. For more on Chinese freight trains, see https://bit.ly/3Q3a6xz and https://bit.ly/3bhsqnR. Due to insufficient investments in infrastructure, railway systems in Eastern Europe continue to lag at the forefront of transportation technology and efficiency. Refer to the European Commission's Orient/Eastern Mediterranean Freight lines: https://bit.ly/493dqmz. The provided link highlights countries with either subpar freight service (indicated by red solid lines compared to fast freight transport indicated by blue) or a total absence of requisite infrastructure for substantial freight volumes. Alternatively, the figure can also be seen here: https://bit.ly/3MbnUX9.

[12]See https://bit.ly/46jaErq, https://bit.ly/3BrkZoD, and https://bit.ly/3rDt72S.

is based on new BRI access induced by the Marmaray tunnel. Prior to Marmaray, countries east of Budapest lacked a continuous rail-freight route through Istanbul to China because there was no Bosporus crossing. Appendix Figure A4, for example, documents weaker freight networks and rail speeds in these countries. After the tunnel opened (Appendix Figure A1), treated countries became connected to the BRI network. In contrast, control countries already had overland corridors to China (Figure 2, Panel A) and thus saw little change in BRI access over the sample period. As noted above, neither treated nor control countries could directly influence the timing of Marmaray, which was primarily driven by Istanbul's traffic needs and the pace of archaeological work under the Bosporus. For these reasons, treatment assignment described in Figure 2 is unlikely to be correlated with country- or firm-level characteristics.

4   Empirical Strategy

In this section, I detail the paper's empirical strategy. In Section 4.1, I discuss the difference-in-differences framework I use to estimate the effects of BRI access on countries and their firms. In Appendix Section E, I describe the supplementary approach of using the SDID methodology to estimate treatment effects, leveraging synthetic counterfactuals that adhere to the parallel trends assumption by construction.

4.1 Difference-in-Differences Estimation

I estimate the average treatment effect of BRI access on treated countries by running a difference-in-differences regression with the below two-way fixed effects (TWFE) structure:

$$y_{i,t} = \beta \text{Treated}_i \times \text{Post}_t + \gamma X_{i,t-1} + \alpha_i + \delta_t + \epsilon_{i,t}, \tag{1}$$

where i denotes the country and t represents the year. The main dependent variables, denoted as $y_{i,t}$, encompass: *Government Debt to GDP*, which quantifies the annual total government debt of a country as a proportion of its GDP; *Corporate Loans and Debt to GDP*, representing the consolidated loan and debt stock of non-financial corporations, scaled by GDP; *Household Debt to GDP*, reflecting the annual household debt in a country, deflated by its GDP; *Chinese Financial Assistance to GDP*, representing total financial support that China extends to a country, deflated by GDP; and *Total Corporate Debt to Assets* and *Total Long-Term Corporate Debt to Assets*, depicting the respective ratios of total debt to book values held by non-financial corporations in a country for a given year.

The coefficient of interest in Equation (1) is β, associated with *Treated$_i$ × Post$_t$*. It quantifies the homogeneous average treatment effect of BRI access on treated countries. The variable *Treated$_i$* is assigned a value of one for Eastern European countries that gained access to BRI after the Marmaray's 2013 inauguration and zero for others (refer to Figure 2 for illustration). Conversely, *Post$_t$* takes a value of one for the years post-2013 and zero for the preceding years. $X_{i,t-1}$ encompasses control variables including *GDP Growth*, representing the percentage increase in GDP; *Unemployment Rate*, indicating the percentage of the labor force that is unemployed; and *Exports to GDP* and *Imports to GDP*, quantifying the

respective exports and imports as a percentage of GDP. α_i and δ_t signify country and year fixed effects respectively, while $\epsilon_{i,t}$ is the disturbance term.

I complement country-level analyses by conducting regressions on a firm-year panel, enabling the estimation of average treatment effects on firms in treated countries. In particular, I run regressions on

$$y_{j,t} = \tau \text{Treated}_j \times \text{Post}_t + \theta W_{j,t-1} + \gamma_j + \mu_{t,k} + \epsilon_{j,t}, \tag{2}$$

where j signifies the firm, k refers to Fama French 48 industry, and t denotes the year. The main firm-level dependent variables, denoted as $y_{j,t}$, encompass *Total Debt*, representing the ratio of a firm's total debt in year t to its book value of assets as of 2012; *Long-Term Debt*, indicating the ratio of long-term debt in year t to the book value of assets as of 2012; and *Non-Convertible Debt*, *Convertible Debt*, *Short-Term Debt*, and *Cash*, each reflecting their respective ratios in year t to the book value of assets as of 2012. Employing the book value of assets from 2012 as a deflator enables the analysis of corporate debt dynamics without the influence of fluctuations in the book value.

The coefficient of interest in Equation (2) is τ, which quantifies the average treatment effect of BRI access on firms headquartered in treated countries. The variable *Treated$_j$* is assigned a value of one for firms headquartered in Eastern European countries that gained access to BRI after the Marmaray's 2013 inauguration and zero for others, and *Post$_t$* takes a value of one for the years post-2013 and zero for the preceding years.

$W_{j,t-1}$ includes control variables such as *Exchange Rate Growth*, indicating the percent change in the year-end exchange rate to Euros for each firm's local currency; *Log(Book Value)*,

the logarithm of the book value of assets in Euros; *Tangibility* and *Intangibility*, the ratios of the book values of tangible and intangible assets to the total book value, respectively; *Log(Tobin's Q)*, the logarithm of Tobin's Q; *Collateral*, the ratio of collateral to book value; *Profitability*, the ratio of operating income before depreciation/amortization to the book value of assets; *Losses*, which is one if operating income to book value of assets is negative; and *Dividend Paying*, which is one if common dividends are positive. The terms γ_j and $\mu_{t,k}$ represent firm and industry $\times$ year fixed effects, respectively. These allow for the separation of treatment effects from the effects of time-invariant firm characteristics and simultaneous shocks occurring at the industry-year level, like the ones affecting industries due to changes in international trade exposures after the opening of Marmaray. The symbol $\epsilon_{j,t}$ denotes the error term.

In both specifications, I implement two-way clustering at the country and year levels to address potential serial correlation within countries and years. This approach acknowledges the possibility of unobserved correlations within a country or year, inducing correlated disturbances in Equations (1) and (2). Such correlations could stem from uncontrolled fluctuations in macroeconomic conditions, unobserved changes in government policies, or unobserved changes in BRI policies affecting multiple countries in a given year.

A possible concern in estimating β in Equation (1) or τ in Equation (2) is the potential breach of the unconfoundedness assumption, which can render the parallel trends assumption unreliable. How could unconfoundedness be violated? Marmaray, arguably, was not designed or financed to influence economic activity in either treated or control countries, and its completion was significantly influenced by unforeseeable archaeological discoveries. However, there may still be skepticism regarding whether certain European governments or firms could

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have anticipated the completion of Marmaray and its subsequent implications, prompting them to adjust their strategies accordingly.

The main concern revolves around government expectations regarding yields before and after the completion of Marmaray in the context of BRI access. Some governments might have issued debt before Marmaray's completion, expecting increased yields. On the other hand, others may have delayed issuance, anticipating reduced yields after Marmaray's opening. The challenge arises when both debt issuance and yields increase, making it difficult to justify the second alternative hypothesis.

I do the following to mitigate these concerns. First, I offer extensive empirical evidence validating the observable counterpart of the parallel trends assumption. For each estimated BRI effect in the paper, treated and control units display closely aligned pre-treatment trends. Second, I employ a more refined approach to estimating average treatment effects locally, bypassing the reliance on the parallel trends assumption. I utilize the latest methodologies in the literature to construct synthetic counterfactuals (Arkhangelsky et al., 2021). This method uses covariates to ensure that the trends of observed outcomes for treated units align with those of their synthetic counterparts. This not only guarantees adherence to parallel trends, but also validates the findings from previous specifications in a more robust manner. These analyses can be found in Section E of the Appendix. Third, I document covariate balance across a broad set of financial and economic variables, supporting comparability between treated and control units.

5   Summary Statistics

The empirical analyses in this paper leverage data aggregated from a variety of sources. The IMF's Global Debt Database (GDD) provides data on public and private debt, Thomson Reuters Refinitiv contains data on new sovereign and corporate bond issuances, and Thomson Reuters Worldscope delivers data on publicly-listed firms. Additionally, comprehensive data on firm ownership, infrastructure investments, public spending, and macroeconomic outcome variables are obtained from Osiris, Eurostat, the World Bank, and the OECD. Since these datasets cover different countries and years, I maximize the inclusivity by utilizing the broadest range of countries available from each source as of 2023.

[**Insert Table 1 here**]

Table 1 encapsulates essential information on the variables under consideration, with Panels A and B presenting summary statistics at the country level, and Panel C at the firm level, respectively. I provide detailed descriptions for these variables in Sections A.1, A.2, and A.3 of the Appendix. In Panel A, the mean (median) government debt to GDP ratio is 60.50% (53.23%) with a standard deviation of 34.81%. Corporate loans and debt to GDP ratio is, on average, 95.49% with a median of 91.68% and a standard deviation of 44.11%. Household debt to GDP ratio has a mean of 55.80%, a median of 51.79%, and a standard deviation of 30.91%. GDP growth exhibits a mean and median of 1.67% and 2.06%, respectively. The average unemployment rate is 8.77%, with a median of 7.25%. The exports to GDP ratio averages at 54.28% with a median of 45.65%, while the imports to GDP ratio is 56.28% (with a 52.14% median). Total corporate debt to assets averages at 28.67%, with a median of 26.60%. Long-term corporate debt to assets has a mean and median of 21.08% and

20.50%, respectively. The dollar-issue-amount-weighted (VW), average (EW), and median yields to maturity of newly issued domestic sovereign debt are 1.26%, 1.23%, and 1.24%, respectively. These values are calculated after replacing yields with zero for years without new public debt issuance, a factor controlled for in regressions using dummy variables.[13]

In Panel B, total social payouts, encompassing government employee wages, collective consumption expenditure, and capital transfers to GDP, average at 57.58% and have a median of 58.20%. In contrast, fixed capital formation, representing the net acquisitions of fixed capital, inventories, and valuables, averages at a modest 11.14% compared to consumption expenditure and has a median of 10.90%. Railway investments to GDP and road investments to GDP average at 0.24% and 0.69%, with medians of 0.22% and 0.54%, respectively. Air and sea investments to GDP are minimal, averaging at 0.04% each, with medians of 0.02% and 0.01%, respectively. Total infrastructure investments to GDP average at 1.02% with a median of 0.90%. Collectively, the data in Panel B highlight the low levels of investment in infrastructure across Europe in recent decades (Mayer et al., 2018).

In Panel C, the firm-level data illustrates various aspects of debt and cash holdings. Total debt has a mean value of 29.92% and a median value of 22.60%. Total long-term debt averages at 17.96% with a median of 13.28%. Non-convertible debt averages at 16.31%, with a median of 9.87%. Convertible debt is scarcely used, with a mean of 0.07% and a median of 0.00%. Short-term debt averages at 6.80%, with a median of 4.07%. Firms hold, on average, 15.40% of their assets in cash, with a median value of 9.27%.

Appendix Table A13 provides evidence for covariate balance before the BRI intervention. Of the 48 Table 1 variables, 45 control-group confidence intervals exclude zero and

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[13] I thank Refinitiv Trading & Banking Division for sending me data on the original yields.

33 treated-group intervals exclude zero, indicating that most mean variables are precisely estimated at the 5% level. Furthermore, confidence intervals intersect for 34 variables and do not intersect for 14, implying balance for the 34 intersecting cases. Among the 14 non-overlapping confidence intervals, eight belong to variables designated as controls, supporting their inclusion in the regression analysis, and the remaining variables –along with all 48 variables–show balance after demeaning following the empirical specifications in Equations (1) and (2).[14]

6 Main Findings

This section presents the main findings of the paper. In Section 6.1, the focus is on the consequences of BRI access, detailing its influence on Chinese financial assistance, public and private debt issuance, the types of investors absorbing sovereign debt supply, and the evolving patterns in yields. Section 6.2 delves into corporate debt financing strategies in the wake of BRI access. Section 6.3 examines public spending, with an emphasis on consumption and infrastructure expenditures. Section 6.4 investigates effect heterogeneity based on Orient Express railway network. Section 6.5 studies state ownership and firm resilience to credit tightening, Section 6.6 presents robustness tests, and Section 6.7 provides a discussion.

6.1 Government Debt Financing After BRI Access

Diving into the empirical findings, Table 2 showcases the effects of BRI access on both public and private sector debt issuance, employing a difference-in-differences approach as

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[14]Appendix Figure A7 illustrates covariate balance in public, private, and household debt, as well as GDP growth, unemployment rate, and imports/exports between treated countries and BRI program members.

specified in Equation (1). For *Government Debt to GDP*$_{i,t}$, the estimated treatment effect of 10.39% suggests that post-Marmaray, the treated countries experienced a sharp increase in government debt relative to GDP compared to the control group. The estimated effect is substantial, compared to the unconditional mean of 60.50% listed in Table 1.[15]

In contrast, Chinese financial assistance only increases by 0.18%, and this increase is statistically insignificant. In Appendix Figure A8, I present the dynamics of this average treatment effect, revealing a statistically significant 1.50% increase during the first year after the opening of Marmaray. However, the estimated effect of BRI access quickly converges to zero thereafter. The figure also provides evidence supporting the parallel trends assumption. In Appendix Table A5, I delve deeper into various components of Chinese financial assistance and find that credits to GDP increase by 0.14% (still statistically insignificant), Chinese loans to GDP increase by 0.04% (also statistically insignificant), and grants and other types of assistance show even smaller changes. Appendix Table A14 shows that the post-BRI effect on Chinese *grants* is positive and statistically significant among BRI member countries, whereas the corresponding effect is negligible for non-members. These results align with the second hypothesis in Section 2.1, which predicts an increase in public debt issuance, rather than the first hypothesis, which predicts an increase in continued Chinese assistance.

Turning to Table 2, *Corporate Loans and Debt to GDP*$_{i,t}$ shows a negative coefficient of -14.18%, suggesting a reduction in corporate debt issued by private and publicly-listed firms in the treated countries after BRI access. Similarly, for publicly listed firms in treated countries, *Total Corporate Debt to Assets*$_{i,t}$ and *Total Long-Term Corporate Debt to Assets*$_{i,t}$

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[15]Appendix Figure A11 shows that long-term debt issuance rises in treated countries, (ii) treated countries issue less investment-grade debt, and (iii) higher domestic market issuance in treated countries.

exhibit coefficients of -12.77% and -9.17%, respectively, both significant at the 1% level. These findings indicate a trend of reduced corporate debt post-BRI access, with the dependent variables controlling for book values of assets rather than GDP. Meanwhile, *Household Debt to GDP*$_{i,t}$ demonstrates an insignificant increase of 1.86%, suggesting no substantial impact of BRI on household debt levels in the treated countries.

These findings suggest a dichotomy in the effects of the BRI on debt issuance between the public and private sectors. After BRI access, there is a marked increase in government debt, contrasted by a decline in corporate debt, particularly long-term, in the treated countries, supporting the crowding-out narrative in Section 2.3. An alternative explanation centers around the economic turbulence that commenced in 2009 within the Eurozone, instigated by substantial public debt levels, particularly within the PIIGS countries (Portugal, Ireland, Italy, Greece, and Spain). These nations became focal points due to their diminishing economic performance and escalating financial instability, casting doubt on their capacity to repay debts and igniting fears of default. While the European debt crisis does not perfectly align with the post-treatment period examined in this paper, and the PIIGS countries are represented in both treatment and control groups, it is crucial to ascertain whether the findings are influenced by these countries and the broader debt crisis spanning from 2009 to the mid-2010s. For this reason, I conduct robustness tests in which I exclude the PIIGS nations from the analysis. Appendix Table A6 demonstrates that the core results of this paper remain robust after this exclusion.

Another important assessment of the study's robustness can be found in Appendix Table A1, where two placebo tests are conducted. The first test (Panel A in Table A1) compares Western European countries (the control group in Table 2) with placebo treatment units

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from the Middle East and Western Asia, both before and after the opening of Marmaray. The second placebo test (Panel B in Table A1) uses countries from the rest of Asia as placebo treatment units. It's important to note that these placebo treatment groups are already situated along the BRI corridor, irrespective of Marmaray's opening. In both cases, the estimated effects are both statistically and economically insignificant. These test results provide support for the conclusion that China access alone does not lead to changes in debt issuance in nearby countries when compared to the control units. Nonetheless, the effects become pronounced when Marmaray serves as a conduit for BRI access. Table A1 also indicates that BRI access due to Marmaray's inauguration does not manifest observable spillover effects on neighboring countries outside the control group.

Figure 3 provides substantial evidence for the observable counterpart of the parallel trends assumption, a critical precondition for the difference-in-differences estimation strategy employed in Table 2. It shows the time-specific treatment effects of BRI access on public and nonfinancial corporate debt to GDP ratios, revealing no discernible pre-trends in either variable. Post-treatment, public debt to GDP experiences a rapid and sustained increase, while corporate debt to GDP exhibits a nearly symmetrical decline. Importantly, the dashed lines in Figure 3 represent the treatment effect of BRI access on GDP growth, which, as illustrated, is neither economically nor statistically significant.

I present trends in the issuance of public and corporate debt separately for treated and control units in Figure 4.[16] As shown in this figure, the fitted public debt to GDP ratio for control units remains relatively stable at around 60% from the pre-treatment era until

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[16]For details on fitted trends, see `estat trendplots`: https://www.stata.com/manuals/tedidregresspostestimation.pdf.

2019. In contrast, the public debt to GDP ratio for treatment units follows a similar path to control units in the pre-treatment era but increases from 63% to approximately 74% by 2019. Notably, this gap between treatment and control units persists during the COVID era. Similarly, the corporate debt to GDP ratios for treated and control units closely mirror each other in the pre-treatment era. However, after treatment, the corporate debt to GDP ratio for control units remains relatively stable, whereas the ratio for treatment units experiences a significant decline. These findings provide further evidence in support of the observable counterpart of the parallel trends assumption and empirically highlight that the reported treatment effects are due to treatment effects on treated countries.

Figure A6 of the Appendix complements the above findings by highlighting the effect dynamics on countrywide corporate debt to assets ratios, specifically on *Total Corporate Debt to Assets$_{i,t}$* and *Total Long-Term Corporate Debt to Assets$_{i,t}$*. Once again, no pre-trends are observed in the pre-treatment era, and substantial and increasing reductions in debt issued by firms in treated countries are evident post BRI access. Furthermore, the negative treatment effects grow stronger alongside an increase in government debt issuance. This trend suggests that private debt issuance may be influenced or delayed in response to the rising public debt, as clearly illustrated in earlier Figure 3.

The findings so far show a clear rise in public debt and a corresponding decline in private debt, largely due to a decrease in corporate debt. To fully understand whether the rise in public debt is impacting private debt issuance—given potential competitive disadvantage of private firms against governments—more exploration into the economic mechanisms is needed. The subsequent analysis therefore focuses on identifying the entities that are absorbing public debt issuance in the treated countries.

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Table 3 reveals who absorbs the increased sovereign debt supply, showing a strong preference for domestic entities, especially domestic banks and non-bank financial institutions, as evidenced by a significant coefficient of 12.55% in column (1). The effect is substantial when compared to the unconditional mean of 40.79%, as seen in Table 1. This result is particularly striking when contrasted with the negligible interest from other investors, such as local and foreign central banks, and foreign investors, evidenced by the insignificant coefficients in columns (2) to (4). In particular, the shares of debt owned by the nation's central bank ($Domestic\ CB_{i,t}$), foreign banks and non-bank investors ($Foreign\ Investors_{i,t}$), and foreign central banks ($Foreign\ CB_{i,t}$) do not show significant changes after BRI access, with coefficients of -4.03%, 1.79%, and -5.69%, respectively. These findings suggest that BRI-driven sovereign debt is predominantly absorbed by domestic entities, limiting the exposure and subsequent impacts on foreign investors and central banks to the fiscal repercussions of such debt, while intensifying competition for local firms seeking to finance their operations through local debt markets.

Appendix Table A10 shows that Table 3 results are robust to further controlling for (i) capital controls on bonds, equity, money-market instruments, derivatives, credit operations, direct investment, and real estate (including nonresident-specific purchase/sale restrictions); and (ii) a macroprudential policy measure defined as the net count of tightenings minus easings across seventeen tools including: countercyclical capital buffer; capital conservation buffer; capital requirements; leverage ratio; loan-loss provisioning; limits on credit growth; borrower-based loan restrictions; limits on foreign-currency loans; loan-to-value limits; debt-service-to-income limits; tax measures on financial intermediation; liquidity requirements; loan-to-deposit ratio limits; limits on foreign-exchange positions; and reserve requirements.

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The first part of Figure 5 presents the linear trends in the proportion of government debt held by domestic investors around the time of Marmaray's opening, revealing that control units do not observe any major changes, while treatment units experience an increase in domestic demand for sovereign debt. The second part of the figure unveils the dynamic treatment effects of BRI access, showing an immediate and statistically significant positive effect which remains robust for eight years. This illustration not only reinforces the findings from Table 3, demonstrating a clear preference of domestic investors in treated countries for holding government-issued debt post-Marmaray, but also provides a visual support for the parallel trends between treated and control groups, thereby bolstering the credibility of Table 3's findings.

Panel C of Appendix Figure A11 shows that local-market issuance increases in treated countries—both in local currency and in Euros—while neither local-market foreign-currency issuance nor foreign-market issuance rises. In line with these results, Appendix Table A11 shows in detail that public debt ownership of domestic banks increases by 9.19% and domestic non-banks increases by 6.89%. Overall, these patterns complement the Table 3 evidence that domestic investors absorb BRI-related increases in public borrowing.

The final piece of evidence on public debt financing pertains to original yields, as illustrated in Table 4. Panel A of the table demonstrates an increase in original yields to maturity for newly-issued public debt following BRI access, with the estimated treatment effects in columns (1) to (3) being 1.33%, 1.24%, and 1.27% respectively. These findings suggest an increase in cost of debt for countries that gain BRI access, mirroring the escalated risk discerned by investors. Importantly, they are robust to controlling for various bond characteristics such as Macaulay Duration, Investment Grade, and Inflation Protection dummies,

along with macroeconomic outcomes.

Figure 6 begins by illustrating the fitted values for both treatment and control groups, yielding important insights. Firstly, it confirms the existence of highly parallel trends in the pre-treatment period. Secondly, it uncovers evidence of effect heterogeneity. The linear trends for treated units reveal a 50 basis points increase in yields immediately after the inauguration of Marmaray and the consequent escalation in public debt issuance in 2013. The magnitude of this effect experiences variations over time, possibly mirroring the dynamic nature of risks related to the BRI. The second part of the figure delineates the dynamic treatment effects with confidence intervals, thereby validating the parallel trends and underscoring the significance of the effects in the post-treatment period.

Panel B of Table 4 complements the above findings by examining the influence of BRI access on corporate original yields. As shown in columns 4–6 of Panel B, corporate original yields increase by 1.28% to 1.71% after BRI access. Comparing value-weighted, equally weighted, and median measures of original sovereign and corporate debt issuances, Panel B indicates that corporate yields rise slightly more than sovereign yields after BRI access. This pattern is consistent with the notion that corporate bond yields are often subject to sovereign "floors". Namely, sovereign credit risk forms a component of corporate credit risk, so risk compensation for corporate borrowers is at least as high as that for their sovereigns (Bevilaqua et al. (2020); Dittmar and Yuan (2008); Almeida et al. (2017b); Durbin and Ng (2005); Corsetti et al. (2014); Mendoza and Yue (2012)). For brevity, Appendix Figure A10 reports the dynamic treatment effects with confidence intervals, validating parallel trends and showing post-treatment effects in the range of 0.80%–2.00%.

In summary, this section unveils crucial insights into the financial adaptations occurring

in Eastern Europe in the wake of Marmaray's opening. There is a significant increase in public debt issuance for countries accessing BRI, contrasted with a significant decline in private debt financing, especially by non-financial firms, evidenced by reductions in country-level and long-term debt to asset ratios. A closer look at debt absorption shows that the influx in public debt is mainly absorbed domestically, particularly by non-bank investors and banks, who are compensated with higher yields to maturity.

6.2   Corporate Debt Financing After BRI Access

The preceding section has shed light on the implications of BRI access on country-level debt ratios. In this section, the focus narrows to explore the impact of BRI access on firm-level leverage, employing a difference-in-differences model as outlined in Equation (2). This approach facilitates the estimation of treatment effects at the firm level, ensuring the observed effects in columns (4) and (5) of Table 2 are not disproportionately driven by large firms. It also allows me to provide insights into how firms adapt to evolving financing conditions, such as rising yields, within their domestic landscapes.

Table 5 reveals significant insights into how the BRI influences corporate debt financing, showing a significant reduction in various debt categories for treated countries post-treatment. Specifically, total debt, long-term debt, non-convertible debt, and short-term debt see changes of -5.08%, -2.38%, -2.67%, and -1.84% respectively, all economically significant compared to the mean values reported in Table 1. Conversely, there is a strategic increase in cash holdings by 0.95%. This increase in cash reserves is indicative of firms taking precautionary measures to navigate the uncertainties and risks in the evolving financial and economic landscape. Figure 7 validates the parallel trends assumption related to Table 5 and

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illustrates the dynamic effects of BRI access on firm-level debt-to-assets ratios, specifically $Total\ Debt_{j,t}$ and $Non\text{-}Conv.\ Debt_{j,t}$. The figure depicts simultaneous reductions in these ratios in the post-treatment period. Overall, these findings highlight distortionary effects of government borrowing on firm borrowing (Akkoyun et al. (2023)).

Table A7 further shows that larger, older, and financially constrained firms cut debt issuance more after BRI access, when public debt issuance rises significantly. Across columns (1)–(3), the baseline BRI effect (coefficient on $Treated_i \times Post_t$) ranges from -1.96% to -3.34%. On top of this baseline, large firms reduce debt by an additional -6.62%. This is consistent with evidence that heavier sovereign issuance crowds out large corporate issuers that rely on public debt markets more (Houston and James, 1996; Denis and Mihov, 2003). Older firms cut debt further by 3.26% as well, which is in line with mature borrowers' reliance on crowded out public debt markets (Johnson, 1997; Cantillo and Wright, 2000). Furthermore, firms classified as financially constrained by the Whited–Wu index (Whited and Wu, 2006) also reduce debt issuance incrementally by 4.14%, consistent with disability to obtain external funds amplifies the distortions experienced by firms in public debt issuance.[17] Complementing these results, Appendix Table A8 shows that firms with better access to non-debt financing—such as those in high equity-capitalization markets or with abundant bank credit—substitute further away from bond financing (Faulkender and Petersen, 2006).

6.3 Public Spending for Infrastructure Investments and Social Payouts

Previous sections highlight a significant rise in public debt issuance coupled with a simultaneous decline in private debt issuance in treated countries following the inauguration of

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[17]The Whited–Wu index is a linear combination of firm characteristics, some of which (e.g., book value of assets) are included among our controls.

Marmaray. The significant increase in public debt issuance raises questions about the allocation and utilization of the newly-acquired capital by governments. In this section, I delve into the specifics of how this capital is being used by the governments involved. More precisely, I explore whether the newly raised funds are being channeled into consumption, such as the provision of public goods or salaries for government employees, or if they are being invested in more productive avenues such as R&D or education.

The results presented in Table 6 provide insights into the allocation of resources by governments. Panel A of the table reveals a 2.52% increase in Government Employee Wages to GDP and a 2.40% rise in Collective Consumption to GDP. Additionally, Capital Transfers to GDP experience an 0.92% increase and Total Social Payouts to GDP see a substantial 5.80% increase. However, there is no significant change observed in fixed capital formation to GDP, indicating that the newly raised capital is not being invested in capital formation.

Appendix Table A13 complements Table 6 by reporting government expenditures by function and the level of government. Several patterns stand out in Table A13. First, spending on *public order and safety* and *environmental protection* rises after BRI access for general governments. Second, within *economic affairs*, local-government *transport* outlays increase, while other categories show no clear change. Third, Panel B reports increases in *R&D within general public services* and in *secondary education* at the general-government level. These patterns indicate that categories plausibly linked to productivity—R&D and human capital—also expand, however modestly. The magnitudes of these estimated effects remain small relative to the contemporaneous rise in public debt issuance.[18]

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[18]Overall, local governments concentrate post-BRI increases in transport and environmental functions, while general government concentrates increases in public order and selected administrative and education items.

Turning the attention to Panel B of Table 6, my findings do not indicate any significant increase in investments in road, air, and sea infrastructure, either. There is a very modest increase in railway investments to GDP by 0.10 percent (in addition to rising local government expenditures on transportation shown in Appendix Table A13), suggesting that the majority of the newly raised capital is not being allocated to infrastructure development projects. In line with these findings, Appendix Figure A4 displays the rail freight corridors across Europe. It confirms that, as of 2024, Eastern Europe's freight infrastructure still lags significantly behind that of Western, Central, and Southern European regions.

Figure 8 shows the dynamic effects of BRI access on total social payouts. The initial segment of the figure presents a rapid and persistent increase in social payouts for treated countries, contrasted by a stable trend in control countries. The subsequent segment demonstrates the statistical significance of the differences in social payouts observed between treated and control countries. In conclusion, findings in this section suggest that the increase in public debt issuance is not primarily directed towards infrastructure investments.

6.4 Orient Express and Topographic Variation

This section utilizes topographic variation among European countries to further substantiate the underlying mechanisms of the paper. If the findings regarding crowding out are primarily attributed to BRI access rather than confounders, then countries better suited for freight logistics should predominantly explain the main findings. Such countries likely possess larger flat lands conducive to freight construction compared to their neighbors, who may have larger mountainous regions and are better suited for road, sea, or air transport.

The topographic variation I introduce derives from the Orient Express (OE), an iconic

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train service operating between Paris and Istanbul from 1883 to 1977. The routes of the OE provide a novel strategy to identify countries with less mountainous terrain, which was a critical consideration in the route selection of the 1880s.[19] Countries along the OE routes, therefore, emerge as more likely candidates to seek financing for freight infrastructure. These countries not only possess flatter areas conducive to the OE's operation but also demonstrate a need for better freight infrastructure after gaining BRI access (see, e.g., Figure A4).

Motivated by this observation, I employ a triple-difference framework that allows for comparisons among treated countries in the post-treatment period. To perform my triple-difference regressions, I add the interaction term $\text{Treated}_i \times \text{Post}_t \times \text{Orient Express}_i$ to Equation (1), where Orient Express_i is set to one for countries along the OE routes, as shown in Panel A of Figure A9. This triple interaction provides an estimate of the influence of BRI access on the public and private debt issuance of treated countries along the OE routes.[20]

I present my findings in Table 7. Columns 1 to 4 of the table indicate that BRI access increases debt issuance in treated countries along the OE by 12.85% to 13.31% across various specifications. In contrast, treated countries not on the OE routes, do not see similar increases in public debt issuance. Similarly, countries along the OE routes but with existing access to Chinese trade routes via the Trans-Siberian Railway network do not show significant changes in their debt issuance following the opening of Marmaray. These results remain robust after controlling for the Treaty of Berlin, which accounts for the potential influence of the Russo–Turkish War and its long-term effects on Balkan countries which may coincide with the timing of BRI access. The results are also robust after controlling for country and

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[19]See https://bit.ly/3WdUGNj on the construction of the Semmering Railway in the 19th century, the first mountain railway in Europe built with a standard gauge track. See also https://bit.ly/4aU6SXQ.

[20]For a comparison of mountainous regions between Bosnia and Greece, contrasted with the relatively flat areas from Croatia through Bulgaria to Turkey, see https://bit.ly/3JEtuzE.

year fixed effects, along with interactive fixed effects that control for yearly variations in treated and OE categories across various specifications. Columns 5-8 show a reduction in corporate loans and debt by 18.44% to 19.48% in treated countries along the OE post-BRI access. Again, treated countries outside the OE routes and OE countries in the control group show no significant changes in their private debt dynamics.

The above results further corroborate the mechanism, emphasizing that countries more likely to invest in freight networks due to topological and historical factors are the ones driving the observed effects of the study. In Appendix Table A9, I present difference-in-differences regression results based on tighter (i.e., subsample) tests for countries on the OE, off the OE, on the northern OE routes, and on the southern OE routes, as shown in Figure A9. These subsample analyses confirm that the estimated difference-in-differences findings are robust to excluding countries not on the OE routes. For instance, column 1 of the Table A9 shows an 11.98% increase in public debt (compared to the main table coefficient of 10.39% in Table 2) and a 13.04% reduction in corporate loans and debt (compared to the main table coefficient of -14.18% in Table 2). Conversely, running the difference-in-differences regressions on treated and control countries outside the OE network reveals no statistically and economically significant changes in these variables. Collectively, these findings provide additional evidence supporting the notion that the estimated effects of the paper are driven by BRI access rather than endogeneity or other factors unrelated to freight.

6.5 State Ownership and Firm Resilience to Credit Tightening

In this section, I examine whether the estimated BRI effects vary by firm ownership. State-owned enterprises (SOEs) are often insulated from credit constraints, implying that public

borrowing may affect SOEs differently than private firms.[21] To test this, I revisit specification (2) and add two interaction terms capturing SOEs and countries with high levels of public debt, allowing me to examine how corporate borrowing responds to public debt issuance across firm ownership types. If SOEs are indeed insulated from credit tightening, their borrowing should remain relatively stable even in high public debt issuance years, whereas non-SOEs are expected to reduce borrowing in such environments.

Table 8 reports the results. The first column of Table 8 shows that, before accounting for public debt issuance, non-SOEs in treated countries borrow at levels similar to SOEs. SOEs experience a 5.32% reduction in total debt issuance, and the statistically insignificant interaction $\text{Treated}j \times \text{Post}_t \times \text{Non-SOE}_j$ confirms that corporate debt issuance does not systematically differ by government ownership.

The second column reports how public debt issuance affects SOEs and non-SOEs in countries with and without BRI access. In low public issuance countries, BRI treatment effects are -9.10% for SOEs and -7.54% for non-SOEs, indicating only minor differences due to government ownership. Instead, the results point to broader effects of BRI-induced uncertainty or alternative mechanisms. In high public issuance countries, SOEs see a 2.93% increase in corporate debt following BRI access, while non-SOEs experience a 3.54% decrease.[22] The quadruple interaction term, $\text{Treated}_j \times \text{Post}_t \times \text{Non-SOE}_j \times \text{High Issuance}_{c,t}$, is -8.04% and is statistically and economically significant.[23] This coefficient estimates the additional reduction in corporate debt for non-SOEs in high public debt issuance countries

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[21]See Khwaja and Mian (2005), Sapienza (2004), Dinç (2005), Cong et al. (2019), Carvalho (2014), Bertay et al. (2015), and Poncet et al. (2010) on how government-owned firms are insulated from tight credit conditions.

[22]SOEs in high-issuance countries: $-9.10\% + 12.04\% = 2.93\%$. Non-SOEs in high-issuance countries: $-9.10\% + 1.56\% + 12.04\% - 8.04\% = -3.54\%$.

[23]The quadruple difference of $-8.04\% = (-3.54\% - 2.93\%) - (-7.54\% + 9.10\%)$.

following BRI access.

The third column reports results after including a comprehensive set of fixed effects. After including these, the quadruple interaction $\text{Treated}_j \times \text{Post}_t \times \text{Non-SOE}_j \times \text{High Issuance}_{c,t}$ remains statistically and economically significant at -13.68%. Overall, the above evidence indicates that SOEs are shielded from credit constraints in BRI-access countries with high public debt issuance.

6.6 Robustness Tests

I present additional robustness tests in Appendix Section F. In Section F.1, I show that BRI access effects are concentrated among official program members. Treated countries joining the BRI exhibit an 8.76% increase in public debt and an 11.75% decrease in corporate debt issuance. In Section F.2, I show that China trade policy uncertainty significantly affects corporate financing for BRI-connected firms. High China TPU reduces treated firms' debt issuance by 7.99%, with effects concentrated among official BRI members (-9.39%).

6.7 Discussion

This section links the main findings of the paper with the hypotheses formulated in Section 2. Section 2.1 proposed two hypotheses concerning the impact of BRI access on public debt issuance. The first hypothesis suggested that BRI access would reduce public debt, as countries could leverage Chinese financing. Conversely, the second hypothesis argued that countries would expand their debt issuance, driven by aspirations to transform their economies and upgrade infrastructure after obtaining BRI access. The evidence in Section 6.1 provides empirical support for the second hypothesis, demonstrating that countries with

BRI access have seen a statistically and economically significant rise in public debt issuance.

In Section 2.2, I presented two distinct hypotheses about how BRI access might affect public financing costs. The first anticipated that BRI access would lead to decreased financing costs, observable through reduced sovereign yields for countries using public debt markets, or through lower interest rates for those securing Chinese loans, particularly for official BRI members. The second hypothesis forecasted a surge in financing costs stemming from BRI-related risks. The findings outlined in Section 6.1 affirm the second hypothesis, indicating a rise in sovereign and corporate yields post-BRI access. Moreover, these findings suggest that domestic banks and non-bank investors demand higher yields to offset the increased BRI-related risks accompanying the surge in public debt following BRI access.

Section 2.3 posited two hypotheses regarding the private sector's response to these developments, specifically the potential crowding in or crowding out of private debt. The findings reported in Section 6.2 point to a pronounced crowding-out effect. Evidently, following BRI access, governments are amassing more funds via public debt, elevating yields. These escalated yields draw domestic investors, narrowing the opportunities for companies to issue debt. As a result, some firms resort to alternative financing methods, such as equity issuance.

7   Conclusion

In September 2013, China unveiled the BRI, poised to be the most transformative infrastructure initiative of the century. Evoking memories of the Ancient Silk Road, the BRI represents not just a monumental infrastructure endeavor, but also poses intricate financial challenges. In this study, I provide the first examination of the BRI's ripple effects

on financial outcomes. Using the inauguration of Marmaray beneath Istanbul's Bosporus Strait as a quasi-natural experiment, I uncover that countries gaining access to the BRI markedly increase their sovereign debt issuance. These governments, however, channel more resources toward collective consumption, sidelining fixed capital investment. Businesses in these countries curtail their debt offerings. BRI-specific risks can be seen in primary market yields.

Transparency around debt allocation—including political ties with BRI and non-BRI partners—is essential to ensure funds are used productively. Since the BRI railway network functions as a cross-border system, delays in one country can weaken investment incentives elsewhere. Greater coordination would therefore help ensure that sovereign borrowing supports complementary efforts. In contrast, BRI countries that rely more heavily on maritime infrastructure—where coordination demands might be lower—may experience different economic and political dynamics. Overall, the regulatory and institutional reforms discussed above would benefit not only European countries but also other BRI participants by reducing trade-related uncertainty across the broader BRI network.

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Table 1. **Summary Statistics**

This table presents summary statistics for country- and firm-level variables, covering European countries and firms over the period from 2007 to 2022. Detailed variable descriptions are presented in Section A of the Appendix.

Panel A: Country-Level Debt Issuance

	N	Mean	Median	SD
Government Debt to GDP	523	60.50	53.23	34.81
Corporate Loans and Debt to GDP	435	95.49	91.68	44.11
Household Debt to GDP	435	55.80	51.79	30.91
Chinese Financial Assistance to GDP	539	0.10	0.00	0.94
GDP Growth	540	1.67	2.06	4.04
Unemployment Rate	540	8.77	7.25	5.81
Exports to GDP	540	54.28	45.65	30.53
Imports to GDP	540	56.28	52.14	26.34
Total Corporate Debt to Assets	432	28.67	26.60	15.52
Long-Term Corporate Debt to Assets	430	21.08	20.50	11.72
Domestic Investors	592	40.79	41.98	23.67
Domestic CB	542	7.04	2.04	9.09
Foreign Investors	592	27.35	25.88	16.91
Foreign CB	584	20.20	16.87	18.24
China TPU	592	202.56	100.32	192.74
Yield to Maturity, VW	378	1.26	0.38	1.64
Yield to Maturity, EW	378	1.23	0.36	1.62
Yield to Maturity, Median	378	1.24	0.34	1.64
Macaulay Duration	378	4.06	2.62	4.89
Investment Grade	378	0.52	0.95	0.50
Inflation Protected	378	0.04	0.00	0.12
No Issue	378	0.41	0.00	0.49
Log(Total Issue Amount)	378	1.49	0.79	1.71

Panel B: Country-level Social and Infrastructure Expenditures

	N	Mean	Median	SD
Government Employee Wage to GDP	405	32.60	32.50	6.30
Collective Consumption to GDP	405	23.57	24.40	6.41
Capital Transfers to GDP	399	1.43	1.10	1.23
Total Social Payouts to GDP	405	57.58	58.20	9.48
Fixed Capital Formation to GDP	405	11.14	10.90	3.46
Railway Investments to GDP	510	0.24	0.22	0.20
Road Investments to GDP	510	0.69	0.54	0.63
Air Investments to GDP	510	0.04	0.02	0.08
Sea Investments to GDP	510	0.04	0.01	0.09
Total Infrastructure Investments to GDP	510	1.02	0.90	0.66

Panel C: Firm-level Characteristics

	N	Mean	Median	SD
Total Debt	43,257	29.92	22.60	33.42
Total Long-Term Debt	42,122	17.96	13.28	18.06
Non-Conv. Debt	43,257	16.31	9.87	19.80
Conv. Debt	43,257	0.07	0.00	0.38
Short-Term Debt	42,156	6.80	4.07	7.77
Cash	43,257	15.40	9.27	19.87
Exchange Rate Growth	43,257	3.79	1.00	19.37
Log(Book Value)	41,996	20.37	20.00	1.99
Tangibility	41,996	0.28	0.22	0.23
Intangibility	41,856	0.21	0.14	0.21
Log(Tobin's Q)	41,996	0.56	0.49	0.42
Collateral	41,797	0.40	0.39	0.25
Profitability	41,676	0.10	0.10	0.18
Losses	42,246	0.08	0.00	0.28
Dividend Paying	42,246	0.68	1.00	0.47

Table 2. **Effects of BRI Access on Public- and Private-Sector Debt Issuance**

This table reports the estimated effects of BRI access on public- and private-sector debt issuance based on the primary difference-in-differences specification in Equation (1). The initial three dependent variables are sourced from the IMF's Global Debt Database (GDD). *Government Debt to GDP$_{i,t}$* denotes a country's total annual stock of government debt, adjusted by its GDP (GDD item GG). *Corporate Loans and Debt to GDP$_{i,t}$* represents the combined loan and debt stock of non-financial corporations, deflated by GDP (GDD item NFC_LS). *Chinese Financial Assistance to GDP* refers to China's loans, grants, credits, scholarships, and debt solutions to country i in year t, deflated by the GDP of country i in year t. Similarly, *Household Debt to GDP$_{i,t}$* denotes the annual household debt in a country, adjusted by its GDP (GDD item HH_LS). *Total Corp. Debt to Assets$_{i,t}$* and *Total Long-Term Corp. Debt to Assets$_{i,t}$* represent the respective stocks of debt held by non-financial corporations in a country for a specific year, expressed in percentage terms. *Treated$_i$* is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post$_t$* is one for years after 2013 and zero otherwise. Control variables are sourced from the World Bank Open Data. *GDP Growth$_{i,t-1}$* signifies the percentage growth in GDP, and *Unemployment Rate$_{i,t-1}$* represents the unemployment rate as a percentage of the total labor force. *Exports to GDP$_{i,t-1}$* and *Imports to GDP$_{i,t-1}$* indicate exports and imports of goods and services as a percentage of GDP, respectively. The sampling period is between 2007 and 2022. Standard errors are clustered in two ways at the country and year levels. The symbols $\star\star\star$, $\star\star$, and $\star$ indicate coefficient estimates significantly different from zero at the 1%, 5%, and 10% significance levels, respectively.

	Government Debt to GDP$_{i,t}$	Corporate Loans and Debt to GDP$_{i,t}$	Household Debt to GDP$_{i,t}$	Chinese Financial Assistance to GDP$_{i,t}$	Total Corp. Debt to Assets$_{i,t}$	Total Long-Term Corp. Debt to Assets$_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)
Treated$_i$ × Post$_t$	10.39**	-14.18**	1.86	0.18	-12.77***	-9.17***
	(2.71)	(-2.24)	(0.56)	(1.35)	(-3.33)	(-3.14)
GDP Growth$_{i,t-1}$	-0.56**	0.01	-0.84***	0.01	-0.30	-0.15
	(-2.43)	(0.02)	(-4.49)	(0.65)	(-0.76)	(-1.04)
Unemployment Rate$_{i,t-1}$	1.87***	1.08*	0.31	-0.01	-0.35	0.02
	(4.33)	(1.95)	(0.91)	(-0.54)	(-0.75)	(0.09)
Exports to GDP$_{i,t-1}$	-0.10	-0.53	-1.03***	0.01	-0.09	-0.06
	(-0.38)	(-1.26)	(-4.27)	(0.98)	(-0.30)	(-0.26)
Imports to GDP$_{i,t-1}$	0.10	0.73	0.40	-0.02	0.23	0.24
	(0.38)	(1.58)	(1.13)	(-0.98)	(0.85)	(0.95)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	523	435	435	539	432	430
R^2	0.941	0.944	0.954	0.136	0.508	0.684

Table 3. **Who Absorbs BRI-Driven Public Debt?**

This table examines the effect of BRI access on investor composition in the sovereign debt market, following the primary difference-in-differences specification in Equation (1). *Domestic Investors$_{i,t}$* indicates the share of country i's debt owned by domestic banks and non-bank investors in year t. *Domestic CB$_{i,t}$*, *Foreign Investors$_{i,t}$*, and *Foreign CB$_{i,t}$* represent the shares held by the nation's central bank, foreign banks and non-bank investors, and foreign central banks, respectively. These data are from Arslanalp and Tsuda (2014a,b). *Treated$_i$* is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post$_t$* is one for years after 2013 and zero otherwise. Control variables—*GDP Growth$_{i,t-1}$*, *Unemployment Rate$_{i,t-1}$*, *Exports to GDP$_{i,t-1}$*, *Imports to GDP$_{i,t-1}$*, and *Log(Total Issue Amt.)$_{i,t-1}$*—are sourced from the World Bank Open Data and described in Section A of the Appendix. *Exchange Rate$_{i,t}$* refers to units of country i's currency per euro at year-end t. The sampling period spans from 2007 to 2022, and the sample comprises countries with holdings by domestic investors greater than zero. Symbols $\star\star\star$, $\star\star$, and $\star$ mark coefficients significantly deviating from zero at 1%, 5%, and 10% levels, respectively.

	Domestic Investors$_{i,t}$	Domestic CB$_{i,t}$	Foreign Investors$_{i,t}$	Foreign CB$_{i,t}$
	(1)	(2)	(3)	(4)
Treated$_i$ × Post$_t$	12.55**	-4.03	1.79	-5.69
	(2.21)	(-1.38)	(0.43)	(-1.04)
GDP Growth$_{i,t-1}$	-0.26	0.01	-0.39*	0.04
	(-0.79)	(0.09)	(-1.84)	(0.24)
Unemployment Rate$_{i,t-1}$	-0.48	-0.07	-1.24**	1.59*
	(-1.26)	(-0.41)	(-2.17)	(2.13)
Exports to GDP$_{i,t-1}$	-0.40***	-0.06	0.33**	-0.11
	(-3.59)	(-0.73)	(2.76)	(-1.14)
Imports to GDP$_{i,t-1}$	0.40**	-0.01	-0.06	0.35*
	(2.93)	(-0.09)	(-0.50)	(1.93)
Log(Total Issue Amt.)$_{i,t-1}$	-0.11	0.06	-0.06	0.01
	(-1.20)	(1.41)	(-1.05)	(0.14)
Exchange Rate$_{i,t}$	0.01	-0.01	0.01	-0.04
	(0.09)	(-0.17)	(0.18)	(-0.62)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	544	479	576	536
R^2	0.731	0.725	0.717	0.808

Table 4. **Effects of BRI Access on Yields**

This table reports the estimated effects of BRI access on sovereign and corporate yields (respectively in Panels A and B), following the primary difference-in-differences specification in Equation (1). *Yield to Maturity$_{i,t}$* is dollar-issue-amount-weighted (Column 1), average (Column 2), or median (Column 3) original yield to maturity of country i's newly-issued sovereign debt during year t. In Columns (4)-(6) it refers to the dollar-issue-amount-weighted, average, or media original yield to maturity of newly-issued corporate debt during year t by firms headquartered in country i. Yields are reported in percentage terms and set to zero in years without issuance, which is accounted for using an untabulated indicator variable. *Macaulay Duration$_{i,t}$* denotes average duration, *Investment Grade$_{i,t}$* denotes the percentage of issues that are investment grade, and *Inflation Protected$_{i,t}$* denotes the percentage of issues that are inflation protected of country i during year t. This variable is excluded from Panel B regressions due to data availability. Data for this variable does not exist for corporate bonds. *Log(Total Issue Amount)$_{i,t-1}$* denotes log of previous year's sovereign debt issuance amount in U.S. dollars. These variables are from Refinitiv. *Treated$_i$* is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post$_t$* is one for years after 2013 and zero otherwise. The remaining variables are described in Section A of the Appendix. The sampling period is between 2007 and 2020. The standard errors are doubly clustered at the country and year levels. Symbols ***, **, and * mark coefficients significantly deviating from zero at the 1%, 5%, and 10% levels, respectively.

	Panel A: Public Debt Issues			Panel B: Corporate Debt Issues		
	Yield to Maturity$_{i,t}$			Yield to Maturity$_{i,t}$		
	VW, %	EW, %	Median, %	VW, %	EW, %	Median, %
	(1)	(2)	(3)	(4)	(5)	(6)
Treated$_i$ × Post$_t$	1.33**	1.24**	1.27**	1.42***	1.28***	1.71***
	(2.68)	(2.82)	(2.81)	(4.14)	(3.21)	(6.54)
Macaulay Duration$_{i,t}$	-0.01	-0.00	-0.00	-0.01	-0.02	-0.08**
	(-0.32)	(-0.17)	(-0.02)	(-0.19)	(-0.29)	(-2.60)
Investment Grade$_{i,t}$	0.20	0.31	0.32	-0.92	-0.42	-0.11
	(0.48)	(0.83)	(0.91)	(-1.12)	(-0.45)	(-0.30)
Log(Total Issue Amount)$_{i,t-1}$	-0.13**	-0.12**	-0.13**	-0.18	-0.38**	-0.16
	(-2.44)	(-2.29)	(-2.43)	(-1.25)	(-2.18)	(-1.44)
Unemployment Rate$_{i,t-1}$	0.03	0.03	0.03	-0.01	-0.03	-0.05**
	(0.94)	(1.26)	(1.22)	(-0.30)	(-0.58)	(-2.42)
Exports to GDP$_{i,t-1}$	0.02	0.02	0.02	0.05*	0.04	0.07***
	(0.85)	(0.79)	(0.77)	(2.00)	(1.19)	(3.76)
Imports to GDP$_{i,t-1}$	-0.02	-0.02	-0.02	-0.07**	-0.06**	-0.07***
	(-0.69)	(-0.73)	(-0.73)	(-2.96)	(-2.62)	(-3.03)
GDP Growth$_{i,t-1}$	-0.03	-0.03	-0.02	-0.08**	-0.09**	-0.06*
	(-1.50)	(-1.32)	(-1.05)	(-2.54)	(-2.63)	(-2.00)
Inflation Protected$_{i,t}$	-1.92***	-2.48***	-2.45***			
	(-3.98)	(-5.89)	(-5.48)			
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	378	378	378	378	378	378
R^2	0.787	0.789	0.782	0.655	0.587	0.730

Table 5. **BRI Access and Corporate Debt Financing**

This table reports the estimated effects of BRI access on corporate debt issuance. It presents coefficient estimates from the primary difference-in-differences specification in Equation (2). *Total Debt*$_{j,t}$ represents firm j's total debt (ITEM3255) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Long-Term Debt*$_{j,t}$ represents firm j's long-term debt (ITEM3251) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Non-Conv. Debt*$_{j,t}$ represents firm j's non-convertible long-term debt (ITEM18281) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Conv. Debt*$_{j,t}$ represents firm j's convertible long-term debt (ITEM18282) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Short-Term Debt*$_{j,t}$ represents firm j's short-term debt (ITEM3051) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Cash*$_{j,t}$ represents firm j's cash (ITEM2001) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Treated*$_j$ is set to one for firms from Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post*$_t$ is one for years after 2013 and zero otherwise. *Exchange Rate Growth*$_{j,t-1}$ represents the percent change in the end-of-year exchange rate with respect to Euros for each firm j's local currency based on its headquarters and year $t-1$. *Log(Book Value)*$_{j,t-1}$ represents the logarithm of the book value of assets (in Euros) of firm j in year $t-1$. *Tangibility*$_{j,t-1}$ represents the ratio of the book value of tangible assets (ITEM2501) to the total book value (ITEM2999) of firm j in year $t-1$. *Intangibility*$_{j,t-1}$ represents the ratio of the book value of intangible assets (ITEM2649) to the total book value (ITEM2999) of firm j in year $t-1$. *Log(Tobin's Q)*$_{j,t-1}$ represents the logarithm of Tobin's Q [(ITEM2999+ITEM8001-ITEM2999)/ITEM2999] of firm j in year $t-1$. *Collateral*$_{j,t-1}$ represents the ratio of the book value of collaterals [(ITEM2101+ITEM2501)/ITEM2999] of firm j in year $t-1$. *Profitability*$_{j,t-1}$ represents the ratio of operating income before depreciation/amortization to the book value of assets (ITEM18155/ITEM2999) of firm j in year $t-1$. *Losses*$_{j,t-1}$ equals one if operating income before depreciation/amortization to book value of assets (ITEM18155) is less than zero for firm j in year $t-1$. *Dividend Paying*$_{j,t-1}$ equals one if common dividends (ITEM5376) are greater than zero for firm j in year $t-1$. The sampling period is between 2007 and 2022. The standard errors are doubly clustered at the country and year levels. Symbols ***, **, and * mark coefficients significantly deviating from zero at the 1%, 5%, and 10% levels, respectively.

	Total Debt$_{j,t}$	Long-Term Debt$_{j,t}$	Non-Conv. Debt$_{j,t}$	Conv. Debt$_{j,t}$	Short-Term Debt$_{j,t}$	Cash$_{j,t}$
	(1)	(2)	(3)	(4)	(5)	(6)
Treated$_j$ × Post$_t$	-5.08***	-2.38***	-2.67***	0.01	-1.84*	0.95**
	(-3.39)	(-3.03)	(-4.07)	(0.39)	(-1.80)	(2.61)
Exchange Rate Growth$_{j,t-1}$	0.15*	0.01	-0.06***	-0.00	0.01	0.07*
	(2.10)	(0.50)	(-4.47)	(-0.57)	(0.27)	(1.91)
Log(Book Value)$_{j,t-1}$	28.62***	11.44***	12.15***	0.03**	3.94***	12.47***
	(12.14)	(11.98)	(12.39)	(2.39)	(8.59)	(10.61)
Tangibility$_{j,t-1}$	11.58	16.35***	8.70***	0.14**	-3.07**	6.52*
	(1.32)	(4.94)	(2.99)	(2.22)	(-2.78)	(2.04)
Intangibility$_{j,t-1}$	15.40***	10.83***	12.20***	0.01	2.62***	-29.05***
	(3.30)	(6.28)	(4.97)	(0.16)	(4.08)	(-10.53)
Log(Tobin's Q)$_{j,t-1}$	-0.36	-0.31	0.18	0.01	-0.42	4.75***
	(-0.32)	(-0.55)	(0.42)	(0.83)	(-1.49)	(5.80)
Collateral$_{j,t-1}$	3.81	-5.42***	-3.74	-0.09*	6.43***	-31.16***
	(0.51)	(-3.04)	(-1.20)	(-2.06)	(4.69)	(-8.92)
Profitability$_{j,t-1}$	-1.50	-0.51	-0.38	-0.02**	-0.56**	1.15***
	(-1.04)	(-0.56)	(-0.45)	(-2.90)	(-2.19)	(3.13)
Losses$_{j,t-1}$	2.90**	0.64	0.86*	0.01	0.67***	-1.43**
	(2.75)	(1.20)	(1.76)	(1.12)	(3.09)	(-2.64)
Dividend Paying$_{j,t-1}$	0.47	0.43	0.85*	-0.03***	0.22**	0.36
	(0.82)	(0.93)	(1.83)	(-3.12)	(2.25)	(1.20)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	41,403	40,314	41,403	41,403	40,334	41,403
R^2	0.675	0.646	0.644	0.420	0.535	0.695

Table 6. **Public Spending for Infrastructure and Social Payouts**

This table presents findings on effects of BRI access on infrastructure investments and social payouts, following the primary difference-in-differences specification in Equation (1). $Treated_j$ is set to one for firms from Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while $Post_t$ is one for years after 2013 and zero otherwise. All other variables are described in Appendix Section A. The sampling period is between 2007 and 2021. The standard errors are doubly clustered at country and year levels. Symbols $\star\star\star$, $\star\star$, and $\star$ mark coefficients significantly deviating from zero at the 1%, 5%, and 10% levels, respectively.

Panel A: Total Social Payouts and Fixed Capital Formation

	Gov. Emp. Wages to $GDP_{i,t}$	Collective Cons. to $GDP_{i,t}$	Capital Transfers to $GDP_{i,t}$	Total Social Payouts to $GDP_{i,t}$	Fixed Capital Formation to $GDP_{i,t}$
	(1)	(2)	(3)	(4)	(5)
$Treated_i \times Post_t$	2.52**	2.40***	0.92**	5.80***	0.45
	(2.64)	(3.01)	(2.63)	(3.66)	(0.29)
Unemployment Rate$_{i,t-1}$	-0.11	0.04	-0.05**	-0.12	-0.11
	(-1.30)	(0.80)	(-2.28)	(-0.98)	(-1.15)
Exports to $GDP_{i,t-1}$	-0.22***	-0.22***	-0.02	-0.46***	-0.23**
	(-3.30)	(-4.07)	(-0.94)	(-4.35)	(-2.92)
Imports to $GDP_{i,t-1}$	0.05	0.15*	0.00	0.20	0.15*
	(0.44)	(1.81)	(0.12)	(1.13)	(1.87)
GDP Growth$_{i,t-1}$	-0.21***	-0.08*	-0.01	-0.30***	0.07**
	(-3.09)	(-1.78)	(-0.78)	(-3.05)	(2.18)
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
N	405	405	399	405	405
R^2	0.907	0.957	0.787	0.902	0.707

Panel B: Infrastructure Investments

	Railway Investments to $GDP_{i,t}$	Road Investments to $GDP_{i,t}$	Air Investments to $GDP_{i,t}$	Sea Investments to $GDP_{i,t}$	Total Infrastructure Investments to $GDP_{i,t}$
	(1)	(2)	(3)	(4)	(5)
$Treated_i \times Post_t$	0.10**	-0.06	0.01	0.02	0.07
	(2.52)	(-0.25)	(0.26)	(0.65)	(0.26)
Unemployment Rate$_{i,t-1}$	-0.00	-0.01	0.00	-0.00**	-0.01
	(-0.69)	(-0.29)	(0.29)	(-2.20)	(-0.60)
Exports to $GDP_{i,t-1}$	-0.00	-0.01	-0.00**	-0.00	-0.02*
	(-1.19)	(-1.61)	(-2.75)	(-0.98)	(-2.03)
Imports to $GDP_{i,t-1}$	0.01*	0.01	0.00**	0.00	0.01
	(1.78)	(0.70)	(2.22)	(0.96)	(1.38)
GDP Growth$_{i,t-1}$	-0.00	0.00	0.00	0.00	0.00
	(-1.21)	(0.53)	(0.03)	(0.36)	(0.46)
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
N	510	510	510	510	510
R^2	0.645	0.636	0.196	0.358	0.580

Table 7. **Effect Heterogeneity: Orient Express Routes and Topography**

This table presents evidence of heterogeneity in the effects of BRI access, based on the geographic location of countries relative to the historic Orient Express (OE) railway line between Western Europe and Istanbul. $Treated_i$ is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration, and Orient Express$_i$ is set to one for countries along the OE routes, as shown in Panel A of Figure A9. Treaty of Berlin$_i$ equals one for the associated signatories Austria, Bulgaria, Greece, Hungary, Montenegro, Romania, and Serbia, and zero otherwise. $Post_t$ is one for years after 2013 and zero otherwise. Detailed descriptions of the remaining variables are presented in Section A of the Appendix. The sampling period spans from 2007 to 2022. All variables are winsorized at the 2% level. Standard errors are clustered at both the country and year levels. The symbols $\star\star\star$, $\star\star$, and $\star$ denote coefficient estimates significantly different from zero at the 1%, 5%, and 10% significance levels, respectively. The map of the Orient Express can be viewed at https://bit.ly/3JAr84U. The region's topography can be viewed at https://bit.ly/3JEtuzE.

	Government Debt to GDP$_{i,t}$				Corporate Loans and Debt to GDP$_{i,t}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated$_i$ × Post$_t$ × Orient Express$_i$	12.85**	12.86**	13.31**	13.23**	-18.44**	-18.79**	-18.85**	-19.48**
	(2.17)	(2.21)	(2.23)	(2.23)	(-2.15)	(-2.20)	(-2.16)	(-2.25)
Treated$_i$ × Post$_t$	0.24	0.18			0.56	0.84		
	(0.06)	(0.04)			(0.09)	(0.13)		
Post$_t$ × Orient Express$_i$	-2.12		-2.19		6.17		6.25	
	(-0.50)		(-0.52)		(1.12)		(1.13)	
Post$_t$ × Treaty of Berlin$_i$	-2.23	-2.26	-2.28	-2.29	-1.32	-1.27	-1.30	-1.23
	(-0.50)	(-0.50)	(-0.51)	(-0.51)	(-0.20)	(-0.19)	(-0.20)	(-0.19)
GDP Growth$_{i,t-1}$	-0.71***	-0.71**	-0.76**	-0.75**	-0.72**	-0.74**	-0.69**	-0.69**
	(-3.00)	(-2.89)	(-2.90)	(-2.81)	(-2.75)	(-2.66)	(-2.59)	(-2.50)
Unemployment Rate$_{i,t-1}$	1.80***	1.81***	1.86***	1.86***	0.76	0.70	0.70	0.60
	(3.93)	(4.03)	(4.05)	(4.05)	(1.46)	(1.27)	(1.35)	(1.13)
Exports to GDP$_{i,t-1}$	-0.05	-0.03	-0.05	-0.04	-0.76**	-0.75**	-0.75*	-0.74*
	(-0.22)	(-0.14)	(-0.20)	(-0.15)	(-2.19)	(-2.19)	(-2.06)	(-2.09)
Imports to GDP$_{i,t-1}$	-0.02	-0.03	-0.03	-0.03	1.05**	1.04***	1.04**	1.04**
	(-0.09)	(-0.12)	(-0.11)	(-0.12)	(2.92)	(2.99)	(2.68)	(2.75)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	No	No	Yes	No	No	No
Orient Express$_i$× Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Treated$_i$× Year FE	No	No	Yes	Yes	No	No	Yes	Yes
N	523	523	523	523	435	435	435	435
R^2	0.940	0.941	0.941	0.942	0.956	0.956	0.957	0.958

Table 8. **Effect Heterogeneity: State Owned Enterprises vs. Private Firms**

This table reports how public borrowing influenced state-owned and non-state-owned firms in countries with and without BRI access. Non-SOE$_j$ equals one for firms that are not owned by the state. A firm is considered state-owned if ULTTYPE or OTYPE is labeled "Public authority, state, government" in OSIRIS dataset. Additional details on the Osiris data and the classification procedures are provided in Section A.4. High Issuance$_{c,t}$ marks countries issuing public debt above the sample median in year t. The remaining variables are previously described in Table 5's caption. The sampling period is between 2007 and 2022. The standard errors are doubly clustered at the country and year levels. Symbols ***, **, and * mark coefficients significantly deviating from zero at the 1%, 5%, and 10% levels, respectively.

	Total Debt$_{j,t}$	Total Debt$_{j,t}$	Total Debt$_{j,t}$
	(1)	(2)	(3)
Treated$_j$ × Post$_t$	-5.32**	-9.10**	
	(-2.86)	(-2.56)	
Treated$_j$ × Post$_t$ × Non-SOE$_j$	0.27	1.56	
	(0.12)	(0.56)	
Treated$_j$ × Post$_t$ × Non-SOE$_j$ × High Issuance$_{c,t}$		-8.04**	-13.68***
		(-2.43)	(-6.31)
Treated$_j$ × Post$_t$ × High Issuance$_{c,t}$		12.04**	
		(2.82)	
High Issuance$_{c,t}$ × Non-SOE$_j$		-0.44	
		(-0.20)	
High Issuance$_{c,t}$		2.34	
		(1.10)	
Exchange Rate Growth$_{c,t-1}$	0.15*	0.15*	
	(2.08)	(2.05)	
Log(Book Value)$_{j,t-1}$	28.62***	28.64***	28.62***
	(12.14)	(12.13)	(12.23)
Tangibility$_{j,t-1}$	11.49	11.43	9.07
	(1.32)	(1.33)	(1.16)
Intangibility$_{j,t-1}$	15.41***	15.36***	14.62***
	(3.29)	(3.29)	(3.09)
Log(Tobin's Q)$_{j,t-1}$	-0.38	-0.44	-0.43
	(-0.33)	(-0.39)	(-0.48)
Collateral$_{j,t-1}$	3.90	3.77	5.43
	(0.53)	(0.51)	(0.77)
Profitability$_{j,t-1}$	-1.50	-1.50	-1.49
	(-1.00)	(-1.00)	(-1.10)
Losses$_{j,t-1}$	2.89**	2.96**	2.89**
	(2.71)	(2.63)	(2.94)
Dividend Paying$_{j,t-1}$	0.47	0.51	0.47
	(0.80)	(0.93)	(0.81)
Firm FE	Yes	Yes	Yes
Industry FE × Year FE	Yes	Yes	Yes
Non-SOE FE × Year FE	No	No	Yes
Treated FE × Non-SOE FE × Year FE	No	No	Yes
Non-SOE FE × High Issuance FE	No	No	Yes
Country FE × Year FE	No	No	Yes
N	41,403	41,403	41,400
R^2	0.675	0.675	0.685

Figure 1. The New and Ancient Silk Roads

Panel A shows the New Silk Road and Trans-Siberian Railway in red and blue respectively. The red solid lines represent existing fast-speed rail lines, while the pink solid lines denote existing railways planned for upgrades to facilitate faster freight transportation. Panel B shows the Ancient Silk Road in red. I sourced the first map from Mercator Institue for China Studies and the second map from Silk Road Trade & Travel Encyclopedia and recolored the existing paths for ease in visual comparison.

Panel A. The New Silk Road (High-speed Red, Standard-speed Pink) and Trans-Siberian Railway (Blue and Dashed)
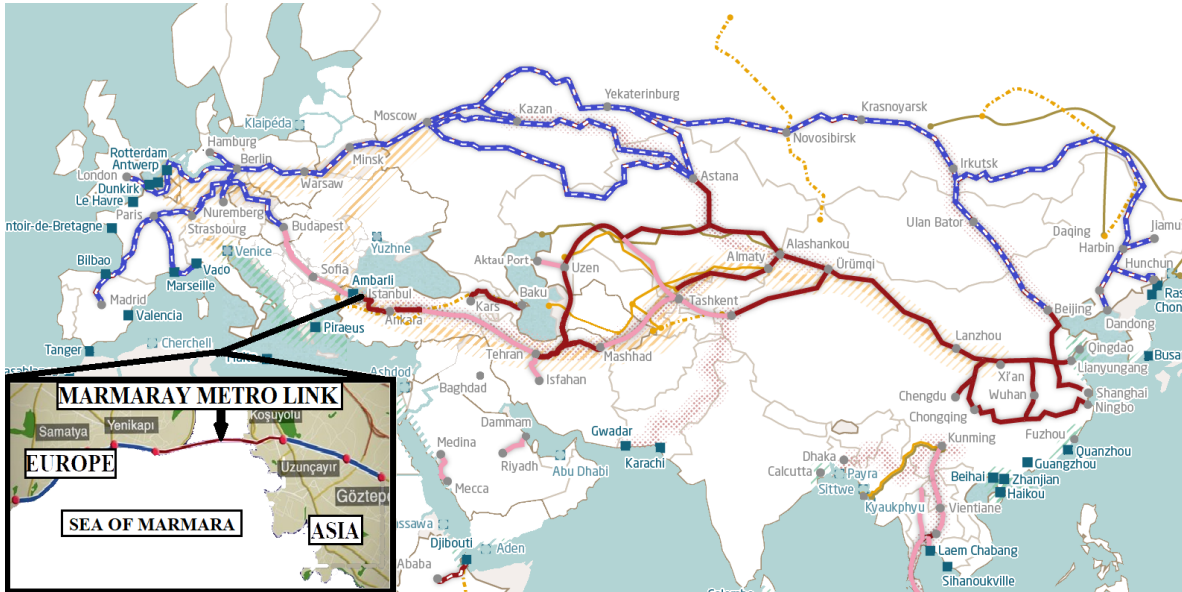
Panel B. The Ancient Silk Road (Red Solid Lines)

Figure 2. **Treatment and Control Units**

This figure presents countries in treatment and control groups. Treated countries are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Hungary, Kosovo, Macedonia, Moldova, Montenegro, Romania, Serbia, and Slovenia. Control countries are the remaining European nations.

Figure 3. **Effect Dynamics: Evidence from Government and Corporate Debt Ratios**

This figure presents time-specific treatment effects of BRI access on public and nonfinancial corporate debt to GDP ratios (*Government Debt to GDP$_{i,t}$* and *Corporate Loans and Debt to GDP$_{i,t}$*). The effects are estimated by using a two-way fixed effects structure (i.e., after controlling for country and year fixed effects), and 90% confidence intervals are drawn for each point estimate. The dashed line illustrates the impact of BRI access on GDP growth. Data is pulled from IMF's GDD dataset. Detailed variable descriptions are in Section A of the Appendix.
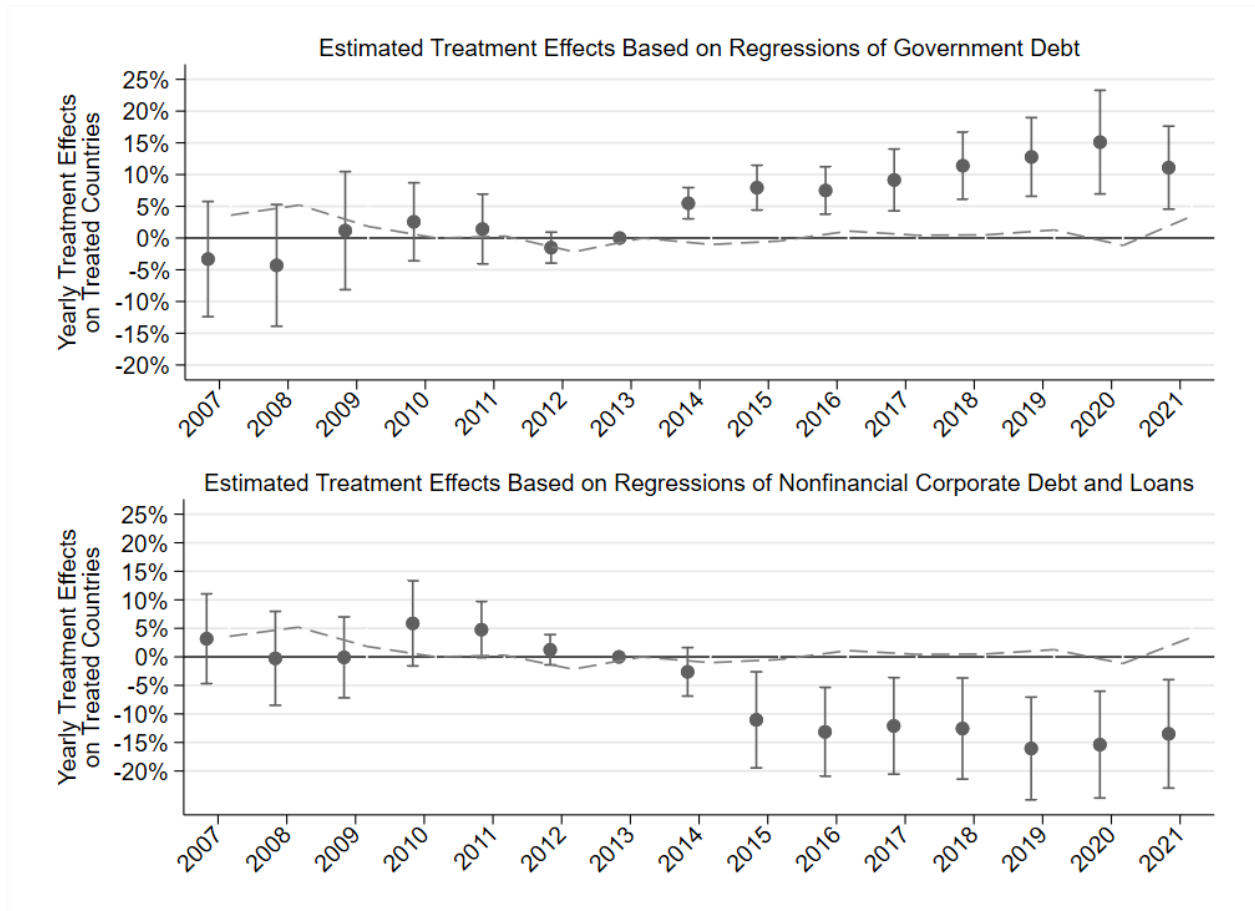
Figure 4. **Debt Trends Around Marmaray's Inaugration: Public vs. Corporate**

The first figure illustrates linear trends in the total annual stock of government debt, deflated by GDP (*Government Debt to GDP$_{i,t}$*) during the period of the Marmaray's opening event. The second figure illustrates linear trends in the combined loan and debt stock of non-financial corporations, deflated by GDP (*Corporate Loans and Debt to GDP$_{i,t}$*) during the period of the Marmaray's opening event. Figures display fitted values for both treatment and control groups, after employing a two-way fixed effects structure (i.e., controlling for country and year fixed effects) and control variables, as represented in Equation (1).

Figure 5. **Trends and Effect Dynamics: Government Debt Held by Domestic Investors**

The first figure illustrates linear trends in the percentage of government-issued debt held by domestic investors (*Domestic Investors*$_{i,t}$) during the Marmaray's opening event period. It displays fitted values for both treatment and control groups, after employing a two-way fixed effects structure (i.e., controlling for country and year fixed effects), as represented in Equation (1). The second figure presents time-specific treatment effects of BRI access on the percentage of government-issued debt held by domestic investors, along with 90% confidence intervals for each point estimate. The data is sourced from Arslanalp and Tsuda (2014a,b).
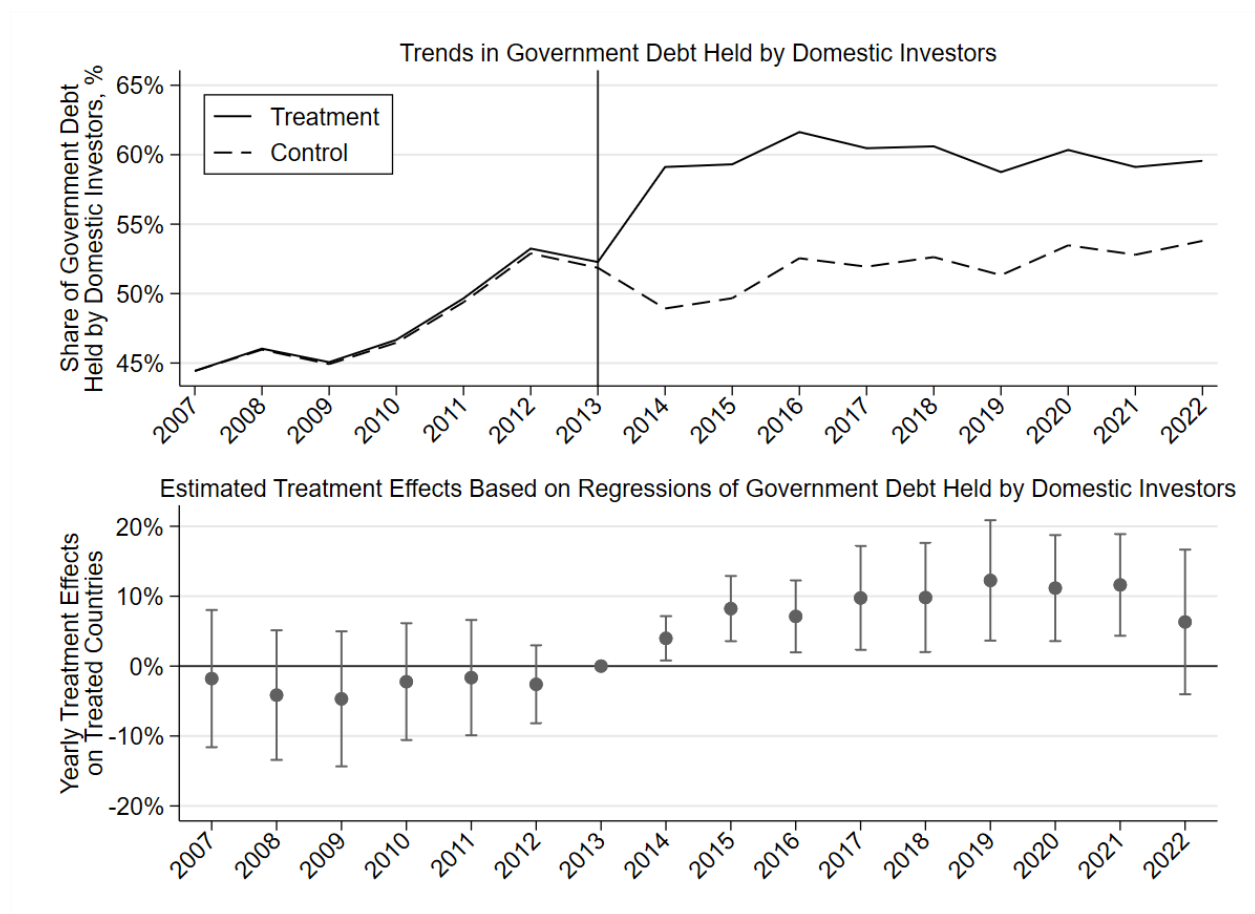
Figure 6. **Trends and Effect Dynamics: Sovereign Yields**

The first figure illustrates linear trends in dollar-issue-amount-weighted yields to maturity ($Yield\ to\ Maturity_{i,t}$) during the Marmaray's opening event period. It displays fitted values for both treatment and control groups, after employing a two-way fixed effects structure (i.e., controlling only for coun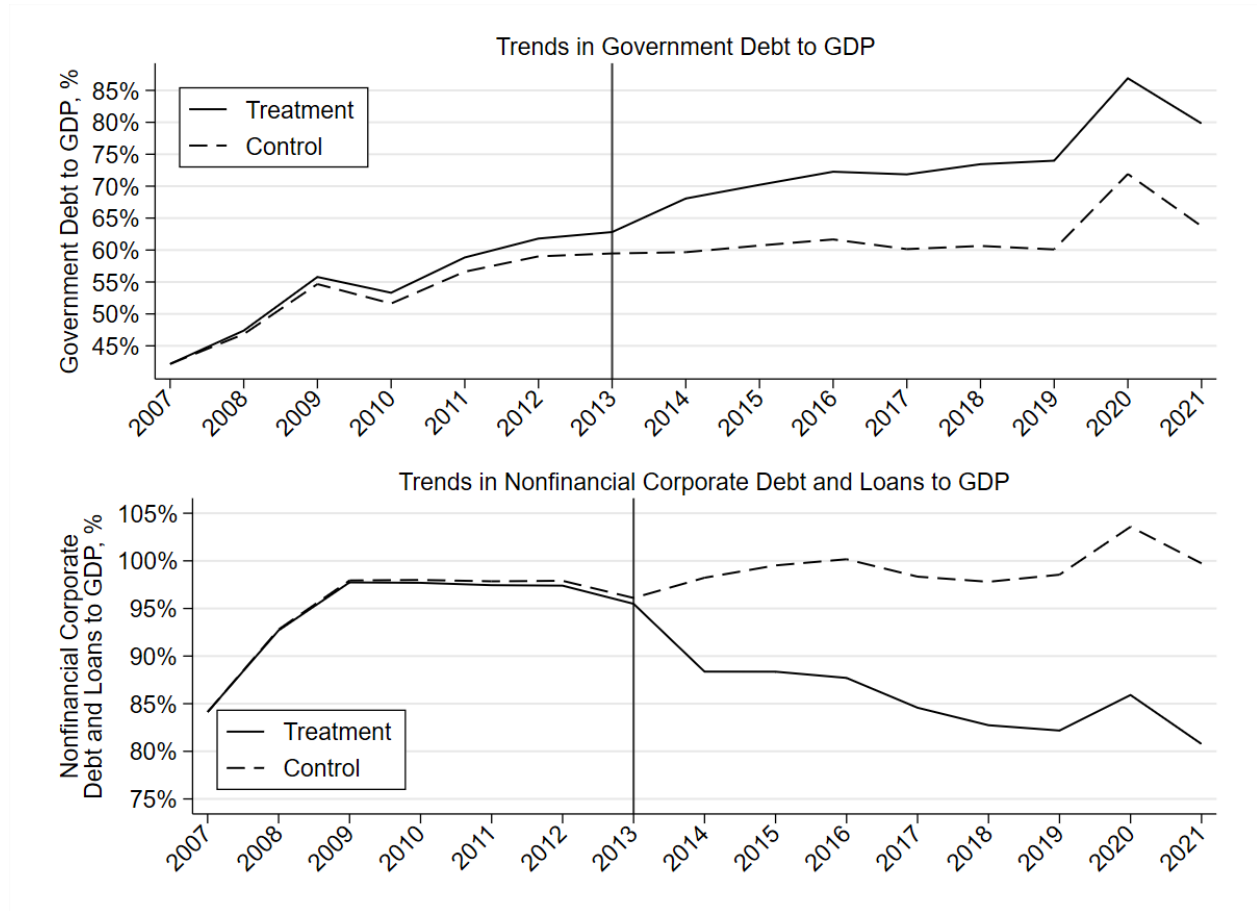try and year fixed effects), as represented in Equation (1). The second figure presents time-specific treatment effects of BRI access on the sovereign yields, along with 90% confidence intervals for each point estimate. The data is sourced from Refinitiv. Detailed variable descriptions are in Section A of the Appendix.
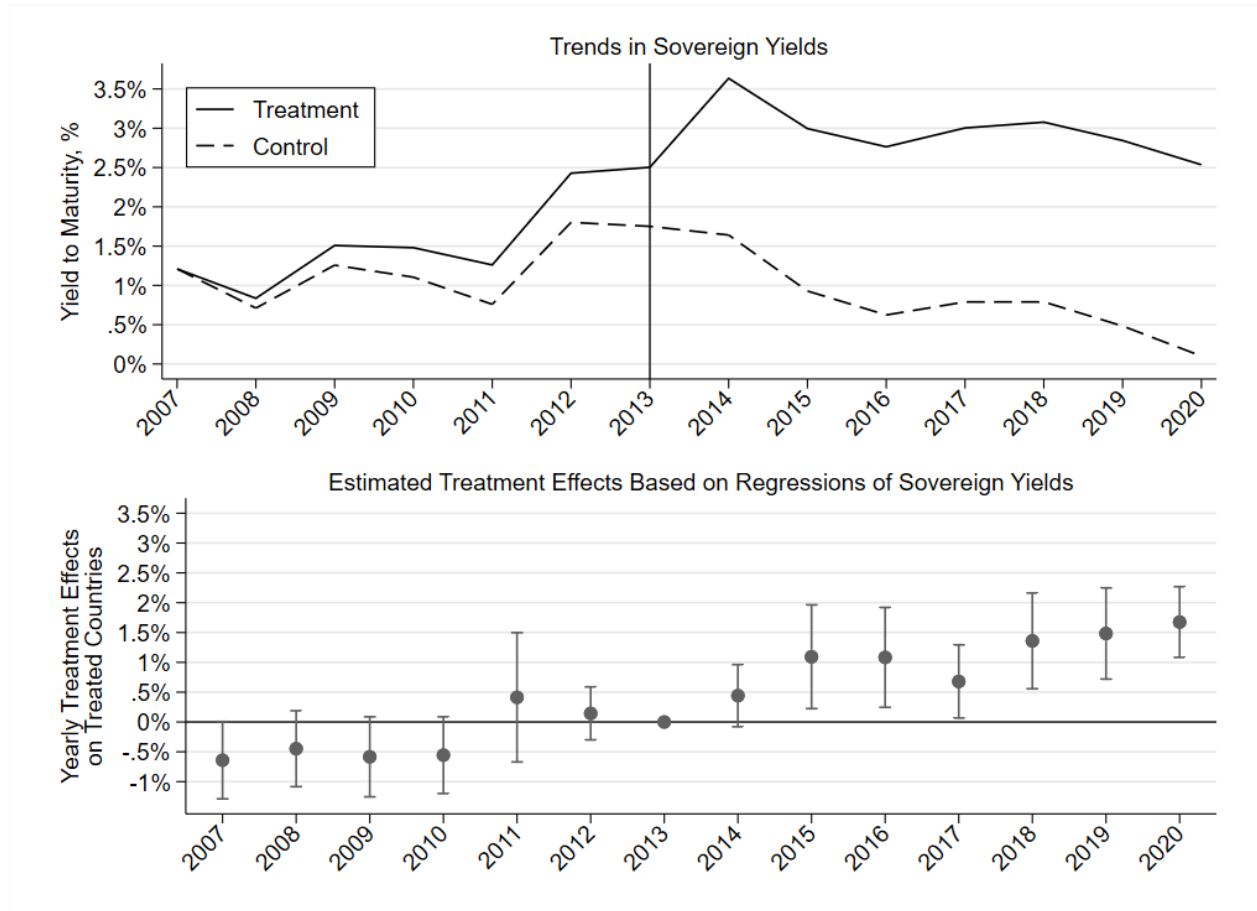
Figure 7. **Effect Dynamics: Evidence from Firm-Level Debt-to-Assets Ratios**

This figure presents time-specific treatment effects of BRI access on total and nonconvertible long-term debt to assets ratios (*Total Debt*$_{j,t}$ and *Non-Conv. Debt*$_{j,t}$). The effects are estimated by using a two-way fixed effects structure (i.e., after controlling for country and year fixed effects), and 90% confidence intervals are drawn for each point estimate. Data is pulled from Worldscope dataset. Detailed variable descriptions are in Section A of the Appendix.
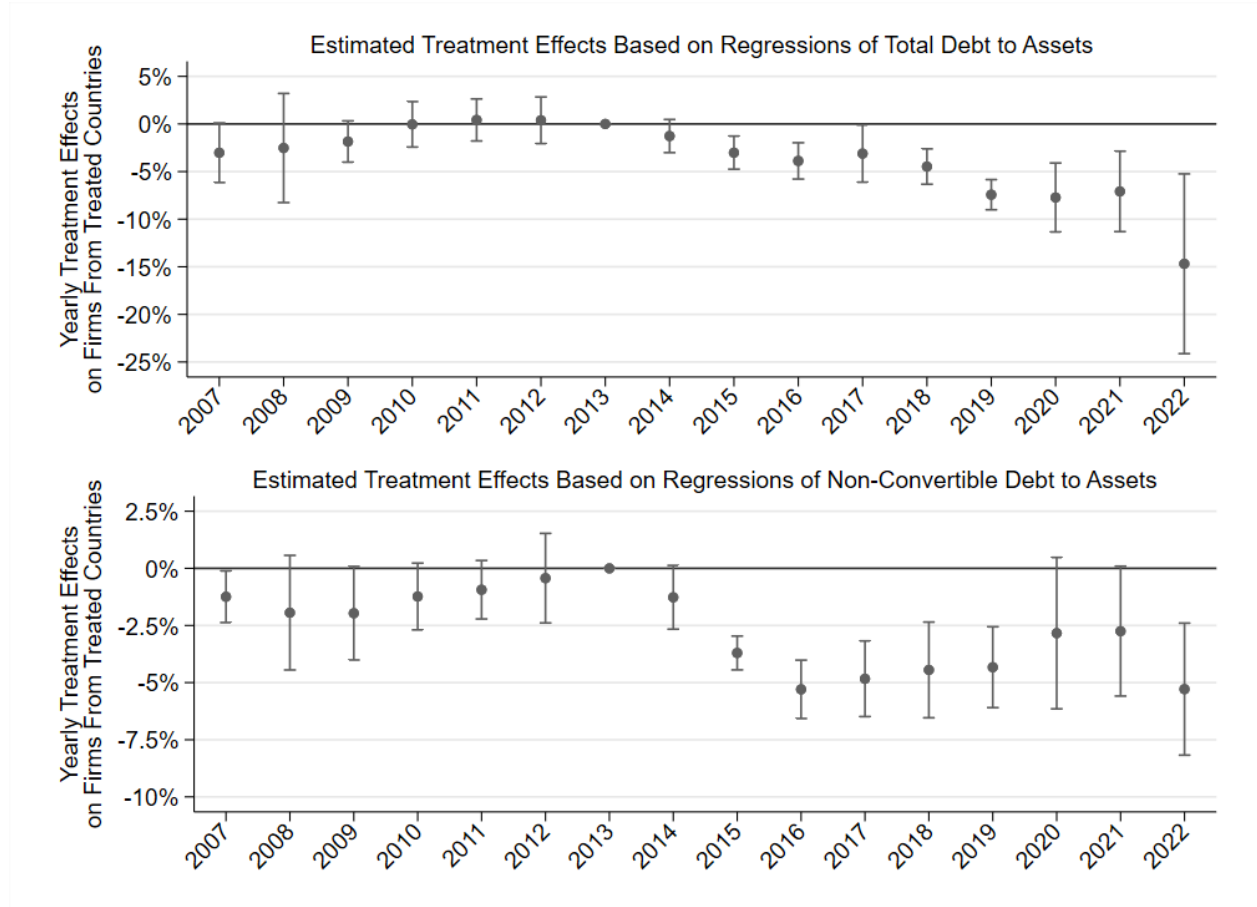
Figure 8. **Trends and Effect Dynamics: Total Social Payouts**

The first figure presents linear trends in total social payouts in treatment and control countries in the event time of Marmaray's opening. The second figure presents time-specific treatment effects of BRI access on total social payouts. The effects are estimated by using a two-way fixed effects structure (i.e., after controlling for country and year fixed effects), and 90% confidence intervals are drawn for each point estimate. Data is from Eurostat. Detailed variable descriptions are in Section A of the Appendix.

Internet Appendix for
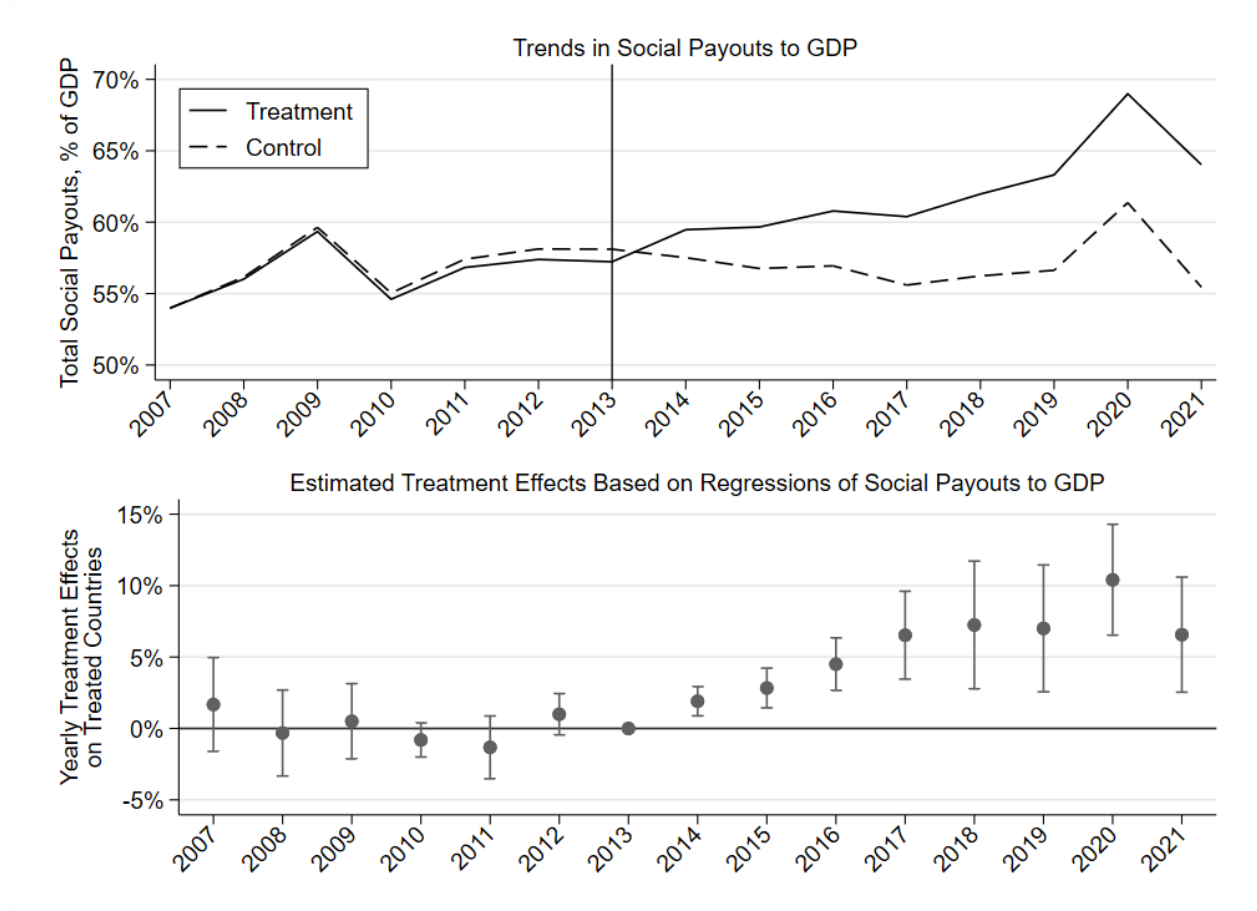
Financial Consequences of the Belt and Road Initiative

A Variable Descriptions

This section reports definitions of the main variables. Section A.1 presents descriptions for the country-level characteristics related to public and private debt issuance, Section A.2 presents descriptions for country-level characteristics related to infrastructure investments, and Section A.3 presents descriptions for firm-level characteristics.

A.1 Country-level Characteristics

This section presents descriptions for the country-level characteristics related to public and private debt issuance.

- *Government Debt to GDP* denotes a country's total annual stock of government debt, adjusted by its GDP (GDD item GG). This variable is sourced from the IMF's Global Debt Database (GDD) and reported in percentage terms.

- *Corporate Loans and Debt to GDP* represents the combined loan and debt stock of non-financial corporations, deflated by GDP (GDD item NFC_LS). This variable is sourced from the IMF's Global Debt Database (GDD) and reported in percentage terms.

- *Household Debt to GDP* denotes the annual household debt in a country, adjusted by its GDP (GDD item HH_LS). This variable is sourced from the IMF's Global Debt Database (GDD) and reported in percentage terms.

- *Chinese Financial Assistance to GDP*, extracted from AidData's Global Chinese Development Finance Dataset, quantifies the full spectrum of financial support that China extends to country i during year t. This includes not only loans but also grants, buyer's and seller's credits, scholarships, and initiatives for debt forgiveness and rescheduling. This amount is normalized by GDP of the recipient country i within the same year t.

- *Total Corporate Debt to Assets* and *Total Long-Term Corporate Debt to Assets* represent the respective stocks of debt held by non-financial corporations in a country for a specific year, weighted by 2012 book values of assets.

- *GDP Growth* denotes percentage increase in GDP, *Unemployment Rate* is the unemployment percentage of the labor force, and *Exports to GDP* and *Imports to GDP* measure the respective exports and imports as a GDP percentage. Data for these four variables come from World Bank Open Data.

- *Domestic Investors*, *Domestic CB*, *Foreign Investors*, and *Foreign CB* represent the ownership percentages of a country's debt by its domestic banks and non-bank investors, its central bank, foreign banks and non-bank investors, and foreign central banks, respectively. These metrics are sourced from Arslanalp and Tsuda (2014a,b).

- *China TPU* is the average China Trade Policy Uncertainty (TPU) index value in a given year (Davis et al. (2019)).

- *Yield to Maturity* is measured as dollar-issue-amount-weighted (VW), average (EW), or median (Median) original yield to maturity of a country's newly issued sovereign debt in a given year. These variables are reported in percentage terms and set to zero during years with no sovereign debt issuance, and *No Issue*, a dummy variable, indicates such years. *Macaulay Duration* represents average duration, *Investment Grade* is the percentage of investment-grade issues, and *Inflation Protected* is the percentage of inflation-protected issues in a specific year. *Log(Total Issue Amount)* indicates the log of the prior year's sovereign debt amount in USD. These variables are sourced from Refinitiv.

A.2 Country-level Infrastructure Investment Characteristics

The below variables are on country-level characteristics related to infrastructure investments and capital formation based on data from Eurostat COFOG and OECD's International Transport Forum. All ten variables are reported in percentage terms.

- *Gov. Emp. Wage to GDP* is the remuneration paid by the government to its employees as a percentage of GDP (COFOG item D.1).

- *Collective Cons. to GDP* represents collective consumption expenditure as a GDP percentage, referring to pure public goods (COFOG item P.32). *Capital Transfers to GDP* indicates government's investment grants as a GDP percentage (COFOG item P.92).

- *Total Social Payouts to GDP* sums up the aforementioned three variables.

- *Fixed Capital Formation to GDP* captures net acquisitions of fixed capital, inventories, and valuables (COFOG item P.5).

- *Railway, Road, Air, Sea, and Total Infrastructure Investments to GDP* denote infrastructure investments in respective domains relative to GDP.

A.3 Firm-level Characteristics

This section presents descriptions of firm-level characteristics based on data from Worldscope and World Bank's Global Financial Development Database. The initial seven variables are reported in percentage terms.

- *Total Debt* represents total debt (ITEM3255), divided by the book value of assets (ITEM2999) as of 2012.

- *Long-Term Debt* represents long-term debt (ITEM3251) in a given firm-year, divided by the book value of assets (ITEM2999) as of 2012.

- *Non-Conv. Debt* represents non-convertible long-term debt (ITEM18281) in a given firm-year, divided by the book value of assets (ITEM2999) as of 2012.

- *Conv. Debt* represents convertible long-term debt (ITEM18282) in a given firm-year, divided by the book value of assets (ITEM2999) as of 2012.

- *Short-Term Debt* represents short-term debt (ITEM3051) in a given firm-year, divided by the book value of assets (ITEM2999) as of 2012.

- *Cash* represents cash (ITEM2001) in a given firm-year, divided by the book value of assets (ITEM2999) as of 2012.

- *Exchange Rate Growth* represents percent change in the end-of-year exchange rate with respect to Euros for each firm's local currency based on its headquarters.

- *Log(Book Value)* represents the logarithm of the book value of assets (in Euros).

- *Tangibility* represents the ratio of the book value of tangible assets (ITEM2501) to the total book value (ITEM2999).

- *Intangibility* represents the ratio of the book value of intangible assets (ITEM2649) to the total book value (ITEM2999).

- *Log(Tobin's Q)* represents the logarithm of Tobin's Q, which is defined as [(ITEM2999+ITEM8001-ITEM2999)/ITEM2999].

- *Collateral* represents the ratio of collateral to book value [(ITEM2101+ITEM2501)/ITEM2999].

- *Profitability* represents the ratio of operating income before depreciation/amortization to the book value of assets (ITEM18155/ITEM2999).

- *Losses* equals one if operating income before depreciation/amortization to book value of assets (ITEM18155) is less than zero for a given firm.

- *Dividend Paying* equals one if common dividends (ITEM5376) are greater than zero.

- *Equity Capitalization* (GFDD.DM.01) denotes the value of listed shares as a percentage of GDP in the country of a given firm between 2007 and 2012.

- *Loan Issuance* (GFDD.DM.12) is the ratio of newly issued syndicated loans by private entities to GDP in the country of a given firm between 2007 and 2012.

- *International Debt Issuance* (GFDD.DM.12) represents international public debt securities to GDP in the country of a given firm between 2007 and 2012. The last three variables are reported in percentage terms.

A.4 Data on Firms with State Participation

The ownership data come from the OSIRIS dataset provided by Bureau van Dijk. I use the OS_DO and OS_UO datasets, which report information on domestic ultimate owners, ultimate owners, controlling companies, and controlling listed companies.[24] State-owned enterprises (SOEs) are identified as firms where ULTTYPE (in OS_UO) or OTYPE (in OS_DO) is labeled "Public authority, state, government" by OSIRIS. The paper's main results are robust to using only ultimate ownership, but combining these measures provides a more comprehensive set of state participation. Since no direct linking table exists between OSIRIS and Worldscope identifiers, I match firms using cleaned firm names (e.g., after removing common terms such as "international," "holdings," or "group"). Matches with a similarity of 97.5% or higher are retained, and I manually verify names to ensure consistency.

A.5 Data on Capital Controls and Banking Regulations

All variables on capital controls are drawn from section XI.A of the IMF *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER) on capital transactions.[25]

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[24] See Dall'Olio et al. (2023) for more details.

[25] See, e.g., https://www.elibrary-areaer.imf.org/Pages/ChapterQuery.aspx.

- Controls under XI.A.1 are dropped because none of the countries in the sample have such controls.

- Under XI.A.2, control variables refer to controls on capital and money market instruments. *Controls on Bonds* refers to item XI.A.2.a.2, *Controls on Shares* refers to item XI.A.2.a.1, and *Controls on Money Market* refers to item XI.A.2.b.

- *Controls on Derivatives* (item XI.A.3) refers to operations in other negotiable instruments and nonsecured claims not covered under the above subsections, including rights, warrants, options and futures, secondary-market operations in other financial claims (including sovereign and mortgage loans, commercial credits, negotiable instruments originating as loans, receivables, and discounted bills of trade), forward operations (including foreign exchange), swaps (interest rate, debt/equity, equity/debt, foreign currency, and swaps of the foregoing instruments), credits and loans, and operations in foreign exchange without any other underlying transaction (e.g., spot or forward trading and forward cover operations).

- *Controls on Credit Ops* (item XI.A.4) refers to controls on commercial credits, financial credits, and guarantees, sureties, and financial backup facilities.

- *Controls on Direct Investment* (item XI.A.5) refers to investments for the purpose of establishing lasting economic relations both abroad by residents and domestically by nonresidents. These investments are essentially for the purpose of producing goods and services, in particular investments that allow investor participation in the management of the enterprise. The category includes the creation or extension of a wholly owned enterprise, subsidiary, or branch, and the acquisition of full or partial ownership of a new or existing enterprise that results in effective influence over the operations of the enterprise.

- *Controls on Divestment* (item XI.A.6) refers to controls on the liquidation of direct investment.

- *Controls on Real Estate* (item XI.A.7) refers to controls on real estate transactions not associated with direct investment, including, for example, investments of a purely financial nature in real estate or the acquisition of real estate for personal use.

- *Controls on Personal Capital* (item XI.A.8) refers to controls on personal capital transactions.

- *Controls on Nonresident purchase—Bonds* (item XI.A.2.a.2.i), *Controls on Nonresident sale—Bonds* (item XI.A.2.a.2.ii), *Controls on Nonresident purchase—Money Market* (item XI.A.2.b.1), and *Controls on Nonresident sale—Money Market* (item XI.A.2.b.2) refer to controls specifically on nonresidents along these dimensions.

B   Additional Details on the Marmaray Project

This section provides additional details on archaeological discoveries in Marmaray excavations. Tunnel and subway station constructions in Marmaray (see Appendix Figure A1 for a satellite image of its trajectory) resulted in the discovery of the lost 4th-century Harbour of Theodosius, traces of the city wall of Constantine the Great, the remains of 1000-year-old ships, including the only early medieval galley ever discovered. Marmaray discoveries now constitute the world's largest medieval shipwreck collection, and as shown in Figure A3, some of the artifacts can be viewed today in Istanbul's Yenikapi Subway Station.

Archaeologists also uncovered the oldest evidence of settlement in Istanbul, with artefacts, including amphorae, pottery fragments, shells, pieces of bone and horse skulls, and nine human skulls found in a bag, dating back to 6,000 BCE. Glass artefacts and fragments dating from the Hellenistic, Roman, Byzantine and Ottoman periods were also found during excavations near Sirkeci terminal. See http://yenikapibatiklari.com/en/ for more information.

C   Additional Details on BRI Program Membership

As shown in Figure A5, the percentage of treated countries that become official BRI member nations consistently surpasses that of control countries. Within three years of Marmaray's opening, more than 40% of the treated countries become BRI members, while this ratio is less than 10% for control countries. By the six-year mark, all treated countries—with the exception of Kosovo, whose independence China does not recognize—have joined the BRI. In contrast, only about 30% of control countries do so. As detailed in Appendix Table A5, by employing a linear probability model I estimate that the likelihood of official BRI membership increases by 39% on average for treated countries compared to control countries after the opening of Marmaray.

D Additional Details on Chinese Financial Assistance

Appendix Figure A8 provides additional insights into the effects discussed in Table 2, Column
(4). As depicted in the figure, treated and control units receive similar levels of financial
assistance relative to GDP in the pre-treatment period, and this difference remains consistent
over time. However, in the post-treatment era, there is a statistically significant increase of
1.5% in Chinese financial assistance. Nevertheless, this effect quickly diminishes and becomes
both economically and statistically insignificant.

Additionally, Appendix Table A5 presents supplementary results regarding the various
types of Chinese financial assistance that treated countries gain after gaining BRI access.
As indicated in the table, Chinese credit to GDP increases by 0.14%, Chinese loans to GDP
increase by 0.04%, while Chinese grants and other forms of aid, such as debt relief, remain
unchanged. It's worth noting that all coefficient estimates are statistically insignificant
and economically modest. In summary, the results presented in this section emphasize
that, contrary to some expectations, Chinese financial assistance remained economically and
statistically negligible compared to the public debt issued by the treated countries after
gaining access to the BRI.

E Synthetic Difference-in-Differences Estimation

To address potential concerns regarding anticipation, I employ synthetic difference in dif-
ferences (SDID) regressions as per Arkhangelsky et al. (2021), estimating a local average
treatment effect on treated units (τ^{SDID}) by matching country trends based on several
observable characteristics such as the ones included in $X_{i,t-1}$. As robustness, I also use addi-
tional matching variables such as *GDP per Capita*, representing Gross Domestic Product per
capita in USD; *Inflation*, indicating the annual percentage change in the GDP deflator; *Final
Consumption Expenditure*, denoting total consumption expenditure in USD; *Households and
NPISHs Final Consumption Expenditure*, referring to the final consumption expenditure of
households and non-profit institutions serving households in USD; *General Government Fi-
nal Consumption Expenditure*, representing the final consumption expenditure of the general
government sector in USD; and *Foreign Direct Investment, Net*, denoting net foreign direct
investment flows in the balance of payments in USD. The purpose of choosing these variables
is to establish another credible counterfactual group with comparable characteristics in key
economic outcome variables such as growth, public and private spending, and foreign direct
investment, as well.

SDID estimator puts more weight on non-Eastern European (control unit) countries and

time periods (pre-treatment) that are on average more similar to the cross-sectional and times series characteristics of Eastern European countries. In particular, unit weights are calculated so that the average outcome for Eastern European countries moves parallel to the weighted average of non-Eastern European countries and time weights are calculated so that the average post-treatment outcome for each of the non-Eastern European countries differs by a constant from the weighted average of the pre-treatment outcomes for the same control units. Overall, the SDID strategy weakens this paper's reliance on the parallel trends assumption.[26]

E.1 Reestimation of Main Findings with Synthetic Difference-in-Differences

Empirical findings presented in Section 6, whether at the country- or firm-year level, hinge on parallel trends assumptions. Although these assumptions can't be formally verified, substantial evidence has been provided, showing that before the event, trends are remarkably similar for treatment and control units. In this section, I employ a more refined approach to estimating average treatment effects, bypassing the reliance on the parallel trends assumption. I utilize the latest methodologies to construct synthetic counterfactuals (Arkhangelsky et al., 2021). This method uses covariates to ensure that the trends of observed outcomes for treated units align with those of their synthetic counterparts. This not only guarantees adherence to parallel trends, but also validates the findings from previous specifications in a more robust manner.

In Panel A of Table A2, the synthetic difference-in-differences method unveils notable results. BRI access drives a 10.16% surge in government debt to GDP (column 1), marking a significant escalation in government debt relative to GDP in the post-treatment phase. In contrast, corporate loans and debt to GDP witness a marked decline, evidenced by a coefficient of -11.90% (column 2). The increased sovereign debt supply is predominantly

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[26]A skeptic might argue that historical economic confounders, dating back a century, could explain the existence of a railway between China and Western Europe, e.g., through Russia, and the absence of one between China and Eastern Europe. It is crucial to acknowledge that constructing a railway beneath the Bosporus was technologically impossible with past technologies, and ferrying trains across one of the busiest maritime routes was unfeasible. The Trans-Siberian Railway, conceived in the 20th century, originally intended for trains to be transported by boats across Lake Baikal, but this plan was quickly abandoned due to impracticality, leading to the construction of a railway around the lake instead. Thus, geographical constraints historically rendered direct railway transportation between Asia and Eastern Europe nonviable. This said, in untabulated analyses I also consider the estimation of conditional average treatment effect (CATE) using a partially linear regression (PLR) model following Robinson (1988) and Chernozhukov et al. (2016, 2017). I model treatment (being located in Eastern Europe or not) as a function of confounders indicated as X such as being a part of Ottoman Empire or distance from Istanbul. Confounders affect the treatment variable T via function $f(.)$ and the outcome variable via function $\theta(.)$ as follows: $T_i = f(X_i) + \eta_i$ and $\Delta Y_i = \theta(X_i) \cdot T_i + g(X_i, W_i) + \epsilon_i$. This specification allows me to estimate the CATE of BRI access and provide rich evidence on effect heterogeneity. Findings from these analyses are available upon request.

absorbed by domestic investors, as indicated by the τ^{SDID} coefficient of 10.20% (column 3). Additionally, there is an increase in yield to maturity, with a coefficient of 1.21% (column 4), implying a heightened cost of sovereign debt post-BRI access. Finally, total corporate debt to assets sees a significant contraction, with a coefficient of -10.14% (column 5), illustrating a response to the evolving economic conditions post-BRI access. These findings are consistent even when additional covariates, as explained in the Appendix, are included in Panel B, reinforcing the robustness of the results and the insights gained from the synthetic difference-in-differences methodology.

The above findings strongly suggest that the previously discussed results are not merely artifacts of certain countries or firms anticipating the opening of Marmaray and adjusting their positions accordingly. The synthetic difference-in-differences methodology generates counterfactual scenarios accounting for any such anticipatory behaviors observed, offering a more refined understanding of the estimated causal effects. Remarkably, even after controlling for these potential anticipatory actions, the results persist in being significant, reinforcing the robustness and the credibility of the initially estimated effects of gaining access to the BRI.

F Additional Results

F.1 BRI Access and Political Alliance with China

In this section, I investigate effect heterogeneity based on political alliances with China in the wake of BRI access. To measure political alliance, I examine whether European countries become official BRI program members, based on data from the UN and CFR (https://bit.ly/3Qpra3U). As shown in Appendix Figure A5 and Table A5, there is a stark differential in BRI program membership between treated and control countries in the post-Marmaray era, suggesting that the treated countries become politically aligned with China after they gain physical access to the BRI's freight network. Motivated by this, I investigate whether the financial variables exhibit heterogeneity across BRI program membership, which would provide a mechanism for the empirical findings of the paper.

[**Insert Table A15 here**]

I present my findings in Table A15. As shown, treated countries exhibit an increase of 8.76% in public debt issuance and a decrease of 11.75% in corporate loans and debt issuance, along with a reduction of 11.50% in the corporate debt to assets ratio after they become BRI members.[27] Control countries that already had access to trade routes with China through

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[27]BRI memberships are in the post-Marmaray era.

the Trans-Siberian Railway and become BRI members, however, do not exhibit any changes in their public and private debt issuance characteristics. This suggests that the estimated effects on these variables are due to BRI access induced by Marmaray's inauguration.

In Column 4 of Table A15, I show that BRI access does not induce more financial assistance from China on average. I find similar evidence in Appendix Table A5 across various forms of financial variables. That said, Table A14 of the revised manuscript shows that post-BRI access, Chinese *grants* to official BRI members rise significantly, whereas *credit* and *loan* flows show no detectable change for members or non-members—consistent with countries relying on their own sovereign debt issuance. Moreover, in Figure A8 of the Appendix, I show that there is an immediate increase in financial assistance from China to treated countries. This increase is followed by an immediate reduction, which can be explained by China's inability to finance the entire BRI project, the lack of subcontracting opportunities for Chinese firms in Eastern Europe (which is important for China in loaning money overseas), or China observing the lack of infrastructure investments in treated countries (as shown in Section 6.3) and cutting loans to the region.

F.2 China Trade Policy Uncertainty and BRI Membership Effects on Firms

The previous sections have presented evidence suggesting that access to the BRI leads to increased public debt issuance without corresponding rises in infrastructure investments, which suggests uncertainty about the future of the BRI program. This section seeks to explore whether BRI-related trade policy uncertainty affects corporate debt issuance across both intensive and extensive margins, employing a triple-difference framework.

For this purpose, I use the China Trade Policy Uncertainty (TPU) index, as detailed in Davis et al. (2019), as a proxy for BRI-related uncertainty. This index is formulated using natural language processing (NLP) techniques to examine Chinese news articles categorized under 'Economy', 'Uncertainty', and 'Trade Policy'. The 'Economy' and 'Uncertainty' categories include news associated with economic and business contexts, alongside words such as uncertain, unpredictable, and unknown. The 'Trade Policy' category encompasses discussions on trade, tariffs, trade barriers, treaties, protectionism, and subsidies, with a particular emphasis on import and export dynamics. Therefore, the China TPU index emerges as a comprehensive measure of the uncertainty in China's trade policy, aptly serving as a proxy for the uncertainties surrounding the BRI.

This said, the China TPU index is not exclusively focused on the BRI. It likely captures effects from significant events like the U.S.-China trade disputes, as well. If uncontrolled, such factors could potentially affect not only the China TPU but also the dependent variables of this study, posing a risk as an omitted variable. To address this, I first include the U.S. TPU

index (Baker et al. (2024)) in my analysis as a control variable to close potential backdoor paths. As an additional robustness test, I also orthogonalize China TPU against the U.S. TPU. This approach allows me to determine if variations in China's TPU, independent of the U.S. TPU, are the main drivers of the results. If this is the case, it suggests that the effects we observe are more directly related to China-specific risks, rather than being influenced by the U.S.-China trade war or similar external factors.

Importantly, by employing China TPU and interactions with BRI membership, I not only assess effect heterogeneity over time and across different firms and countries but also evaluate the overarching influence of China TPU and BRI membership. The significance of interaction terms other than the triple interaction could for example suggest the broader impact of China TPU and BRI membership, even prior to the treatment. Conversely, if these interactions are not significant, it could help reinforce the view that the Marmaray inauguration provided BRI access to treated countries and introduced them to BRI-associated risks.

The results presented in Table A16 reveal important insights about the incremental effect of China TPU and BRI membership on corporate debt issuance. Firstly, the interaction term $\text{Treated}_j \times \text{Post}_t \times \text{High China TPU}_t$ shows a substantial negative effect (-7.99%) on Total $\text{Debt}_{j,t}$ in Columns 1 and 2, indicating that high trade policy uncertainty in China, post-treatment, reduces debt issuance for treated firms. However, the effect of $\text{Treated}_j \times \text{Post}_t \times \text{High U.S. TPU}_t$ is not significant, as evidenced by the coefficient of 0.42 in Column 2. This suggests that U.S. trade policy uncertainty does not have a comparable impact. Moreover, the orthogonalized China TPU ($\text{Treated}_j \times \text{Post}_t \times \text{China TPU}_t^{\perp}$) also shows a significant negative impact (-0.05) on corporate debt in Column 3, reinforcing the influence of China's trade policy uncertainty. This estimate suggests that a one standard deviation increase in China TPU (unrelated to U.S. TPU), decreases corporate debt by 4.22%.

Furthermore, the term $\text{Treated}_j \times \text{BRI Member}_{j,t}$ in Column 4 shows a pronounced negative effect (-9.39%) on Total $\text{Debt}_{j,t}$, suggesting that BRI membership for treated firms significantly reduces debt issuance.[28] The individual interaction terms $\text{Treated}_j \times \text{High China TPU}_t$, $\text{Treated}_j \times \text{High U.S. TPU}_t$, and $\text{Treated}_j \times \text{China TPU}_t^{\perp}$ show relatively minor and insignificant effects, with coefficients of 0.17 or 0.11, -0.32, and 0.02 respectively. Furthermore, the variable $\text{BRI Member}_{j,t}$, representing firms from BRI member countries during post-membership years, also has an insignificant coefficient of -0.01. This finding suggests that the estimated effect of BRI program membership on Total $\text{Debt}_{j,t}$ is both statistically and economically negligible for countries that did not yet gain physical access to the New Silk Road. Membership in the BRI program, without actual physical integration

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[28]In untabulated regressions, I find that this effect becomes more negative in high-TPU periods ($-11.22^{***}\%$), and is small and statistically indistinguishable from zero in low-TPU periods (-1.36%).

into the New Silk Road infrastructure, does not significantly alter debt issuance patterns of the member country firms.[29]

Overall, the findings discussed above, along with those presented in Section F.1, illustrate how political alliances with China and the China TPU shape financing decisions at both the country and firm levels. Additionally, they highlight that without the Marmaray intervention, these factors do not significantly impact financing outcomes. The next section provides further evidence on the economic mechanisms underpinning the core findings of the paper.

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[29]In untabulated analyses, I also find that the China TPU is factored as an additional risk in sovereign debt markets, particularly at the extensive margin. The interaction term $\text{Treated}_j \times \text{Post}_t \times \text{High China TPU}_t$ demonstrates a significant positive impact (0.581%, t-stat = 2.13) on sovereign yields, indicating that high China TPU during the post-treatment period is priced in as additional risk. The term $\text{Treated}_j \times \text{Post}_t$ also shows a substantial positive effect (1.02%, t-stat = 2.08) on sovereign yields, suggesting an inherent risk associated with being treated in the post-treatment period. However, the interaction $\text{Treated}_j \times \text{High China TPU}_t$ reveals an insignificant effect (-0.19%, t-stat = -0.73), indicating that high China TPU alone, without the post-treatment context, does not significantly alter sovereign yields. These results, along with my findings on the incremental effect of BRI membership on sovereign yields — a 1.44% increase with a t-stat of 2.89 — are not tabulated for brevity but remain available upon request.

Table A1. **Placebo Tests on Public- and Private-Sector Debt Issuance**

This table reports findings from two placebo tests. The first placebo test compares Western European countries (the control units from Table 2) with placebo treatment units from the Middle East and Western Asia including: Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Russian Federation, Saudi Arabia, Syrian Arab Republic, Turkey, Ukraine, United Arab Emirates, West Bank and Gaza, and Yemen, Rep. The comparison is before and after Marmaray's inauguration. In the second placebo test, the panel compares control units from the main specification with placebo treatment units from the rest of Asia: Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, India, Indonesia, Japan, Kazakhstan, Kyrgyz Republic, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Tajikistan, Thailand, Turkmenistan, Uzbekistan, and Vietnam. Effects are estimated using the main specification in Equation (1). Variable descriptions can be found in Section A of the Appendix. Standard errors are clustered in two ways at the country and year levels. The symbols $\star\star\star$, $\star\star$, and $\star$ indicate coefficient estimates significantly different from zero at the 1%, 5%, and 10% significance levels, respectively.

	Panel A: Placebo Treatment on Middle East			Panel B: Placebo Treatment on Asia (Excl. Middle East)		
	Government Debt to GDP$_{i,t}$	Corporate Loans and Debt to GDP$_{i,t}$	Household Debt to GDP$_{i,t}$	Government Debt to GDP$_{i,t}$	Corporate Loans and Debt to GDP$_{i,t}$	Household Debt to GDP$_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)
Treated$_i$ × Post$_t$	2.57	4.43	-3.60	0.40	2.08	0.11
	(0.54)	(0.67)	(-0.93)	(0.11)	(0.52)	(0.04)
GDP Growth$_{i,t-1}$	-0.59**	-0.33	-0.73***	-0.68**	-0.21	-0.54*
	(-2.67)	(-0.63)	(-3.10)	(-2.66)	(-0.56)	(-2.10)
Unemployment Rate$_{i,t-1}$	2.19***	1.06	0.18	2.08***	0.67	0.25
	(3.57)	(1.41)	(0.41)	(3.49)	(0.94)	(0.61)
Exports to GDP$_{i,t-1}$	-0.11	-0.37	-0.69***	0.09	-0.27	-0.78***
	(-0.51)	(-1.34)	(-3.05)	(0.60)	(-0.99)	(-3.66)
Imports to GDP$_{i,t-1}$	0.11	0.63	-0.01	-0.07	0.23	0.46**
	(0.60)	(1.73)	(-0.05)	(-0.40)	(0.86)	(2.54)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	465	434	434	579	560	560
R-squared	0.922	0.939	0.953	0.957	0.952	0.958

Table A2. **Estimated Effects of BRI Access Based on Synthetic Difference-in-Differences**

This table presents the estimated effects of BRI access on public and private debt issuance, investor composition in the sovereign debt market, sovereign yields, and corporate leverage using the synthetic difference-in-differences methodology as in Arkhangelsky et al. (2021). The unit of observation is at the country (i) and year (t) level. τ^{SDID} refers to the estimate of the average treatment effect on the treated units. In Panel A, synthetic counterfactuals are estimated by using macroeconomic control variables from Table 2 (i.e., *GDP Growth$_{i,t-1}$*, *Unemployment Rate$_{i,t-1}$*, *Exports to GDP$_{i,t-1}$*, and *Imports to GDP$_{i,t-1}$*) and control variables related to bond-issue characteristics in Table 4 (i.e., *Macaulay Duration$_{i,t}$*, *Investment Grade$_{i,t}$*, *Inflation Protected$_{i,t}$*, *No Issue$_{i,t}$* and *Log(Total Issue Amount)$_{i,t-1}$*). Descriptions for these variables are provided in Section A of the Appendix. In Panel B, additional covariates from World Bank Open Data are included to generate synthetic counterfactuals. These covariates include: Current account balance (% of GDP), Foreign direct investment, net (BoP, current US$), Personal remittances, received (% of GDP), General government final consumption expenditure (current US$), General government final consumption expenditure (annual % growth), Households and NPISHs Final consumption expenditure (current US$), Households and NPISHs Final consumption expenditure per capita growth (annual %), Final consumption expenditure (current US$), Gross fixed capital formation (constant LCU), Inflation, GDP deflator (annual %), GDP per capita (current US$). The sampling period is between 2007 and 2022. Standard errors are bootstrapped as in Arkhangelsky et al. (2021). The symbols $\star\star\star$, $\star\star$, and $\star$ indicate coefficient estimates significantly different from zero at the 1%, 5%, and 10% significance levels, respectively.

Panel A: Synthetic Difference-In-Differences Based on Covariates from Main Specifications					
	Gov. Debt to GDP$_{i,t}$	Corp. Loans and Debt to GDP$_{i,t}$	Domestic Investors$_{i,t}$	Yield to Maturity$_{i,t}$	Total Corp. Debt to Assets$_{i,t}$
	(1)	(2)	(3)	(4)	(5)
τ^{SDID}	10.16***	-11.90**	10.20***	1.21***	-10.14**
	(2.90)	(-2.23)	(2.73)	(3.76)	(-2.33)
Synthetic Controls Generated Using					
Macro variables in Table 2	Yes	Yes	Yes	Yes	Yes
Bond-issue variables in Table 4	No	No	No	Yes	No
Panel B: Synthetic Difference-in-Differences with Additional Covariates					
	Gov. Debt to GDP$_{i,t}$	Corp. Loans and Debt to GDP$_{i,t}$	Domestic Investors$_{i,t}$	Yield to Maturity$_{i,t}$	Total Corp. Debt to Assets$_{i,t}$
	(1)	(2)	(3)	(4)	(5)
τ^{SDID}	7.32**	-14.11**	8.35**	1.23***	-11.98**
	(2.06)	(-2.44)	(2.25)	(4.59)	(-2.37)
Synthetic Controls Generated Using					
Macro variables in Table 2	Yes	Yes	Yes	Yes	Yes
Bond-issue variables in Table 4	No	No	No	Yes	No
Additional variables in Table A3	Yes	Yes	Yes	Yes	Yes

Table A3. **Summary Statistics on Additional SDID Variables**

This table presents summary statistics for macroeconomic variables utilized in synthetic difference-in-differences estimation. Sample contains country-year level observations, and the data is sourced from the World Bank Open Data. *GDP per Capita* (WB item NYGDPPCAPCD) quantifies Gross Domestic Product per capita in current US dollars. *Inflation* (WB item NYGDPDEFLKDZG) signifies the annual percentage change in the GDP deflator. *Final Consumption Expenditure* (WB item NECONTOTLCD) represents total consumption expenditure in current US dollars. *Households and NPISHs Final Consumption Expenditure* (WB item NECONPRVTCD) refers to the final consumption expenditure of households and non-profit institutions serving households, all in current US dollars. *General Government Final Consumption Expenditure* (WB item NECONGOVTCD) refers to the final consumption expenditure of the general government sector in current US dollars. *Foreign Direct Investment, Net* (WB item BNKLTDINVCD) refers to net foreign direct investment flows in the balance of payments, all in current US dollars. The last four variables are reported in billions.

	N	Mean	Median	SD
GDP Per Capita	539	29,958.41	22,641.81	22,816.72
Inflation	538	2.93	1.88	5.58
Final Consumption Expenditure	531	412.14	146.68	690.25
Households and NPISHs Final Consumption Expenditure	531	300.25	110.02	506.29
General Government Final Consumption Expenditure	531	111.89	39.65	186.39
Foreign Direct Investment, Net	525	2.69	-0.74	31.29

Table A4. **BRI Access and International Trade**

Goods exports (imports) refer to all movable goods including nonmonetary gold and net exports of goods under merchanting involved in a change of ownership from residents to nonresidents (from nonresidents to residents) in U.S. dollars. Export/Import volume indexes are from UNCTAD's volume index series. Merchandise exports to high-income economies and imports from the Near East are the sum of merchandise exports/imports by the reporting economy from high-income/Near East economies according to the World Bank classification of economies. Data are expressed as a percentage of total merchandise imports by the economy. Data are from Worldbank with the following identifiers: Goods exports is BX.GSR.MRCH.CD, Export volume index is TX.QTY.MRCH.XD.WD, Merchandise exports to high-income economies is TX.VAL.MRCH.HI.ZS, Goods imports is BX.GSR.MRCH.CD, Import volume index is TM.QTY.MRCH.XD.WD, and Merchandise imports from the Near East is TM.VAL.MRCH.AL.ZS. Standard errors are clustered at the country level. $\star\star\star$, $\star\star$, and $\star$ indicate that the coefficient estimate is significantly different from zero at the 1%, 5%, and 10% levels, respectively.

	Goods exports (Logged, \$B)	Export volume index	Merchandise exports to high-income countries (% of Merch.)	Goods imports (Logged, \$B)	Import volume index	Merchandise imports from Near East (% of Merch.)
	(1)	(2)	(3)	(4)	(5)	(6)
τ^{DD}	0.12**	77.12***	6.13*	0.02	23.10*	0.95***
	(2.23)	(3.73)	(1.78)	(0.47)	(1.97)	(3.26)
τ^{SDID}	0.17***	44.34***	3.07***	-0.02	21.45***	0.89***
	(3.03)	(3.49)	(2.94)	(-0.69)	(2.76)	(3.54)
N	523	531	560	523	517	551
R^2	0.997	0.919	0.885	0.997	0.940	0.887

Table A5. **Findings on BRI Membership and China's Financial Support to Corridor Countries**

This table presents evidence on official government participation in the BRI program and various forms of financial support extended by China to corridor countries. The dependent variable *BRI Membership* is assigned a value of one if a nation officially joins BRI within a particular year. In Columns 2 to 5, the table reports findings on several economic aid measures from China, each expressed relative to the GDP of the recipient country i during year t. These metrics, derived from AidData's Global Chinese Development Finance Dataset, encompass a broad array of financial aid categories. *Chinese Credit to GDP* represents the aggregate sum of buyer's and seller's credits China allocates to country i in year t. *Chinese Loans to GDP* indicates the total fiscal loans China grants to country i in the same timeframe. *Chinese Grants to GDP* quantifies non-repayable funds or products that China provides. *Other Assistance to GDP* includes various other financial aid, such as scholarships or debt relief initiatives, that do not fall under the previous categories. All these forms of assistance are normalized by the GDP of country i in year t. Descriptions for the remaining variables are provided in Section A of the Appendix. Coefficient estimates are reported in percentage terms. $\star\star\star$, $\star\star$, and $\star$ indicate that the coefficient estimate is significantly different from zero at the 1%, 5%, and 10% levels, respectively.

	BRI Member$_{i,t}$	Chinese Credit to GDP$_{i,t}$	Chinese Loans to GDP$_{i,t}$	Chinese Grants to GDP$_{i,t}$	Other Assistance to GDP $_{i,t}$
	(1)	(2)	(3)	(4)	(5)
Treated$_i$ × Post$_t$	0.39***	0.14	0.04	-0.00	-0.00
	(4.50)	(1.17)	(0.96)	(-0.24)	(-1.04)
GDP Growth$_{i,t-1}$	0.00	0.01	0.00	-0.00	0.00
	(0.21)	(0.70)	(0.71)	(-0.86)	(1.07)
Unemployment Rate$_{i,t-1}$	-0.03***	-0.01	0.00	-0.00	-0.00
	(-3.95)	(-0.74)	(0.66)	(-1.24)	(-0.74)
Exports to GDP$_{i,t-1}$	0.01**	0.01	0.00	-0.00	-0.00
	(2.78)	(0.99)	(0.76)	(-0.18)	(-1.04)
Imports to GDP$_{i,t-1}$	-0.01***	-0.02	-0.00	0.00	0.00
	(-3.08)	(-1.00)	(-0.66)	(0.21)	(0.92)
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
N	624	539	539	539	539
R^2	0.691	0.123	0.177	0.365	0.100

Table A6. **Main Findings After Excluding PIIGS Countries**

This table presents the outcomes from regression analyses detailed in Table 2, after excluding PIIGS countries (Portugal, Ireland, Italy, Greece, and Spain). For descriptions of variables, please refer to Section A of the Appendix.

	Government Debt to GDP$_{i,t}$	Corporate Loans and Debt to GDP$_{i,t}$	Household Debt to GDP$_{i,t}$	Chinese Financial Assistance to GDP$_{i,t}$	Total Corp. Debt to Assets$_{i,t}$	Total Long-Term Corp. Debt to Assets$_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)
Treated$_i$ × Post$_t$	12.21***	-15.68**	-2.09	0.18	-14.45***	-10.70***
	(3.10)	(-2.69)	(-0.67)	(1.40)	(-3.21)	(-3.12)
GDP Growth$_{i,t-1}$	-0.68**	-0.68*	-0.70***	0.02	-0.71	-0.32*
	(-2.49)	(-1.88)	(-3.07)	(0.79)	(-1.45)	(-1.98)
Unemployment Rate$_{i,t-1}$	0.69**	1.39**	0.42	0.01	-0.54	0.16
	(2.45)	(2.35)	(1.11)	(0.39)	(-0.56)	(0.43)
Exports to GDP$_{i,t-1}$	-0.27	-0.83*	-0.81***	0.02	-0.19	-0.10
	(-1.05)	(-2.09)	(-3.68)	(0.99)	(-0.55)	(-0.33)
Imports to GDP$_{i,t-1}$	0.29	1.01**	0.78***	-0.02	0.24	0.20
	(1.36)	(2.73)	(3.51)	(-1.00)	(0.63)	(0.64)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	448	360	360	464	352	350
R^2	0.921	0.960	0.976	0.140	0.530	0.700

Table A7. **Effect Heterogeneity in Corporate Debt: Size, Age, and Financing Constraints**

This table presents evidence of heterogeneity in BRI's effects on corporate debt issuance based on firm size, age, and external financing dependency. Large Firm$_{j,t}$ and Old Firm$_{j,t}$ are indicator variables equal to one if firm j's book value of common equity (in USD) and age in year t are greater than their sample medians, respectively. In column (1), observations with missing book value of common equity are controlled for using a dummy variable. High WW Index$_{j,t}$ is equal to one if firm j's Whited and Wu (2006) financial constraints (WW) index is greater than the sample median in year t, and zero otherwise. Descriptions for the remaining variables are presented in Table 5 and Section A of the Appendix. The sampling period ranges from 2007 to 2022. Standard errors are doubly clustered at the country and year levels. Symbols ***, **, and * indicate coefficients that significantly deviate from zero at the 1%, 5%, and 10% levels, respectively.

	Total Debt$_{j,t}$	Total Debt$_{j,t}$	Total Debt$_{j,t}$
	(1)	(2)	(3)
Treated$_j$ × Post$_t$	-3.34**	-1.96	-2.89**
	(-2.18)	(-1.13)	(-2.35)
Treated$_j$ × Post$_t$ × Large Firm$_{j,t}$	-6.62***		
	(-4.80)		
Large Firm$_{j,t}$	0.76		
	(1.10)		
Treated$_j$ × Post$_t$ × Old Firm$_{j,t}$		-3.26*	
		(-2.11)	
Old Firm$_{j,t}$		0.46	
		(0.39)	
Treated$_j$ × Post$_t$ × High WW Index$_{j,t}$			-4.14**
			(-2.32)
High WW Index$_{j,t}$			0.10
			(0.21)
Exchange Rate Growth$_{j,t-1}$	0.11**	0.09*	0.09*
	(2.46)	(1.86)	(1.80)
Log(Book Value)$_{j,t-1}$	22.42***	22.80***	22.79***
	(13.90)	(13.92)	(13.95)
Tangibility$_{j,t-1}$	13.52**	13.19*	13.11*
	(2.16)	(2.10)	(2.10)
Intangibility$_{j,t-1}$	13.50***	14.16***	14.11***
	(3.75)	(3.90)	(3.89)
Log(Tobin's Q)$_{j,t-1}$	-2.72**	-0.28	-0.31
	(-2.78)	(-0.30)	(-0.33)
Collateral$_{j,t-1}$	0.44	1.73	1.76
	(0.08)	(0.33)	(0.33)
Profitability$_{j,t-1}$	-1.10	-1.46	-1.46
	(-0.86)	(-1.07)	(-1.05)
Losses$_{j,t-1}$	2.25***	2.27***	2.27***
	(3.10)	(3.02)	(3.08)
Dividend Paying$_{j,t-1}$	0.15	0.43	0.44
	(0.25)	(0.81)	(0.85)
Firm FE	Yes	Yes	Yes
Industry FE× Year FE	Yes	Yes	Yes
N	41,403	41,403	41,403
R^2	0.688	0.683	0.683

Table A8. **Country-Level Effect Heterogeneity in Corporate Debt: Switching Costs**

This table presents evidence of heterogeneity in BRI's effects on corporate debt issuance based on the ease of issuing equity, international debt, and getting new loans. Data is from the merged universe of Worldscope and World Bank's Global Financial Development Database. *Total Debt*$_{j,t}$ represents firm j's total debt (ITEM3255) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Treated*$_j$ is set to one for firms from Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post*$_t$ is one for years after 2013 and zero otherwise. *Equity Capitalization*$_i$ measures stock market capitalization to GDP, *Loan Issuance*$_i$ refers to syndicated loan issuance volume to GDP, and *International Debt Issuance*$_i$ refers to outstanding international public debt securities to GDP, all averaged in the pre-Marmaray era, i.e., between 2007 and 2012. Subscript i refers to the headquarter country of firm j. Descriptions for the remaining variables are presented in Table 5 and Section A of the Appendix. The sampling period ranges from 2007 to 2022. Standard errors are doubly clustered at the country and year levels. Symbols ***, **, and * indicate coefficients that significantly deviate from zero at the 1%, 5%, and 10% levels, respectively.

	Total Debt$_{j,t}$	Total Debt$_{j,t}$	Total Debt$_{j,t}$
	(1)	(2)	(3)
Treated$_j$ × Post$_t$ × Equity Capitalization$_i$	-0.08**		
	(-2.45)		
Treated$_j$ × Post$_t$ × Loan Issuance$_i$		-1.49**	
		(-2.15)	
Treated$_j$ × Post$_t$ × International Debt Issuance$_i$			-0.15**
			(-2.44)
Treated$_j$ × Post$_t$	-1.19**	0.13	-0.88
	(-2.20)	(0.08)	(-0.77)
Exchange Rate Growth$_{j,t-1}$	-0.03	0.00	0.00
	(-1.04)	(0.01)	(0.28)
Log(Book Value)$_{j,t-1}$	16.41***	16.90***	16.90***
	(10.53)	(11.16)	(10.83)
Tangibility$_{j,t-1}$	10.41**	10.36**	9.32**
	(2.55)	(2.57)	(2.39)
Intangibility$_{j,t-1}$	8.63***	10.04***	10.22***
	(3.50)	(4.15)	(3.96)
Log(Tobin's Q)$_{j,t-1}$	-1.54**	-1.36**	-1.35**
	(-2.37)	(-2.30)	(-2.15)
Collateral$_{j,t-1}$	0.94	1.57	2.30
	(0.25)	(0.48)	(0.67)
Profitability$_{j,t-1}$	-1.64	-0.96	-0.86
	(-1.03)	(-0.99)	(-0.95)
Losses$_{j,t-1}$	1.02*	1.22*	1.30*
	(1.93)	(2.02)	(1.95)
Dividend Paying$_{j,t-1}$	0.86	0.54	0.45
	(1.39)	(0.98)	(0.78)
Firm FE	Yes	Yes	Yes
Industry FE× Year FE	Yes	Yes	Yes
N	33,575	38,478	36,962
R^2	0.693	0.687	0.688

Table A9. **Robustness Tests on Countries Along and Beyond Orient Express Routes**

This table examines the effect of BRI access on public and private debt issuance by subsamples of countries along and beyond the Orient Express (OE) routes, following the primary difference-in-differences specification in Equation (1). *All OE* refers to the subsample of all European countries along the historic Orient Express routes, as shown in Panel A of Figure A9. *Northern OE* refers to the subsample of all European countries along the northern Orient Express routes, as shown in Panel B of Figure A9. *Southern OE* refers to the subsample of all European countries along the southern Orient Express routes, as shown in Panel C of Figure A9. *Non-OE* refers to the subsample of all European countries that are not along any of the Orient Express routes, as shown in Panel A of Figure A9. $Treated_i$ is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while $Post_t$ is set to one for years after 2013 and zero otherwise. All other variables are described in detail in Section A of the Appendix. The sampling period spans from 2007 to 2022. Standard errors are clustered at the year level. Symbols $\star\star\star$, $\star\star$, and $\star$ denote coefficients significantly different from zero at the 1%, 5%, and 10% levels, respectively.

	Panel A: Government Debt to GDP$_{i,t}$			
	All OE	Northern OE	Southern OE	Non-OE
	(1)	(2)	(3)	(4)
$Treated_i \times Post_t$	11.98***	4.34***	11.84***	-1.67
	(8.31)	(3.06)	(3.79)	(-0.73)
GDP Growth$_{i,t-1}$	-0.77*	-1.00**	-0.47	-0.67**
	(-1.87)	(-2.86)	(-0.90)	(-2.79)
Unemployment Rate$_{i,t-1}$	1.66***	1.02**	1.70***	1.91***
	(5.91)	(2.74)	(3.81)	(4.51)
Exports to GDP$_{i,t-1}$	0.03	0.05	-0.78**	-0.04
	(0.12)	(0.16)	(-2.16)	(-0.26)
Imports to GDP$_{i,t-1}$	0.07	0.44	0.39*	-0.10
	(0.60)	(1.19)	(2.07)	(-0.57)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	238	120	120	285
R^2	0.949	0.945	0.965	0.936

	Panel B: Corporate Loans and Debt to GDP$_{i,t}$			
	All OE	Northern OE	Southern OE	Non-OE
	(1)	(2)	(3)	(4)
$Treated_i \times Post_t$	-13.04***	-9.68***	-9.07*	1.25
	(-4.28)	(-3.22)	(-2.01)	(0.36)
GDP Growth$_{i,t-1}$	-1.05**	-0.44	-3.05***	-0.85***
	(-2.84)	(-1.66)	(-5.60)	(-2.98)
Unemployment Rate$_{i,t-1}$	1.81***	3.41***	1.32	0.32
	(3.99)	(9.33)	(1.45)	(0.88)
Exports to GDP$_{i,t-1}$	-1.67***	-0.97**	-2.85***	-0.52***
	(-7.31)	(-2.87)	(-7.24)	(-5.58)
Imports to GDP$_{i,t-1}$	1.92***	1.71***	2.23***	0.83**
	(7.44)	(3.70)	(7.00)	(2.49)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	180	120	75	255
R^2	0.945	0.978	0.898	0.957

Capital Controls, Macroprudential Policies, and the Absorption of BRI-Driven Public Debt

This table examines the effect of BRI access on investor composition in the sovereign debt market, following the primary difference-in-differences specification in Equation (1). *Domestic Investors*$_{i,t}$ indicates the share of country i's debt owned by domestic banks and non-bank investors in year t. *Domestic CB*$_{i,t}$, *Foreign Investors*$_{i,t}$, and *Foreign CB*$_{i,t}$ represent the shares held by the nation's central bank, foreign banks and non-bank investors, and foreign central banks, respectively. These data are from Arslanalp and Tsuda (2014a,b). *Treated*$_i$ is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post*$_t$ is one for years after 2013 and zero otherwise. Control variables—*GDP Growth*$_{i,t-1}$, *Unemployment Rate*$_{i,t-1}$, *Exports to GDP*$_{i,t-1}$, *Imports to GDP*$_{i,t-1}$, and *Log(Total Issue Amt.)*$_{i,t-1}$—are sourced from the World Bank Open Data and described in Section A of the Appendix. All capital control variables for country i and year t come from Section XI.A ("Capital Transactions") of the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER). Capital controls under Section XI.A.1 are dropped because none of the countries in the sample have such controls. The table reports reports findings after controlling for the following AREAER Sections: *Controls on Bonds*$_{i,t}$ (XI.A.2.a.2), *Controls on Equity*$_{i,t}$ (XI.A.2.a.1), *Controls on Money Market*$_{i,t}$ (XI.A.2.b), *Controls on Derivatives*$_{i,t}$ (XI.A.3), *Controls on Credit Operations*$_{i,t}$ (XI.A.4), *Controls on Direct Investment*$_{i,t}$ (XI.A.5), *Controls on Divestment*$_{i,t}$ (XI.A.6), *Controls on Real Estate*$_{i,t}$ (XI.A.7), *Controls on Personal Capital* (XI.A.8), *Controls on Nonresident purchase—Bonds*$_{i,t}$ (XI.A.2.a.2.i), *Controls on Nonresident sale/issue—Bonds*$_{i,t}$ (XI.A.2.a.2.ii), *Controls on Nonresident purchase—Money Market (MM)*$_{i,t}$ (XI.A.2.b.1), and *Controls on Nonresident sale/issue—Money Market (MM)*$_{i,t}$ (XI.A.2.b.2). Details on these variables are presented in Section A.5. *Exchange Rate*$_{i,t}$ refers to units of country i's currency per euro at year-end t. *Macroprudential Policies*$_{i,t}$ refers to year-end iMaPP score sourced from IMF's integrated Macroprudential Policy (iMaPP) database. It is the net count of tightenings minus easings across 17 instruments: countercyclical capital buffer (CCB); capital conservation buffer (CONSERVATION); capital requirements (CAPITAL); leverage ratio (LVR); loan-loss provisioning (LLP); limits on credit growth (LCG); borrower-based loan restrictions (LOANR); limits on foreign-currency loans (LFC); loan-to-value limits (LTV); debt-service-to-income limits (DSTI); tax measures on financial intermediation (TAX); liquidity requirements (LR); loan-to-deposit ratio limits (LTD); limits on foreign-exchange positions (LFX); reserve requirements (RR); SIFI capital surcharges (SIFI); and other macroprudential measures (OT) category. See Alam et al. (2019) for additional details. The sampling period spans from 2007 to 2022, and the sample comprises countries with holdings by domestic investors greater than zero. Symbols $\star\star\star$, $\star\star$, and $\star$ mark coefficients significantly deviating from zero at 1%, 5%, and 10% levels, respectively.

Table continues on the next page

	Domestic Investors$_{i,t}$	Domestic CB$_{i,t}$	Foreign Investors$_{i,t}$	Foreign CB$_{i,t}$
	(1)	(2)	(3)	(4)
Treated$_i$ × Post$_t$	16.15**	-3.46	-1.68	-4.52
	(2.71)	(-1.34)	(-0.39)	(-0.80)
GDP Growth$_{i,t-1}$	-0.16	0.02	-0.36	-0.15
	(-0.46)	(0.16)	(-1.58)	(-0.67)
Unemployment Rate$_{i,t-1}$	-0.47	-0.11	-1.06**	1.20**
	(-1.06)	(-0.65)	(-2.40)	(2.15)
Exports to GDP$_{i,t-1}$	-0.39***	-0.03	0.32***	-0.10
	(-3.56)	(-0.60)	(4.02)	(-1.08)
Imports to GDP$_{i,t-1}$	0.39**	-0.04	-0.03	0.33*
	(2.88)	(-0.66)	(-0.22)	(1.93)
Log(Total Issue Amt.)$_{i,t-1}$	-0.13	0.06	-0.07	0.04
	(-1.55)	(1.17)	(-1.27)	(0.63)
Controls on Bonds$_{i,t}$	-6.89	2.27	0.49	6.82
	(-1.54)	(1.20)	(0.12)	(1.12)
Controls on Equity$_{i,t}$	1.39	-8.51**	4.54	-4.61
	(0.29)	(-2.50)	(0.99)	(-1.07)
Controls on Money Market$_{i,t}$	2.96	9.77***	5.34	-6.27
	(0.62)	(3.63)	(0.88)	(-1.55)
Controls on Derivatives$_{i,t}$	5.25	-8.19***	2.57	-8.37
	(0.82)	(-2.96)	(0.47)	(-1.72)
Controls on Credit Operations$_{i,t}$	-0.09	5.41*	-1.03	-3.23
	(-0.01)	(1.84)	(-0.22)	(-0.49)
Controls on Direct Investment$_{i,t}$	-11.05	-3.11	12.05**	0.38
	(-1.54)	(-1.40)	(2.30)	(0.09)
Controls on Divestment$_{i,t}$	-1.20	0.05	-3.28	4.37
	(-0.18)	(0.02)	(-0.81)	(0.90)
Controls on Real Estate$_{i,t}$	-4.49	0.53	-10.85*	12.88**
	(-0.85)	(0.29)	(-2.02)	(2.34)
Controls on Personal Capital$_{i,t}$	-0.54	3.94*	-0.85	2.19
	(-0.11)	(2.01)	(-0.16)	(0.73)
Controls on Nonresident purchase—Bonds$_{i,t}$	-5.79	-6.18	1.75	10.81**
	(-0.59)	(-1.35)	(0.26)	(2.57)
Controls on Nonresident purchase—MM$_{i,t}$	1.81	-3.38**	-2.63	4.06
	(0.69)	(-2.28)	(-1.06)	(1.10)
Controls on Nonresident sale—Bonds$_{i,t}$	-8.75	9.98*	-2.27	-1.45
	(-1.00)	(1.84)	(-0.30)	(-0.70)
Controls on Nonresident sale—MM$_{i,t}$	4.05	-5.59	-4.64	3.36
	(0.91)	(-1.33)	(-1.28)	(1.05)
Exchange Rate$_{i,t}$	-0.00	-0.07	0.07	-0.07
	(-0.03)	(-0.91)	(1.01)	(-1.00)
Macroprudential Policies$_{i,t}$	0.13	-0.21	1.42	-1.27*
	(0.10)	(-0.36)	(1.28)	(-2.05)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	544	479	576	536
R^2	0.749	0.773	0.759	0.836

Table A11. **Banks, Non-Bank Investors, and the Absorption of BRI-Induced Public Debt**

This table examines the effect of BRI access on investor composition in the sovereign debt market, following the primary difference-in-differences specification in Equation (1). Domestic Banks$_{i,t}$ and Domestic Non-Banks$_{i,t}$ disaggregate *Domestic Investors$_{i,t}$* in Table 3. Similarly, Foreign Banks$_{i,t}$ and Foreign Non-Banks$_{i,t}$ disaggregate *Foreign Investors$_{i,t}$* in Table 3. Missing observations for these four variables are controlled with indicator variables, and the sample is the same as in columns 1 and 3 of Table 3. These variables are as in Arslanalp and Tsuda (2014a,b). *Treated$_i$* is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post$_t$* is one for years after 2013 and zero otherwise. Control variables—*GDP Growth$_{i,t-1}$*, *Unemployment Rate$_{i,t-1}$*, *Exports to GDP$_{i,t-1}$*, *Imports to GDP$_{i,t-1}$*, and *Log(Total Issue Amt.)$_{i,t-1}$*—are sourced from the World Bank Open Data and described in Section A of the Appendix. All capital control variables for country i and year t come from Section XI.A ("Capital Transactions") of the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER). Capital controls under Section XI.A.1 are dropped because none of the countries in the sample have such controls. The table reports reports findings after controlling for the following AREAER Sections: *Controls on Equity$_{i,t}$* (XI.A.2.a.1), *Controls on Bonds$_{i,t}$* (XI.A.2.a.2),*Controls on Money Market$_{i,t}$* (XI.A.2.b), *Controls on Derivatives$_{i,t}$* (XI.A.3), *Controls on Credit Operations$_{i,t}$* (XI.A.4), *Controls on Direct Investment$_{i,t}$* (XI.A.5), *Controls on Divestment$_{i,t}$* (XI.A.6), *Controls on Real Estate$_{i,t}$* (XI.A.7), *Controls on Personal Capital* (XI.A.8), *Controls on Nonresident purchase—Bonds$_{i,t}$* (XI.A.2.a.2.i), *Controls on Nonresident sale/issue—Bonds$_{i,t}$* (XI.A.2.a.2.ii), *Controls on Nonresident purchase—Money Market (MM)$_{i,t}$* (XI.A.2.b.1), and *Controls on Nonresident sale/issue—Money Market (MM)$_{i,t}$* (XI.A.2.b.2). Details on these variables are presented in Section A.5. *Exchange Rate$_{i,t}$* refers to units of country i's currency per euro at year-end t. *Macroprudential Policies$_{i,t}$* refers to year-end iMaPP score sourced from IMF's integrated Macroprudential Policy (iMaPP) database. It is the net count of tightenings minus easings across 17 instruments: countercyclical capital buffer (CCB); capital conservation buffer (CONSERVATION); capital requirements (CAPITAL); leverage ratio (LVR); loan-loss provisioning (LLP); limits on credit growth (LCG); borrower-based loan restrictions (LOANR); limits on foreign-currency loans (LFC); loan-to-value limits (LTV); debt-service-to-income limits (DSTI); tax measures on financial intermediation (TAX); liquidity requirements (LR); loan-to-deposit ratio limits (LTD); limits on foreign-exchange positions (LFX); reserve requirements (RR); SIFI capital surcharges (SIFI); and other macroprudential measures (OT) category. See Alam et al. (2019) for additional details. The sampling period spans from 2007 to 2022, and the sample comprises countries with holdings by domestic investors greater than zero. Symbols ⋆⋆⋆, ⋆⋆, and ⋆ mark coefficients significantly deviating from zero at 1%, 5%, and 10% levels, respectively.

Table continues on the next page

	Domestic Banks$_{i,t}$	Domestic Non-Banks$_{i,t}$	Foreign Banks$_{i,t}$	Foreign Non-Banks$_{i,t}$
	(1)	(2)	(3)	(4)
Treated$_i$ × Post$_t$	9.19**	6.89**	-2.29	-0.25
	(2.63)	(2.26)	(-1.26)	(-0.08)
GDP Growth$_{i,t-1}$	0.08	0.07	0.02	-0.27
	(0.41)	(0.50)	(0.31)	(-1.37)
Unemployment Rate$_{i,t-1}$	-0.22	-0.18	-0.66***	-0.49
	(-0.71)	(-1.02)	(-3.81)	(-1.32)
Exports to GDP$_{i,t-1}$	-0.27**	-0.12	-0.25***	0.64***
	(-2.60)	(-1.15)	(-3.73)	(7.62)
Imports to GDP$_{i,t-1}$	0.09	0.13	0.09	-0.28***
	(0.82)	(1.09)	(1.70)	(-3.33)
Log(Total Issue Amt.)$_{i,t-1}$	-0.02	-0.05	0.01	-0.08
	(-0.46)	(-0.92)	(0.49)	(-1.71)
Controls on Bonds$_{i,t}$	-0.37	-3.78	-2.21	2.15
	(-0.09)	(-1.26)	(-0.86)	(0.69)
Controls on Equity$_{i,t}$	1.07	-0.77	0.56	4.34
	(0.24)	(-0.26)	(0.34)	(1.14)
Controls on Money Market$_{i,t}$	6.60	-2.13	3.22	3.69
	(1.56)	(-0.99)	(1.57)	(0.77)
Controls on Derivatives$_{i,t}$	-10.30*	12.23***	2.22	-0.33
	(-1.92)	(4.11)	(1.53)	(-0.07)
Controls on Credit Operations$_{i,t}$	6.04	-7.25*	-4.15*	1.58
	(1.60)	(-1.95)	(-1.93)	(0.37)
Controls on Direct Investment$_{i,t}$	-13.87***	2.79	2.22	8.66**
	(-3.31)	(0.74)	(0.64)	(2.88)
Controls on Divestment$_{i,t}$	-2.04	-0.82	-0.99	1.47
	(-0.70)	(-0.20)	(-0.54)	(0.45)
Controls on Real Estate$_{i,t}$	1.34	-5.36***	-2.98	-8.92**
	(0.36)	(-3.93)	(-1.12)	(-2.53)
Controls on Personal Capital$_{i,t}$	-2.64	2.45	3.56	-4.32
	(-0.83)	(0.66)	(1.00)	(-0.80)
Controls on Nonresident purchase—Bonds$_{i,t}$	-3.25	-4.51	2.16	0.76
	(-0.40)	(-0.70)	(1.03)	(0.13)
Controls on Nonresident purchase—MM$_{i,t}$	2.02	0.59	-0.61	-2.89
	(0.49)	(0.12)	(-0.30)	(-0.87)
Controls on Nonresident sale—Bonds$_{i,t}$	-2.24	-3.78	0.04	-4.77
	(-0.36)	(-0.77)	(0.02)	(-0.91)
Controls on Nonresident sale—MM$_{i,t}$	-0.38	2.53	-1.91	-3.01
	(-0.14)	(0.84)	(-1.09)	(-0.96)
Exchange Rate$_{i,t}$	-0.03	0.00	0.01	0.02
	(-0.85)	(0.05)	(0.34)	(0.65)
Macroprudential Policies$_{i,t}$	-1.07	0.42	0.19	0.47
	(-1.34)	(0.36)	(0.68)	(0.60)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	544	544	576	576
R^2	0.740	0.910	0.772	0.757

Table A12. **Pre-Marmaray Covariate Balance**

This table presents evidence on covariate balance as of 2013. The first four columns report group means and 95% confidence intervals for the control and treated samples. The final column indicates whether the demeaned confidence intervals overlap (✓ refers to overlap and X refers to no overlap). Detailed variable descriptions are presented in Table 1 and Section A of the Appendix.

Panel A: Country-Level Debt Issuance

	Control Mean	Control 95% CI	Treated Mean	Treated 95% CI	CIs Intersect?
Government Debt to GDP	67.50	[52.90, 82.11]	61.26	[33.77, 88.74]	✓
Corporate Loans and Debt to GDP	106.65	[87.75, 125.55]	71.57	[40.03, 103.12]	✓
Household Debt to GDP	65.43	[51.88, 78.98]	30.92	[14.17, 47.67]	X
Chinese Financial Assistance to GDP	0.03	[-0.03, 0.09]	0.15	[-0.07, 0.38]	✓
GDP Growth	0.40	[-0.83, 1.63]	-1.03	[-2.63, 0.57]	✓
Unemployment Rate	9.17	[6.97, 11.37]	14.17	[8.75, 19.59]	✓
Exports to GDP	60.33	[46.33, 74.33]	43.25	[30.91, 55.59]	✓
Imports to GDP	56.86	[43.43, 70.29]	55.89	[47.04, 64.73]	✓
Total Corporate Debt to Assets	27.01	[23.45, 30.58]	19.63	[7.43, 31.82]	✓
Long-Term Corporate Debt to Assets	21.12	[18.00, 24.24]	13.13	[1.52, 24.73]	✓
Domestic Investors	51.32	[43.06, 59.58]	40.02	[27.72, 52.32]	✓
Domestic CB	5.10	[1.48, 8.72]	2.84	[-1.02, 6.70]	✓
Foreign Investors	31.02	[24.15, 37.89]	28.19	[18.48, 37.90]	✓
Foreign CB	19.67	[12.74, 26.60]	33.43	[21.00, 45.85]	✓
China TPU	64.75	[64.75, 64.75]	64.75	[64.75, 64.75]	✓
Yield to Maturity, VW	2.22	[1.36, 3.07]	1.11	[-1.97, 4.20]	✓
Yield to Maturity, EW	2.17	[1.31, 3.03]	1.09	[-1.94, 4.13]	✓
Yield to Maturity, Median	2.15	[1.28, 3.02]	1.09	[-1.94, 4.13]	✓
Macaulay Duration	3.63	[1.70, 5.55]	0.85	[-1.51, 3.21]	✓
Investment Grade	0.73	[0.53, 0.93]	0.20	[-0.36, 0.76]	✓
Inflation Protected	0.06	[-0.01, 0.12]	0.00	[0.00, 0.00]	✓
No Issue	0.27	[0.07, 0.47]	0.80	[0.24, 1.36]	✓
Log(Total Issue Amount)	0.65	[0.07, 1.23]	0.36	[-0.27, 0.98]	✓

Panel B: Country-level Social and Infrastructure Expenditures

	Control Mean	Control 95% CI	Treated Mean	Treated 95% CI	CIs Intersect?
Government Employee Wage to GDP	32.87	[29.70, 36.04]	31.42	[26.46, 36.37]	✓
Collective Consumption to GDP	22.48	[19.76, 25.20]	28.12	[23.28, 32.95]	✓
Capital Transfers to GDP	1.23	[0.70, 1.76]	1.45	[0.12, 2.78]	✓
Total Social Payouts to GDP	56.58	[52.55, 60.61]	60.98	[51.27, 70.69]	✓
Fixed Capital Formation to GDP	9.94	[8.65, 11.23]	13.10	[12.36, 13.84]	X
Railway Investments to GDP	0.28	[0.20, 0.36]	0.20	[0.06, 0.34]	✓
Road Investments to GDP	0.49	[0.36, 0.61]	1.00	[0.50, 1.50]	✓
Air Investments to GDP	0.04	[0.02, 0.05]	0.03	[0.00, 0.05]	✓
Sea Investments to GDP	0.04	[0.01, 0.06]	0.09	[-0.06, 0.25]	✓
Total Infrastructure Investments to GDP	0.84	[0.67, 1.01]	1.32	[0.91, 1.73]	✓

Panel C: Firm-level Characteristics

	Control Mean	Control 95% CI	Treated Mean	Treated 95% CI	CIs Intersect?
Total Debt	23.37	[22.62, 24.11]	30.03	[26.54, 33.51]	X
Total Long-Term Debt	16.03	[15.45, 16.61]	15.24	[12.99, 17.50]	✓
Non-Conv. Debt	14.96	[14.37, 15.55]	13.01	[10.57, 15.45]	✓
Conv. Debt	0.06	[0.05, 0.07]	0.00	[0.00, 0.00]	X
Short-Term Debt	6.21	[5.95, 6.48]	11.32	[9.86, 12.78]	X
Cash	13.49	[12.92, 14.06]	7.87	[6.40, 9.33]	X
Exchange Rate Growth	2.75	[2.38, 3.13]	18.90	[9.14, 28.67]	X
Log(Book Value)	20.35	[20.28, 20.42]	19.26	[19.06, 19.45]	X
Tangibility	0.26	[0.26, 0.27]	0.50	[0.47, 0.54]	X
Intangibility	0.22	[0.21, 0.23]	0.04	[0.03, 0.06]	X
Log(Tobin's Q)	0.49	[0.47, 0.50]	0.25	[0.22, 0.28]	X
Collateral	0.39	[0.38, 0.40]	0.61	[0.58, 0.65]	X
Profitability	0.10	[0.10, 0.10]	0.08	[0.05, 0.11]	✓
Losses	0.09	[0.08, 0.10]	0.17	[0.12, 0.23]	X
Dividend Paying	0.66	[0.64, 0.68]	0.43	[0.36, 0.51]	X

Table A13. Expenditures by Function and Level of Government

This table reports the effects of BRI access on government expenditure by COFOG function and by level of government, estimated using the difference-in-differences specification in Equation (1). It presents coefficient estimates (in percentage points of GDP) on the interaction term $Treated_j \times Post_t$, with stars denoting statistical significance for each estimate. Data are from Eurostat COFOG. All expenditures are summed across government expenditure components (na_item). Expenditures for social security funds (S1314) are excluded from the table for brevity. COFOG categories labeled *n.e.c.* ("not elsewhere classified") are omitted from the table for brevity. Cells marked "–" indicate estimates not available due to data limitations. Additional details on variables can be found in Appendix Section A. The sampling period is between 2007 and 2021. The standard errors are doubly clustered at country and year levels. Symbols $\star\star\star$, $\star\star$, and $\star$ mark coefficients significantly deviating from zero at the 1%, 5%, and 10% levels, respectively.

Table continues on the next page

	Panel A: Estimated ATTs Across Main Functions				
GF Code	Description	General Gov	Central Gov	State Gov	Local Gov
GF01	General public services	0.41	0.42	-0.06	0.03
GF02	Defense	-0.16	-0.19	-	0.03
GF03	Public order and safety	0.80**	0.80**	-0.01	-0.03
GF04	Economic affairs	0.49	-1.11	0.13	0.98*
GF05	Environmental protection	0.96***	0.60*	0.01	0.41**
GF06	Housing and community amenities	0.06	0.38	0.04	0.18
GF07	Health	1.00	1.44	-0.28	0.23
GF08	Recreation, culture and religion	0.70	0.74	0.05	0.14
GF09	Education	0.34	1.41	0.04	-1.71
GF10	Social protection	-3.08	-1.83	-0.38*	-1.04*

	Panel B: Estimated ATTs Across Other Functions				
GF Code	Description	General Gov	Central Gov	State Gov	Local Gov
GF0101	Executive and legislative organs, financial and fiscal affairs, external affairs	0.52	-1.05	0.02	0.23
GF0102	Foreign economic aid	-0.06	-0.04	-	-
GF0103	General services	-0.26	0.10	-0.01	-0.31
GF0104	Basic research	-0.18	-0.13	-0.05	0.01
GF0105	R&D General public services	0.09**	0.09**	-	-
GF0107	Public debt transactions	0.20	0.10	-0.02	-0.03
GF0108	Transfers of a general character between different levels of government	0.00	1.32	-0.04	0.01
GF0201	Military Defense	-0.29	-0.31	-	-
GF0202	Civil Defense	0.06*	0.03	-	0.03
GF0203	Foreign military aid	0.01	0.01	-	-
GF0204	R&D Defense	0.00	0.00	-	-
GF0301	Police services	0.57**	0.51**	0.00	0.14
GF0302	Fire-protection services	0.03	0.11**	-0.00	-0.12
GF0303	Law courts	0.13	0.12	0.01	-
GF0304	Prisons	0.11	0.12	-0.01	-
GF0305	R&D Public order and safety	-0.02	-	-	-0.01
GF0401	General economic, commercial and labour affairs	0.01	-0.70	-0.03	0.26
GF0402	Agriculture, forestry, fishing and hunting	0.06	-0.00	0.05	-0.03
GF0403	Fuel and energy	0.48	0.52	-0.00	-0.07
GF0404	Mining, manufacturing and construction	-0.44	-0.30	0.00	-0.16
GF0405	Transport	0.15	-0.64	0.12	0.83***
GF0406	Communication	-0.08	-0.05	-	-0.01
GF0407	Other industries	0.37**	0.24**	0.02	0.07
GF0408	R&D Economic affairs	0.05	0.05	0.00	0.00
GF0501	Waste management	0.36***	0.17	0.00	0.20
GF0502	Waste water management	0.37**	0.24*	0.00**	0.16
GF0503	Pollution abatement	0.10	0.06	0.00	-0.00
GF0504	Protection of biodiversity and landscape	0.21*	0.08	0.02	0.03
GF0505	R&D Environmental protection	0.02*	0.01	-	0.00
GF0601	Housing development	0.45*	0.15	0.03	0.33
GF0602	Community development	0.02	0.26*	-0.00	0.00
GF0603	Water supply	-0.17	-0.30*	0.00	0.18
GF0604	Street lighting	-0.09	0.01	-	-0.10
GF0701	Medical products, appliances and equipment	-0.42	0.04	0.06	0.03
GF0702	Outpatient services	-0.05	0.45	-0.04	-0.09
GF0703	Hospital services	1.38*	1.15	-0.20	0.33
GF0704	Public health services	-0.23*	-0.17	-0.00	0.01
GF0705	R&D Health	0.07	0.08	-0.01	-0.00
GF0801	Recreational and sporting services	0.43	0.53	-0.00	0.09
GF0802	Cultural services	0.17	0.05	0.02	0.10
GF0803	Broadcasting and publishing services	-0.10	-0.13	0.02	-
GF0804	Religious and other community services	0.17	0.13	-	0.02
GF0805	R&D Recreation, culture and religion	0.01	0.01	-	-
GF0901	Pre-primary and primary education	-0.28	0.36	-0.02	-1.00
GF0902	Secondary education	0.80**	1.33	0.04	-0.53
GF0903	Post-secondary non-tertiary education	0.02	0.01	-	-
GF0904	Tertiary education	-0.10	-0.16	-0.00	0.03
GF0905	Education not definable by level	-0.04	0.03	-0.01	-0.10*
GF0906	Subsidiary services to education	-0.13	-0.03	-0.00	-0.07
GF0907	R&D Education	0.03	0.03	-0.01	-
GF1001	Sickness and disability	-0.57	0.46	-0.07	0.03
GF1002	Old age	-1.64*	-1.54	-0.02	-0.21
GF1003	Survivors	0.18	0.18	-	-
GF1004	Family and children	-0.20	-0.26	-0.12	-0.38
GF1005	Unemployment	-0.05	0.10	-0.00	-0.12
GF1006	Housing	-0.36	-0.31	-0.00	-0.14
GF1008	R&D Social protection	-0.00	-0.00	-	-

Table A14. **BRI Membership and Financial Outcomes**

This table presents evidence on how official participation in the Belt and Road Initiative (BRI) affects Chinese financial support. Outcomes are measured as a share of recipient country i's GDP in year t and are constructed from AidData's Global Chinese Development Finance Dataset. *Chinese Grants to GDP* captures non-repayable transfers (cash or in-kind) provided by China. *Chinese Credit to GDP* is the sum of buyer's and seller's credits extended by China to country i in year t. *Chinese Loans to GDP* is the total value of loans extended by China to country i in year t. *BRI Member* (*Non-BRI Member*) denotes countries that are (not) official BRI members in year t. Descriptions of the remaining variables are provided in Section A of the Appendix. Coefficient estimates are reported as percent of GDP. $\star\star\star$, $\star\star$, and $\star$ denote statistical significance at the 1%, 5%, and 10% levels, respectively. .

	Chinese Grants		Chinese Credit		Chinese Loans	
	BRI Member	Non-BRI Member	BRI Member	Non-BRI Member	BRI Member	Non-BRI Member
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Treated}_i \times \text{Post}_t$	0.04**	0.00	0.04	0.57	-0.00	0.03
	(2.44)	(0.17)	(0.88)	(1.16)	(-0.32)	(0.97)
GDP Growth$_{i,t-1}$	-0.00	-0.00**	-0.00	0.01	0.00	0.00
	(-1.36)	(-2.19)	(-1.02)	(0.53)	(0.99)	(1.19)
Unemployment Rate$_{i,t-1}$	-0.00*	-0.00*	-0.00	-0.02	0.00	0.00
	(-2.04)	(-1.89)	(-0.83)	(-1.04)	(1.10)	(0.80)
Exports to GDP$_{i,t-1}$	0.00	0.00	-0.00	0.01	-0.00	0.00
	(0.58)	(0.49)	(-0.87)	(1.08)	(-0.39)	(0.99)
Imports to GDP$_{i,t-1}$	-0.00	-0.00	0.00	-0.02	0.00	-0.00
	(-0.52)	(-0.48)	(0.86)	(-1.09)	(0.35)	(-1.07)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	421	478	421	478	421	478
R^2	0.359	0.382	0.407	0.171	0.271	0.165

Table A15. **Effect Heterogeneity: BRI Program Membership**

This table presents evidence of effect heterogeneity in the main findings of the paper by using countries' official BRI program membership. Coefficient estimates are based on the difference-in-differences specification in Equation (1). $Treated_i$ is set to one for Eastern European countries that gained access to BRI following the Marmaray inauguration, and BRI Member$_{i,t}$ is equal to one for years when country i is an official member of the BRI program (i.e., it's equal to the product of post-membership dummy and member country dummy). Descriptions for all variables are in Section A of the Appendix. Standard errors are doubly clustered at the country and year levels. Symbols ***, **, and * denote coefficients that significantly deviate from zero at the 1%, 5%, and 10% levels, respectively.

	Government Debt to GDP$_{i,t}$	Corporate Loans and Debt to GDP$_{i,t}$	Household Debt to GDP$_{i,t}$	Chinese Financial Assistance to GDP$_{i,t}$	Total Corp. Debt to Assets$_{i,t}$	Total Long-Term Corp. Debt to Assets$_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)
Treated$_i$ × BRI Member$_{i,t}$	8.76**	-11.75**	-1.67	-0.23	-11.50**	-7.84*
	(2.21)	(-2.18)	(-0.43)	(-0.90)	(-2.27)	(-1.89)
BRI Member$_{i,t}$	2.15	-2.92	6.75	-0.09	-3.21	-2.82
	(0.69)	(-0.75)	(1.57)	(-0.86)	(-0.77)	(-0.75)
GDP Growth$_{i,t-1}$	-0.53**	-0.01	-0.80***	0.01	-0.15	-0.18
	(-2.46)	(-0.01)	(-4.97)	(0.67)	(-0.63)	(-1.37)
Unemployment Rate$_{i,t-1}$	2.02***	0.73	0.54	-0.01	-0.46*	-0.23
	(4.66)	(1.70)	(1.57)	(-0.80)	(-1.85)	(-1.17)
Exports to GDP$_{i,t-1}$	-0.05	-0.49	-1.18***	0.02	0.05	-0.02
	(-0.18)	(-1.27)	(-4.62)	(1.06)	(0.21)	(-0.10)
Imports to GDP$_{i,t-1}$	0.02	0.71	0.54*	-0.02	0.12	0.22
	(0.06)	(1.59)	(1.77)	(-1.06)	(0.53)	(0.98)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	523	435	435	539	432	430
R^2	0.941	0.943	0.956	0.139	0.649	0.689

Table A16. **Firm Exposure to China Trade Policy Uncertainty and BRI Program Membership**

This table presents evidence of effect heterogeneity by using China and U.S. TPU indices (Davis et al. (2019); Baker et al. (2024)) and countries' BRI program membership. *Total Debt$_{j,t}$* represents firm j's total debt (ITEM3255) as of year t, divided by the book value of assets (ITEM2999) as of 2012. *Treated$_j$* is set to one for firms from Eastern European countries that gained access to BRI following the Marmaray inauguration in 2013, and zero otherwise (see, e.g., Figure 2); while *Post$_t$* is one for years after 2013 and zero otherwise. *High China (U.S.) TPU$_t$* denotes higher than median TPU index values in year t for China (U.S.). China TPU$_t^{\perp}$ denotes China TPU index orthogonalized against U.S. TPU index. BRI Member$_{j,t}$ is equal to one if headquarter country of firm j is an official member of the BRI program. Descriptions for all other variables are in Section A of the Appendix. Standard errors are doubly clustered at the country and year levels. Symbols ***, **, and * denote coefficients that significantly deviate from zero at the 1%, 5%, and 10% levels, respectively.

	Total Debt$_{j,t}$	Total Debt$_{j,t}$	Total Debt$_{j,t}$	Total Debt$_{j,t}$
	(1)	(2)	(3)	(4)
Treated$_j$ × Post$_t$ × High China TPU$_t$	-7.99***	-7.99***		
	(-3.26)	(-3.39)		
Treated$_j$ × Post$_t$ × High U.S. TPU$_t$		0.42		
		(0.20)		
Treated$_j$ × Post$_t$ × China TPU$_t^{\perp}$			-0.05***	
			(-3.12)	
Treated$_j$ × BRI Member$_{j,t}$				-9.39***
				(-4.42)
Treated$_j$ × High China TPU$_t$	0.17	0.11		
	(0.17)	(0.11)		
Treated$_j$ × High U.S. TPU$_t$		-0.32		
		(-0.28)		
Treated$_j$ × China TPU$_t^{\perp}$			0.02	
			(1.25)	
BRI Member$_{j,t}$				-0.01
				(-0.00)
Treated$_j$ × Post$_t$	-0.55	-0.74	-4.31***	0.45
	(-0.47)	(-0.54)	(-3.13)	(0.50)
Exchange Rate Growth$_{j,t-1}$	0.16**	0.16**	0.16**	0.17**
	(2.23)	(2.22)	(2.20)	(2.30)
Log(Book Value)$_{j,t-1}$	28.58***	28.58***	28.59***	28.57***
	(12.17)	(12.16)	(12.16)	(12.17)
Tangibility$_{j,t-1}$	11.04	11.04	11.07	10.94
	(1.29)	(1.29)	(1.29)	(1.28)
Intangibility$_{j,t-1}$	15.44***	15.44***	15.46***	15.44***
	(3.29)	(3.30)	(3.30)	(3.31)
Log(Tobin's Q)$_{j,t-1}$	-0.33	-0.33	-0.33	-0.33
	(-0.29)	(-0.29)	(-0.29)	(-0.30)
Collateral$_{j,t-1}$	4.21	4.21	4.12	4.20
	(0.57)	(0.58)	(0.56)	(0.57)
Profitability$_{j,t-1}$	-1.50	-1.50	-1.51	-1.48
	(-1.07)	(-1.07)	(-1.06)	(-1.07)
Losses$_{j,t-1}$	2.86**	2.86**	2.87**	2.86**
	(2.76)	(2.74)	(2.75)	(2.78)
Dividend Paying$_{j,t-1}$	0.50	0.50	0.52	0.55
	(0.88)	(0.89)	(0.91)	(0.98)
Firm FE	Yes	Yes	Yes	Yes
Industry FE× Year FE	Yes	Yes	Yes	Yes
N	41,403	41,403	41,403	41,403
R^2	0.675	0.675	0.675	0.675

Figure A1. Satellite Image of Bosporus with Marmaray's Trajectory

This figure presents a satellite image of Bosporus. The red dotted lines indicate Marmaray's trajectory under Bosporus. The eastern land block is Asia and the western land block is Europe. Solid lines represent railways on the Asian and European sides of Istanbul. Source: International Union of Railways (Union Internationale des Chemins de fer).

Figure A2. **Yearly Railway Passengers in Istanbul**

This figure presents data on yearly railway passengers (in millions) in Asian and European parts of Istanbul between 2010 and 2020. Asian and European subways merged under the name of Marmaray in October 2013. Data is drawn from Turkish State Railways (TCDD) annual reports at https://www.tcdd.gov.tr/kurumsal/istatistikler.

Figure A3. **Archaeological Discoveries During Marmaray Excavations**

This figure presents photos of archaeological discoveries near Yenikapı Subway Station on the European side of Istanbul. The first photo shows Yenikapi Subway Station during excavations. The second and third photos show artifacts found during the excavations and are currently being displayed at Yenikapi Subway Station. *Sources*: History of Istanbul from Antiquity to XXIst (online encyclopedia can be reached at http://bit.ly/3SavHWv) and wowTURKEY (also available online at https://bit.ly/3OGYOt0).
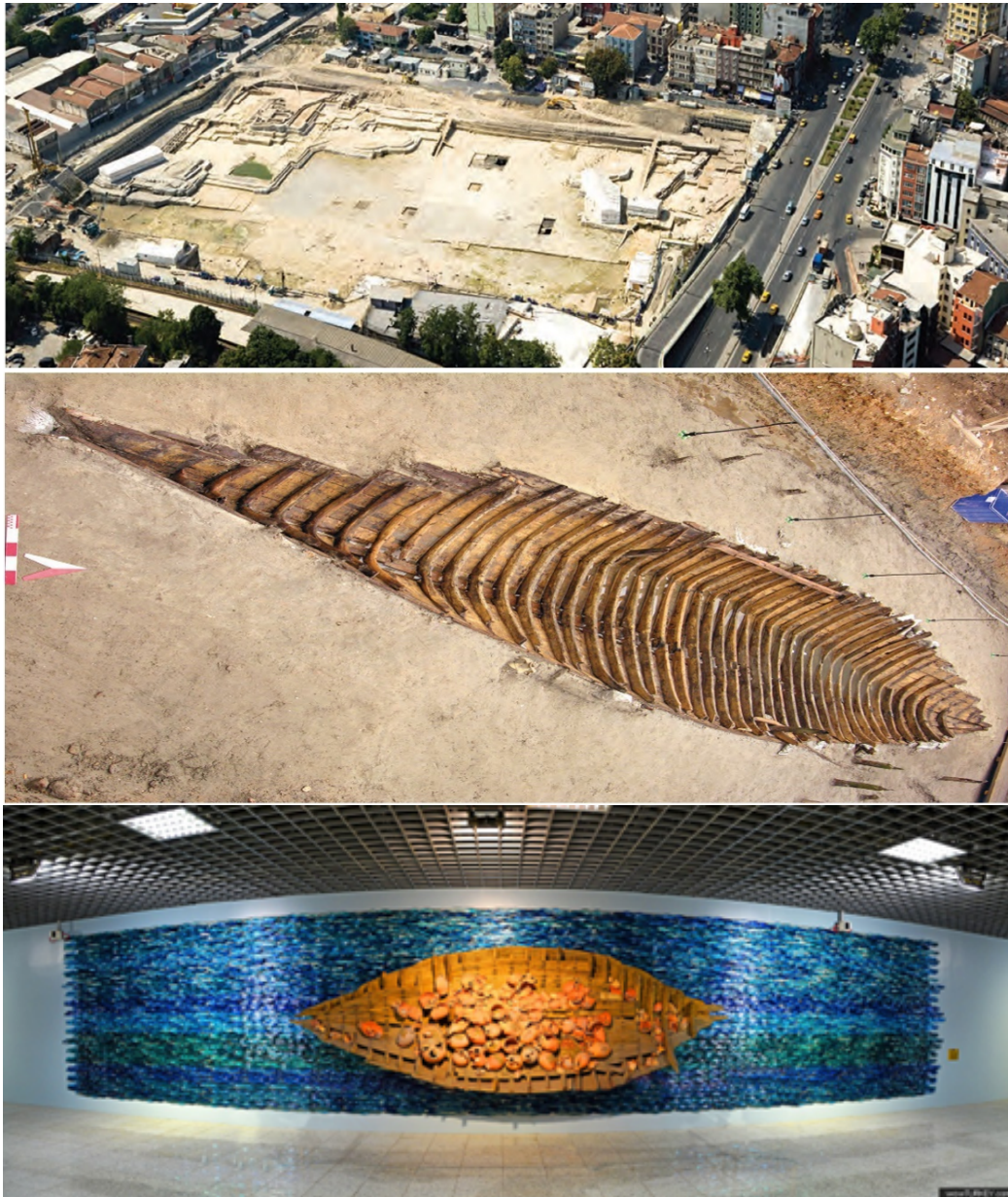
Figure A4. **Rail Freight Corridors in Europe**

Panel A illustrates the freight transportation systems across Europe, and Panel B shows railway speeds (both freight and non-freight). For EU member states, blue lines depict the fast and modern freight infrastructure, predominantly spanning Western, Central, and parts of Southern Europe. In contrast, the red lines, symbolizing slower freight routes, are more prevalent in regions of Eastern Europe, indicating a continued need for infrastructural development in these areas. For non-EU member states, the freight network is shown in different colors and formats, all representing slow freight lines. Source: TENtec Interactive Map Viewer, accessed in April 2024.

Panel A. European Rail Freight Corridors

Panel B: Railway Line Speed (Freight and Non-Freight)

Figure A5. **Trends in BRI Program Membership in Europe**

This figure presents the percentage of treated and control units that become official members of China's BRI program in a given year. Treated units are Eastern European countries and control units are the remaining European countries. BRI membership is based on UN and CFR data (https://bit.ly/3Qpra3U). Kosovo, an exception among treated countries, is the only non-BRI member due to China's non-recognition of its independence (https://bit.ly/3EQgxAi).

Formal Government Participation in the Belt and Road Program
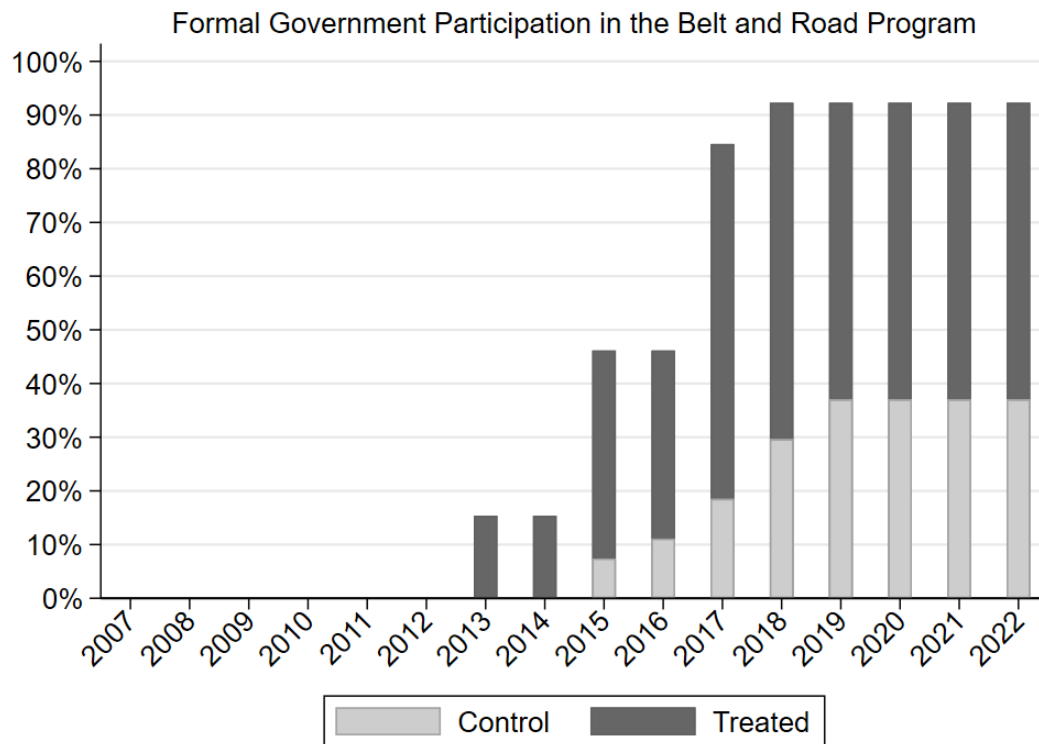
Figure A6. **Effect Dynamics: Evidence from Countrywide Corporate Debt to Assets**

This figure presents time-specific treatment effects of BRI access on total and long-term debt to assets ratios (*Total Corp. Debt to Assets$_{i,t}$* and *Total Long-Term Corp. Debt to Assets$_{i,t}$*). The effects are estimated by using a two-way fixed effects structure (i.e., after controlling for country and year fixed effects), and 90% confidence intervals are drawn for each point estimate. Data is pulled from Worldscope dataset. Detailed variable descriptions can be found in Section A of the Appendix.
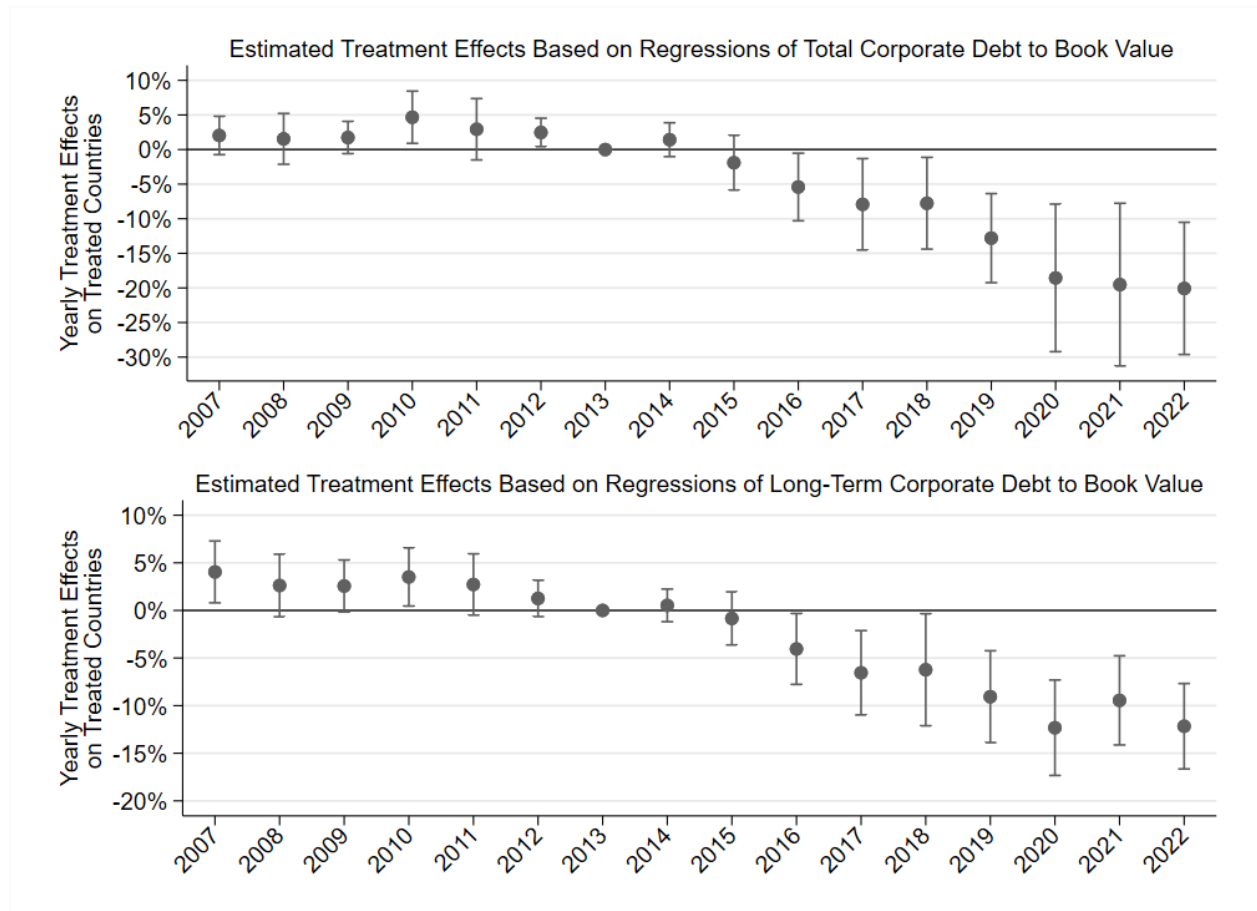
Figure A7. **Comparing Treated Countries and Other BRI Members**

This figure shows the mean differences in main Table 2 variables between treated countries and all ever-members of the BRI program as of 2023, calculated as of years of joining BRI and adjusted for continent and year of joining fixed effects. Differences are computed as values for treated countries minus those for other BRI members, with robust standard errors and 90% confidence intervals.
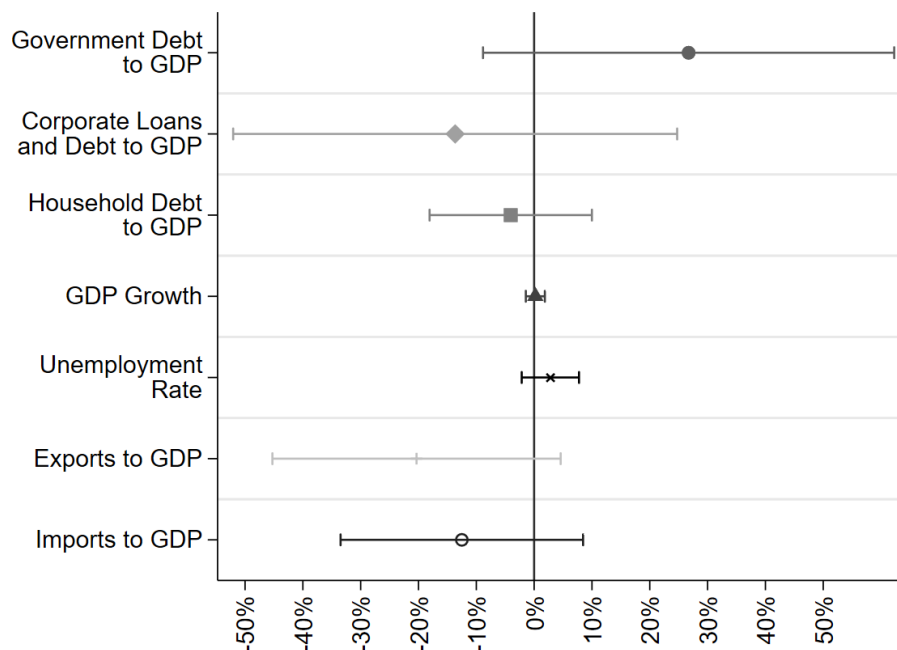
Figure A8. **Chinese Financial Assistance and BRI Access**

This figure presents time-specific treatment effects of BRI access on *Chinese Financial Assistance to GDP$_{i,t}$*, which denotes the total financial aid that China provides to country i in year t. This aid encompasses various forms of financial assistance including loans, grants, buyer's and seller's credit, scholarships, as well as debt forgiveness and rescheduling. The total sum of this aid is then divided by the GDP of country i for the same year t, with both the financial aid and GDP expressed in terms of US dollars. The effects are estimated by using a two-way fixed effects structure (i.e., after controlling for country and year fixed effects), and 90% confidence intervals are drawn for each point estimate. Data are pulled from AidData TUFF 2.0 and the World Bank. Detailed variable descriptions can be found in Section A of the Appendix.
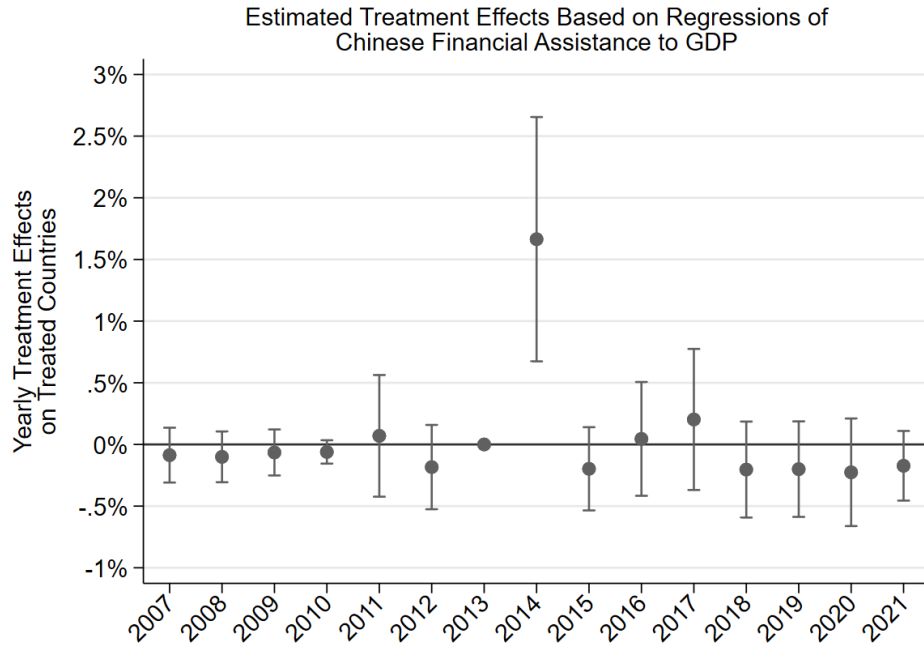
Figure A9. **Treated and Control Countries Along the Orient Express Routes**

This figure illustrates the distribution of treated and control countries along and beyond the routes of the Orient Express (OE), as utilized in the paper's tighter difference-in-differences analyses. Panel A depicts both the northern and southern routes of the OE. Panel B focuses on the northern route only, while Panel C highlights the southern (Simplon) route. Treated countries on the OE routes are marked in orange, whereas control countries on these routes are colored in blue. Off-OE treated countries are represented with a diamond grid, and off-OE control countries with horizontal lines. These countries are excluded in tighter difference-in-differences regressions. Countries located on both the northern and southern routes appear in both Panel A and Panel B. In Panel B (C), only countries along the northern (southern) routes are considered part of the OE to ensure that the difference-in-differences regressions exclusively analyze the subsample of countries along the northern (southern) routes. The map of the OE can be viewed at `https://bit.ly/3JAr84U`. The region's topography can be viewed at `https://bit.ly/3JEtuzE`.

Panel A. Countries Along the Orient Express
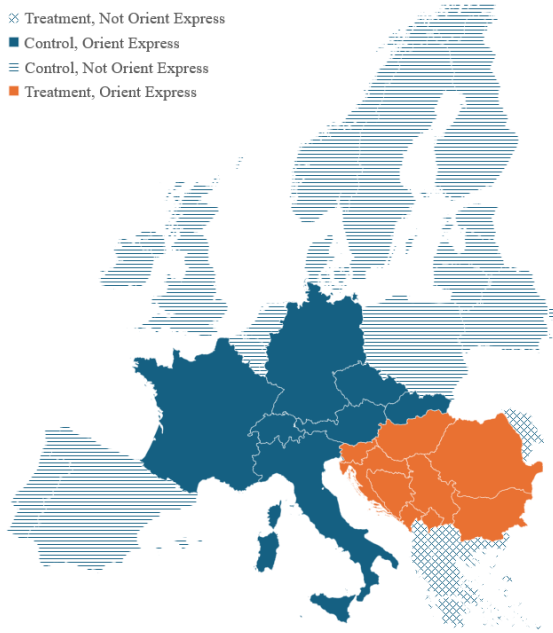
Panel B. Countries Along the Northern Route
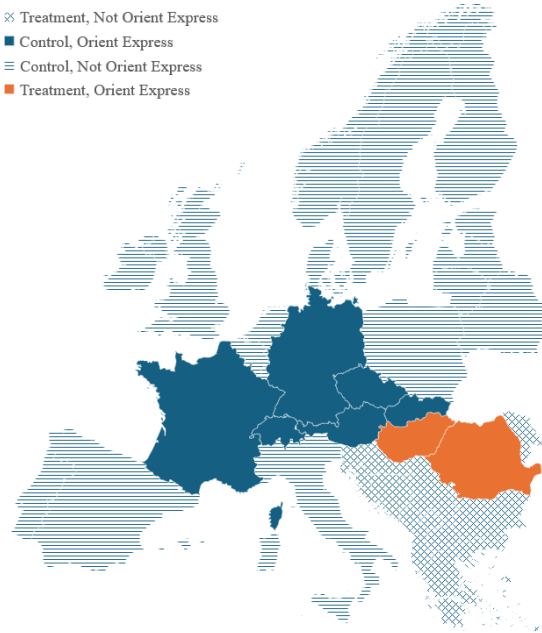
Panel C. Countries Along the Southern Route

Figure A10. **Effect Dynamics: Corporate Yields**

The first figure illustrates effect dynamics in dollar-issue-amount-weighted yields to maturity (*Yield to Maturity*$_{i,t}$) as in Column (4) of Table 4. It displays fitted values for both treatment and control groups, after employing a two-way fixed effects structure (i.e., controlling only for country and year fixed effects), as represented in Equation (1). The second figure presents time-specific treatment effects of BRI access on corporate yields, along with 90% confidence intervals for each point estimate. The data is sourced from Refinitiv. Detailed variable descriptions are in Section A of the Appendix.
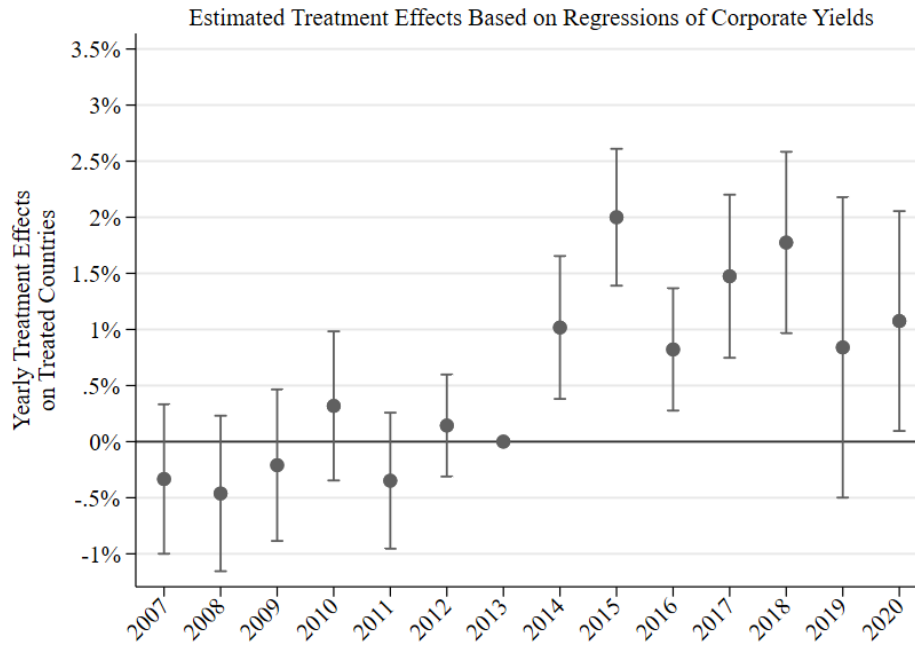
Figure A11. **Characteristics of Newly-Issued Public Debt**

This figure summarizes characteristics of newly-issued government debt. Panel A reports outcomes by maturity, Panel B by credit rating, and Panel C by market and currency. All panels use Refinitiv data and plot differences in outcomes between treated and control countries before and after Marmaray's opening year using a country–year panel. In Panel A, *Average Duration* is the average Macaulay duration of new issues, and *Long-Term Debt Issuance* is the share of new issues with duration greater than 10 years (extensive margin). In Panel B, *Moody's Rating* is the average long-term issuer rating on a 1–21 scale (21 = AAA; 1 = C), and *Investment-Grade Debt Issuance* is the share of issues with a Moody's score greater than 11. In Panel C, *Local market, local currency* denotes issues where the issuance country equals the issuer's country and the currency equals the issuer's domestic currency; *Local market, Euro* denotes issues where the issuance country equals the issuer's country and the currency is euros; *Local market, foreign currency* denotes issues where the issuance country equals the issuer's country but the currency is not the domestic currency; and *Foreign market* denotes issues identified as "Foreign" by Refinitiv's AssetSubTypeDescription variable.

Panel A. Government Debt by Maturity
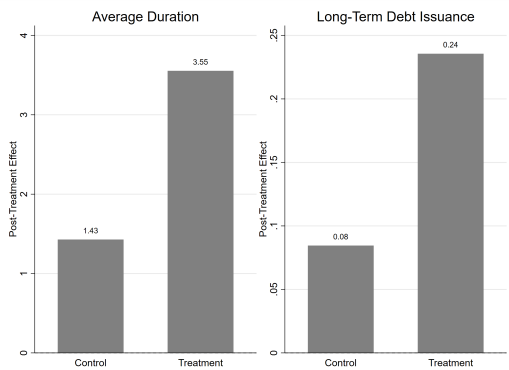
Panel B. Government Debt by Rating
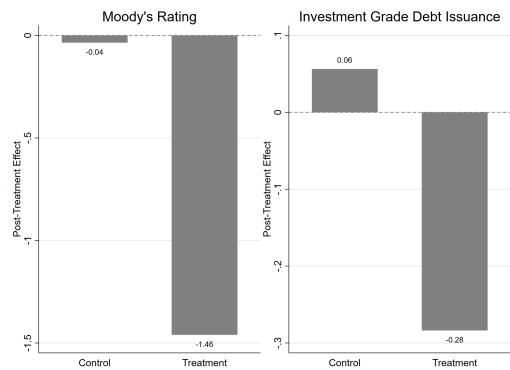
Panel C. Government Debt by Market/Currency