

HOW LARGE IS THE BORROWING COST ADVANTAGE OF STATE-OWNED ENTERPRISES?

Jang Ping Thia, Jiaqi Su, and Xinyu Kong*

Abstract

We provide new evidence of lower borrowing costs for state-owned enterprises (SOEs). Using ORBIS ownership data matched to financing transactions in syndicated loan and bond markets, regressions and propensity score matching estimates confirm the lower financing costs for advanced and developing economies' SOEs, compared to private sector, and especially for hard currency borrowings. For loans, SOEs' financing advantage is moderate. For bonds, the advantage is large and up to -120 bps. Financing advantage differs slightly but is present for different state ownership stakes. This confirms that SOEs can, with the right conditions, be an effective conduit for state-related capital raising.

Keywords: State-owned enterprise (SOE); syndicated loans; bonds

JEL Classification: D20; H82; L30; E60; G3

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1. Introduction

State-owned enterprises (SOEs) have a sizeable footprint in many economies for both emerging markets and developing economies (EMDEs) as well as advanced economies.¹ How SOEs perform, and the roles they play in development, have received much academic study and policy discussions over the past decades. In this paper, we revisit an “old” question on how large, if any, is SOEs’ financing advantage, and in which financing markets.

This topic remains highly relevant not least because of the need to mobilize large sums of development finance to plug infrastructure gaps in EMDEs. In recent years, loan and bond markets in EMDEs have grown, presenting more opportunities for the mobilization of development finance. Mobilizing capital through SOEs, compared to more traditional fiscal avenues, can be advantageous under the right conditions. As corporate entities with more market-based incentives and professional management, SOEs can be effective in investing and managing assets. In some less-developed economies, there could also be direct policy restrictions that prevent states from contracting private sector loans. With suitable conditions, SOEs can be effective in tapping into capital markets to provide development finance.

Nevertheless, for some economies, SOEs are fairly entrenched and are not well governed or managed. There is also some evidence that SOEs’ financial liabilities are causes, or at least amplifying factors, toward financial crises. Bova, Ruiz-Arranz, Toscani and Ture (2016) provide historical data that shows substantial fiscal risks arising from SOE debts in various crises. World Bank (2021) documents the presence of large liabilities of SOEs in South Asia and the associated risks. Molnar and Lu (2019) document the high level of debts accumulated in China’s SOE sector.

Added to this are further concerns that range from low productivity and innovation to poor incentive alignment and inferior financial or economic performance. An Asian Development Bank (ADB) study shows that SOEs are less profitable, more dependent on debts and have higher labor costs (Phi, Taghizadeh-Hesary, Tu, Yoshino and Kim, 2019). Baum, Hackney, Medas and Sy (2019) show that SOE performance interacts with country-specific conditions resulting in SOE performances that are particularly weak, compared to private enterprises, when there is a higher level of country-specific institutional weakness. The concerns also speak of crowding out of the private sector and misallocation of credit leading to poorer productivity outcomes (Hsieh and Klenow, 2009). This has engendered skepticism around SOEs’ participation and the distortions that come with it, and alongside various governance frameworks proposed (Putniņš, 2015).

¹ See, for example, Kowalski, Büge, Sztajerowska and Egeland (2013); European Commission (2016) and Samphantharak (2019).

Recognizing that privatization is not always the optimal or feasible policy solution, the World Bank has been engaged for many years on frameworks to improve SOE governance (World Bank, 2014). The International Monetary Fund (IMF) recently highlights the role of SOEs as “the other government” (IMF, 2020). Similarly, ADB calls for reforms toward “the bankable SOE” to crowd in development finance (ADB, 2020; 2021).

In this paper, we study the presence (or absence) of SOEs’ financing advantage in both the loan and bond markets, quantify it and provide comparative analysis for various subgroups of economies. This provides an extension of earlier related works by Borisova and Megginson (2011); Borisova, Fotak, Holland and Megginson (2015) and Shailer and Wang (2015). And in doing so, this paper reflects more recent financial market developments (especially in EMDEs) and adds several dimensions to existing knowledge.

Firstly, different from earlier studies, we include both syndicated loans and bonds in the study to provide a more complete financing picture. As we will explain later, the syndicated loan market has also become significant in EMDEs.² Secondly, we include and provide separate analysis on financing in non-hard currencies (for both syndicated loans and bonds). Financing in local or EMDE currencies is increasingly important as local loan and bond markets become more mature over the decades. Raising development finance in local currencies, thereby reducing currency mismatch, is also seen as a key risk-mitigating measure for EMDEs. Thirdly, we also include financing beyond listed companies, leveraging on ORBIS data, and include the identification of non-corporatized SOEs (recorded as national legal forms, to be explained later). Including only listed SOEs could lead to selection bias.

Our data coverage is large, thereby allowing subgroups (by advanced economies viz EMDEs, currency types, levels of state shareholding, country ratings, etc.) to be tested. Our empirical work also leverages on propensity score matching (PSM). As we will describe later, this is potentially a more robust approach. Taken together, these provide a more complete and yet nuanced picture on potential SOE financing advantage.

The importance of the financing channel cannot be overstated. It is posited as one key channel of crowding out, simultaneously leading to and reinforced by higher market power of SOEs. This can result in private enterprises becoming reluctant to enter certain sectors. If indeed SOEs receive special access to finance, this could point to crowding out rather than crowding in.

More broadly beyond finance, there is also a large body of work analyzing SOE performance. Empirical evidence on SOE performance is often mixed given the heterogeneous landscape between and within countries, as well as the presence of

² As it is well established, loan financing will be less prone to inefficient liquidation and hence, advantageous under some circumstances.

many confounding factors.³ Researchers have attempted to compensate for this, for example, through using matched firm samples to provide more robust analyses of SOE performance. Nevertheless, given the unique position of SOEs in many economies and the sectors they operate in, and also the size and scale of many SOEs, it could in practice be difficult to achieve very good matching of a SOE to a private firm that is necessary for this class of methodology to work.

For example, SOEs often operate in sectors such as public utilities or large-scale infrastructure where there are public mandates or tight regulations, hence, private enterprises could be reluctant to enter into these sectors in the first place. Even if there are private firms in such sectors, the number of players would likely be small. It would be difficult to create suitably matched samples in such situations. Furthermore, SOEs often have large revenues or asset portfolios, and their size provides buffers against economic shocks, which in turn improves creditworthiness. Returning to finance, preferential access to funding could be seen as a tool to help SOEs achieve their public nonmarket social mandates. It is not surprising that the literature on this is broad and specific to country context.

Empirical research toward this is also shaped, and to a certain extent limited, by available data. Hence, skepticism with the empirical methods to assess SOE performance and effects of privatization is not new, though the literature has arrived at some consensus that privatization of SOEs has improved overall performance in both transition and non-transition economies (Megginson and Netter, 2001). Typically, research is focused on the firm-level performance of SOEs – e.g., output or sales, profitability, returns on assets, stock market performance, etc. – versus private enterprises, or SOEs before and after privatization.⁴

Research into SOE performance is also linked with the sizeable literature on political connections and financial access. Here, empirical research has leveraged much on loan-level data. Existing research in this area typically defines political connections based on the owners' or directors' political participation. There is substantial evidence in the literature that for various economies, political connections do increase the availability of bank credit and on improved terms. This is true even for private enterprises, and for developed economies.⁵

³ See Ng and Menon (2013) for the documentation for the threshold effects for Malaysia, leading to reduced private sector participation. Ramírez and Tan (2004), on the other hand, find no evidence of preferential finance access for Singapore's government-linked companies.

⁴ See Omran (2004); Lazzarini and Musacchio (2015); (Phi, Taghizadeh-Hesary, Tu, Yoshino and Kim (2019) and Zhang, Yu and Chen (2020) as examples of propensity-matched analysis of SOE performances.

⁵ Cull and Xu (2003) document the shifts from fiscal to bank finance for China's SOEs, with state-owned banks providing support in place of direct transfers from the state. Khwaja and Mian (2005) find that political connections in Pakistan increased access to larger loans with higher default, though without interest rate difference effects. Li, Meng, Wang and Zhou (2008) and Yeh, Shu and Chiu (2013) find that political connections increased the access to loans and large loan sizes in their respective economies of studies.

We take it as a given that SOEs are politically connected and do not deal with the political activities of owners or directors, many of whom are appointed by the state in any case. The focus of this paper is state ownership itself, which potentially comes with the implied pricing assumption that SOEs will not be allowed to fail. But one could also imagine scenarios where state ownership is seen as a bad (e.g., political influence affecting business decisions), leading to worsened financial terms of borrowing.

We also include the effects of state ownership on pricing of issued bonds, which existing research on political connections do not cover. Bond financing has become important for many SOEs as we will show later. The contribution of our research is to uncover how significant this borrowing cost advantage is and for which markets. The bond market is of particular interest as will be explained shortly.

We obtained firm-level data from ORBIS, including ownership data. We then conducted a detailed name merge with two separate datasets – one for syndicated loans and one for bond issuances. This provides us a large and combined dataset rich with financing decisions and the underlying characteristics of such transactions (amount, tenor, spreads or yields, currency type, date, number of participating banks, etc.). We also include firm-level characteristic (solvency) and country-level characteristic (sovereign rating) as further controls.

With the ownership data from ORBIS, we are able to mark out transactions, whether loans or bonds, undertaken by SOEs against those by non-SOEs. We also analyzed loans and bonds in hard currencies separately from those in EMDEs' currencies. Using loan (bond)- level characteristics, we then used matching techniques to match a loan (bond) contracted by an SOE to one by a private company. This allows us to tease out differences in financial cost in the counterfactual sense, between SOEs and non-SOEs.

The key benefit is that we derive our conclusions not from the internal financial metrics of SOEs, but their observed financing transactions in the market, and analyze these against non-SOEs. As companies (SOEs or private enterprises) have repeated transactions, there would be a larger set of transactions for matching, thereby alleviating any potential matching difficulties at the firm level as described earlier. We first provide the estimates of SOEs based on regressions. We supplement these by average treatment effect estimates PSM and explain why in some instances the latter could be more robust. Again, we reiterate that PSM in this paper is conducted on a large number of transactions and does not match an SOE with a private enterprise.

Large firms raise debt finance in two key markets – syndicated loans and bond capital markets. Both markets have a high degree of transparency, where the loan amounts, contract date, tenor, borrower and spreads (above the reference rate) are captured in large commercially available datasets. For the syndicated loan market, the list of lenders (and, hence, the number of lenders) in the syndicate is known. For the bond market, the number of arranging banks and yield to maturity at offer date are also known. While these are imperfect substitutes, there is also an overlap between the two markets.

For example, syndicated loans can be sold off by any lender in the syndicate in the secondary market without affecting the borrower or other lenders in the syndicate. For bond offerings, banks participating in the underwriting would also typically hold a share, before selling down in the secondary market [(Simons, 1993); (Altunbas, Kara and Marqués-Ibáñez, 2010)]. Large firms will tend to use both forms of corporate finance.

Bond financing differs in a crucial aspect – the cost of financing at offering is typically determined by the demand in the market. To be clear, even without preferential access, SOEs could still benefit by being linked to the government such as the implicit assumption that they would be bailed out. Importantly though, this implicit support would apply to both loans and bonds. What is different in bonds is that there would not be direct spread setting by a small group of lenders, and thus far less exposure to political relationships or politically directed lending.⁶ In other words, bond pricing could provide a cleaner assessment on how the market perceives the benefits (and/or risks) of state ownership. Furthermore, it is well worth noting that bonds are less senior to loans. Being lower in the repayment hierarchy, any implied government support would therefore be worth more for bonds. With the benefit of large datasets and using both regressions and PSM, we preface a few key results.

- SOEs in both advanced economies and EMDEs have lower syndicated loans spreads, in hard currencies, compared to the private sector. This SOE advantage is slight for advanced economies, but sizeable for EMDEs. For non-hard currencies, SOEs have a smaller and weakly significant advantage.
- SOEs in both advanced economies and EMDEs have lower bond yields, in hard currencies, at issuance. Financing advantage in the bond market is more clear-cut, compared to loans. For yields in EMDE currencies-denominated bonds, SOEs have a smaller but still significant advantage.
- The picture is more mixed for SOEs in non-investment-grade EMDEs. On the one hand, there does not seem to be a systematic advantage in hard currency loans. On the other hand, there is evidence of financing advantage for bonds, compared to the private sector.
- Different levels of state ownership show some differentiation in borrowing costs advantage. But in general, lower costs of financing continue to hold, especially for hard currency financing.

These provide quantified evidence that government ownership does result in lower financing costs, particularly for the bond market (even for SOEs in non-investment-grade EMDEs). This also informs us on how lenders and investors to EMDEs perceive SOE risks.

⁶ This cannot be ruled out completely, of course. There could for example be the pressure to support certain bond offerings, but this channel would be much more indirect.

For the remainder of the paper, section 2 will provide a description of the dataset, summary statistics and key trends. Section 3 will provide the estimation framework and present the results. Section 4 will discuss the results. Section 5 concludes.

2. Data

2.1 Identifying SOEs

To begin, ORBIS company data is used to identify companies that are owned by government ministries or states. The use of ORBIS data to identify SOEs has become widely used in the literature in recent years.⁷ ORBIS cumulates ownership data across different layers of the corporate structure toward the identity of the “global ultimate owner” or GUO. When a company’s GUO is a government or state entity, it means that the state is the single-largest owner (through cumulation), and this is clearly identified as an SOE.

In addition, ORBIS provides two default ownership thresholds toward the identification of SOEs – first, when cumulation shows that 25 percent of the firm is owned by the government or state; and second, at 50 percent.

Our first criterion for a company to be tagged as an SOE is when there is a cumulative 25 percent ownership by the state. For this set of SOEs, the state is the largest single ultimate owner, but its ownership does not cross 50 percent. This provides us with a fuller set of SOEs than at the 50 percent threshold. We retain an indicator for firms with 50 percent government or state ownership for robustness checks.

Our second criterion includes instances (fewer in numbers) where the government or state has at least 25 percent direct ownership of a firm, but there is the presence of at least a single private owner with a larger share. In such cases, the GUO would be identified as the largest private sector owner, and not the state. We added some cases into the list of SOEs for completeness, though there can certainly be a degree of debate whether these are truly as such. We also perform robustness checks using this subgroup. In any case, such occurrences are significantly fewer in numbers in the dataset.

Finally, we also include SOEs if they are defined by certain “national legal form.” This is an important criterion because not all SOEs have a corporate structure whereby ownership can be identified through shareholdings. Rather, SOEs are created by statutory processes and identified in the ORBIS data by their national legal form. Many post-central planning economies have SOEs that are defined in this way. Examples include the “State Unitary Company” in Russia, “State-Owned Corporation” in Viet Nam and “Government Company” in India. Because this selection step is more

⁷ A sizeable body of studies uses ORBIS data to identify SOEs, including Kowalski, Büge, Sztajerowska and Egeland (2013); Lazzarini and Musacchio (2015) and Phi, Taghizadeh-Hesary, Tu, Yoshino and Kim (2019). Some studies identify SOE as those with 50 percent state ownership.

arbitrary, unlike the previous two criteria using shareholdings, we acknowledge that the identification of SOEs here will be less than perfect and more susceptible to both errors of inclusion and omissions.

2.2 Transaction Data

As for the transactional data, syndicated loan and bond data were extracted from Refinitiv. For the analysis, we drop all transactions by financial sector firms or by supranational organizations. Borrowing costs for financial sector firms are typically not indicative of the costs for the rest of the sectors in the economy. Supranational organizations, while having state shareholders, are multilateral institutions with a very different governance structure (and borrowing costs) from national SOEs. We also include only transactions that reached financial close.

The list of SOEs is then name-matched to a dataset of contracted syndicated loans and another dataset on bond issuance, both of which are available from commercial financial data provider Refinitiv. To be clear, the names of companies in transactional datasets are uploaded into the ORBIS platform and merged using the fuzzy logic provided by the ORBIS platform. Where the names are not successfully matched, a further manual match is performed for the large transactions, so that the merge is as complete as possible. This allows us to mark out syndicated loans to and bond issuance by SOEs against those by non-SOEs, as the basis for regressions and PSMs to be performed later.

2.3 Data Summary

Most transactions by advanced economy firms, whether loans or bonds, are conducted in hard currencies, by which we mean currencies of advanced economies. Most of the syndicated loans by EMDE firms are conducted in hard currencies, though EMDE currency transactions form a significant share (Table 1). This can be explained by the fact that EMDEs do have hard currency needs. EMDE companies' bond issuances, on the other hand, is largely in EMDE currencies. This provides some early indication of the financing preference of EMDE firms, where hard currency financing is done through banks while local currency financing is through the debt market.

Table 1: Breakdown of Transaction Types (2010–2020)

Number of syndicated loans		
	In hard currencies	In non-hard currencies
Advanced economy firms	173,942	484
EMDE firms	14,113	10,179
Number of bond issuances		
	In hard currencies	In non-hard currencies
Advanced economy firms	310,946	10,245
EMDE firms	13,386	97,585

We further present the breakdown of transactions (both loans and bonds) conducted by SOEs and non-SOEs (Table 2). In EMDEs, SOE transactions form the majority, unlike that in advanced economies.

Table 2: Breakdown of Transactions by SOEs and Non-SOEs (2010–2020)

	Number of transactions (syndicated loans and bonds)	
	SOEs	Non-SOEs
Advanced economies	138,069	357,540
EMDEs	43,378	90,919

It is also clear from Figure 2 that EMDE SOEs have become much more active in bond markets in the past decade.

Figure 1: SOE Syndicated Loan Volume for AEs and EMDEs (in all currencies)

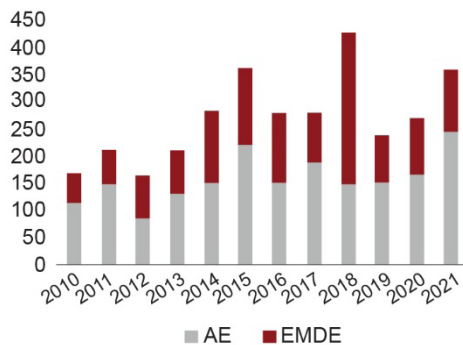
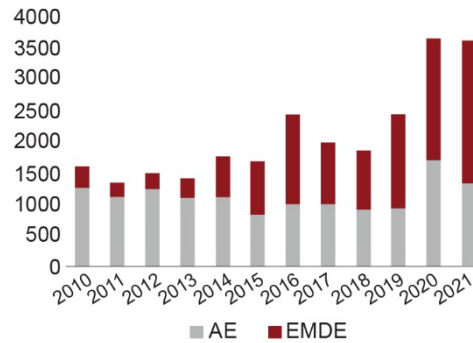


Figure 2: SOE Bond Issuances for AEs and EMDEs (in all currencies)



Note: Unit in USD billion. Data in these charts exclude firms in financial sector or supranational organizations.
Data source: Refinitiv and ORBIS.

In Figure 3, it is clear from observational data that SOEs have a lower hard currency financing cost in syndicated loans (for both advanced economies and EMDEs). For loans in EMDE currencies, the advantage of SOEs is more mixed (Figure 4). For bond issuance, it is also very clear from observational data that SOEs have lower cost of financing in hard currencies (Figure 5) and EMDE currencies (Figure 6).

Despite the large datasets on transactions, a key caveat is that firm-level data (from ORBIS) is incomplete. Many firms do not have recorded financial data. We do not attempt to make any corrections for this, and subsequent regressions as well as propensity matching are done only for samples with full data.

Figure 3: Syndicated Loan Spreads AEs and EMDEs (in hard currencies)

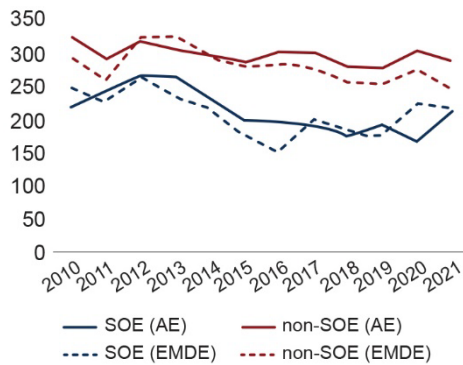
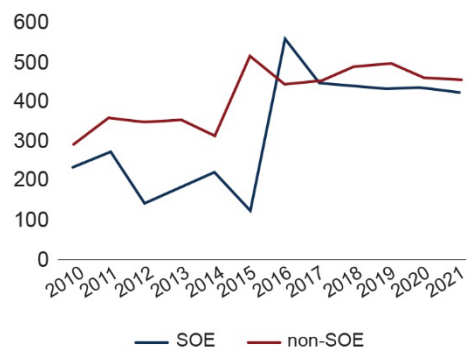


Figure 4: Syndicated Loan Spreads for EMDEs (in non-hard currencies)



Note: Data in these charts exclude firms in financial sector or supranational organizations.
Data source: Refinitiv and ORBIS.

Figure 5: Bond Yields Spread for AEs and EMDEs (in hard currencies)

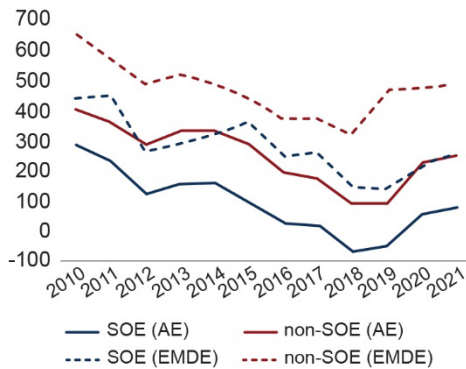
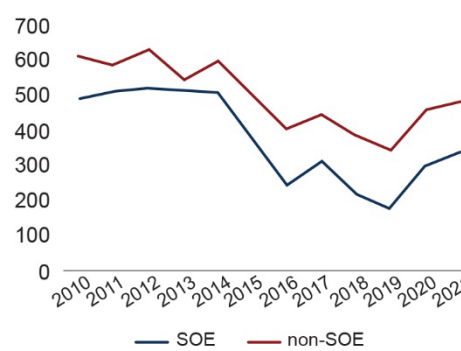


Figure 6: Bond Yields Spread for EMDEs (in non-hard currencies)



Note: Data in these charts exclude firms in financial sector or supranational organizations.
Data source: Refinitiv and ORBIS.

3. Regression

With the completion of the data description, we estimate the following equation:

Equation 1

$$s_{i,j,k,t} = \alpha + \delta_j I_j + \delta_t R_t + \mathbf{X}_i \boldsymbol{\theta}_i + \mathbf{Y}_{j,t} \boldsymbol{\theta}_j + \theta_k Z_{k,t} + \varepsilon_{i,j,k,t}$$

where $s_{i,j,k,t}$ denotes the spread of loan i of firm j in country k at time t . For the explanatory variables, α is the year-fixed effect; R_t is the Libor rate at time t , which acts as a control for global liquidity conditions; \mathbf{X}_i is a vector of loan characteristics (number of participating banks, amount, tenor); $\mathbf{Y}_{j,t}$ is the firm-level characteristics,

namely the five–year mean solvency ratio of the firm between 2017 to 2021,⁸ five–year average asset size to control for any potential size effects and whether the firm has bond access. We expect the solvency ratio to have a negative sign as high solvency is an indication of lower risk.

For bond access, an indicator is set to 1 should the firm also issue bonds during the sample period (0 otherwise) – we expect the sign of this to be negative, as bond market access indicates nonbank finance and can thus reduce the market power of lending banks.⁹

Finally, $Z_{k,t}$ is the country characteristics at time t , namely the sovereign’s credit rating for foreign currency. Here, we use Standard and Poor’s long-term foreign currency ratings as the benchmark for sovereign creditworthiness. An “AAA” rating is given a score of 1, “AA+” a score of 2 and so on. A higher score reflects a weaker sovereign rating. A non–investment or speculative grade is defined as BB+ and below.¹⁰

We treat the SOE indicator I_j as exogenous – that is, predetermined as opposed to being endogenously determined. The variable of interest is I_j , which takes the value of 1 if loan i , is contracted by a SOE. The above equation attempts to control for loan-, firm- and country-level characteristics, together with global liquidity condition, that may have effect on spreads. With the large set of covariates, there is a chance that conditional mean independence (CMI) is achieved and the coefficient δ_j would indicate the casual effect that state ownership has on loan costs.

We present the four sets of regression estimates for various subgroups: (a) advanced economies loans in hard currencies, (b) EMDE loans in hard currencies, (c) EMDE loans in non–hard currencies and (d) EMDE loans in hard currencies in non–investment-grade EMDEs.¹¹

⁸ The solvency ratio, provided by ORBIS, is defined as income plus depreciation, divided by liabilities. This variable thus measures how able the firm is in meeting its liability. The firm-level data in ORBIS is not complete and has significant gaps – the mean value between 2017 and 2021 allows us to overcome data gap in some years by taking the average across years.

⁹ It is known in the literature that bond access can reduce loan spreads as bonds provide another avenue of finance (Hale and Santos, 2009).

¹⁰ A country’s creditworthiness reflects its level of development, governance, macroeconomic strengths, etc. – and these factors affect both SOEs and private sector firms. For SOEs, the correlation between sovereign strengths and SOE financing costs is only natural. For the private sector, the transmission channel is perhaps more indirect, but can be rationalized by the fact they operate in country environments that carry certain risks, which in turn impact their borrowing costs.

¹¹ Many EMDEs have not reached investment-grade credit ratings. The interesting question is whether SOEs still have a financing edge over the private sector in these economies. Hence, we pay specific attention to this subgroup.

However, it is conceivable that CMI would not hold. SOEs themselves may have very different corporate characteristics (e.g., solvency). The loan characteristics may be different as well. For example, governments may be attracted to holding stakes in systemically large companies. Similarly, SOEs could take on much larger loans, or attract many participating banks keen to do business with government-linked firms. Hence, $X_i, Y_{j,t}$ can potentially interact with the “treatment” – I_j . In such instances, deriving the “treatment effect” through PSM would be more robust against any misspecification in the regression functional form.

The results for regressions and treatment effects from PSMs are provided in Table 3 and Table 4, respectively. From the regression estimates, the SOE coefficients are negative. For advanced economies, the effect is small, at around -25 bps. For SOEs in EMDEs, for hard currencies and EMDE currencies loans, respectively, the effect of state ownership is around -65 bps and -55 bps. The effect is not significant for non-investment-grade EMDEs. The ATE estimates from PSM are also negative from 1(a) to 1(c) and have similar magnitudes to the regressions.

Table 3: Regressions of Syndicated Loan Spreads

	1 (a)	1 (b)	1 (c)	1 (d)
SOE indicator	-25.14*** (5.932)	-64.76*** (7.806)	-55.38* (31.43)	4.308 (18.95)
Libor	-0.193*** (0.0634)	0.0962 (0.132)	-0.264 (0.419)	-0.363 (0.252)
Number of participating	-5.614*** (0.380)	-7.375*** (0.733)	-12.40** (6.193)	-5.178*** (1.532)
Amount in transaction	-0.00234*** (0.000787)	-0.00653* (0.00373)	0.000111 (0.0119)	-0.00322 (0.00541)
Tenor	6.117*** (1.557)	-1.082 (1.469)	-4.918 (5.753)	-5.756** (2.538)
Sovereign foreign	-2.779*** (0.283)	3.397*** (1.287)	38.11 (49.71)	10.98* (6.145)
Mean solvency ratio	-1.066*** (0.0541)	-0.414*** (0.147)	-4.591** (1.983)	-0.244 (0.298)
Mean assets	-0.000462*** (0.0000282)	-0.0000232 (0.0000575)	-0.0000831 (0.000280)	-0.000479*** (0.000171)
Access to bond market	-61.97*** (2.409)	-18.42** (7.721)	22.51 (53.16)	-25.00* (14.84)
Observations	24,804	1,548	520	471
R-square	0.062	0.146	0.100	0.167
Prof > F	0.000	0.000	0.000	0.000
Year-fixed effects	Yes	Yes	Yes	Yes
Economy group	Advanced	EMDEs	EMDEs	EMDEs (BB+ &
Currency	Hard currencies	Hard currencies	EMDE	Hard currencies

Notes: Standard errors are provided in parentheses below coefficients. *10 percent, **five percent and ***one percent significance, respectively.

Table 4: ATEs of Syndicated Loan Spreads (all SOEs)

	1 (a)	1 (b)	1 (c)	1 (d)
ATE of state ownership at least				
25 percent	-27.86*** (7.183)	-68.85*** (8.226)	-47.34 (44.18)	-5.533 (26.83)

Notes: Standard errors are provided in parentheses below coefficients. *10 percent, **five percent and ***one percent significance, respectively.

We further estimate the effects of state ownership on borrowings from debt markets with a similar equation, also with various subgroups.

Equation 2

$$r_{i,j,k,t} = \alpha + \delta_j I_j + \delta_t R_t + X_i \theta_i + Y_{j,t} \theta_j + \theta_k Z_{k,t} + \varepsilon_{i,j,k,t}$$

where $r_{i,j,k,t}$ denotes the yields to maturity (YTM) at the point of bond i offering or issuance by firm j in country k at time t . The rest of the explanatory variables are largely the same as Equation 1, where X_i is a vector of loan characteristics; $Y_{j,t}$ is the firm-level characteristics, but without the bond market access indicator (which is irrelevant in this context). The results for the regression and ATE estimates are presented in Table 5 and Table 6, respectively.

Table 5: Regressions of Bond Yields at Offer

	2 (a)	2 (b)	2 (c)	2 (d)
SOE indicator	-122.6*** (2.435)	-120.6*** (15.45)	-85.53*** (4.094)	-81.22*** (18.76)
Libor	0.133*** (0.0443)	0.590*** (0.203)	0.368*** (0.0989)	0.413 (0.328)
Number of participating	7.075*** (0.523)	17.18*** (2.221)	7.498*** (0.923)	-7.717* (4.265)
Amount in transaction	-0.0234*** (0.00222)	-0.0911*** (0.0155)	-0.184*** (0.0129)	-0.0422*** (0.0159)
Tenor	2.092*** (0.431)	-2.398*** (0.603)	4.024*** (0.404)	0.820* (0.464)
Sovereign foreign	-16.90*** (0.369)	36.91*** (1.388)	68.18*** (2.289)	30.48*** (5.670)
Mean solvency ratio	-1.143*** (0.0535)	-1.894*** (0.279)	-1.386*** (0.104)	0.452 (0.294)
Mean assets	-0.000301*** (0.00000781)	0.000168* (0.0000894)	0.00000350 (0.0000105)	-0.000621** (0.000262)
Observations	41,923	2,814	12,828	759
R-square	0.219	0.318	0.309	0.239
Prof > F	0.000	0.000	0.000	0.000
Year-fixed effects	Yes	Yes	Yes	Yes
Economy group	Advanced	EMDEs	EMDEs	EMDEs (BB+)
Currency	Hard currencies	Hard currencies	EMDE currencies	Hard

Notes: Standard errors are provided in parentheses below coefficients. *10 percent, **five percent and ***one percent significance, respectively.

Table 6: ATEs of Yields Using PSM (all SOEs)

	2 (a)	2 (b)	2 (c)	2 (d)
ATE of state ownership	-119.9*** (3.617)	-117.5*** (13.84)	-81.09*** (4.875)	-34.31* (18.39)

Notes: Standard errors are provided in parentheses below coefficients. *10 percent, **five percent and ***one percent significance, respectively.

4. Discussion of Results

Regressions and PSM estimates for syndicated loans are largely consistent with regard to the SOE effect [see SOE indicator of Table 3 and ATEs of Table 4]. This provides confidence to the estimates. SOEs in advanced economies have only a slight financing advantage in loans, while this advantage is larger in EMDEs. SOEs in EMDEs have a larger financing advantage for hard currency loans (-69 bps), but financing advantage for EMDE currencies is not significant.

If the financing advantage of SOEs is slight in the syndicated loan market, it is much larger in the bond market where SOEs are able to borrow more cheaply compared to private sector firms. For bonds, the estimates for both advanced economies and EMDEs are fairly consistent for hard currency bonds, at around -120 bps advantage compared to the private sector. For EMDE currencies, the advantage is also sizeable, at around -81 bps (and larger than the advantage of syndicated loans). SOEs have become increasingly able to tap and mobilize debt markets.

An interesting question is whether SOEs in EMDEs are able to borrow at equivalent rates as the states themselves (rather than comparing to the private sector only). We are unable to make such a determination in this paper because many EMDEs do not or have few official debts contracted with the private sector. Indeed, many lower-income EMDEs still rely on bilateral or multilateral financing for their hard currency needs, and often on concessionary terms. In this context, SOEs are likely acting as government proxies for debt contracting.

For 2020 and 2021, SOEs issued an estimated USD3.5 trillion of bonds, in each year (Figure 2). A -120 bps advantage translates into around USD42 billion lower financing cost based on 2021 issuance alone, a non-trivial savings for SOEs. As a corollary, this also makes SOEs more suited to undertake development that requires hard currency financing or participate in overseas projects.¹²

Focusing on the sovereign foreign currency rating variable, this has little impact on loan spreads (Table 3), but a significant impact on bond yields in EMDEs (Table 5). Hence, private sector investors are more sensitive in sovereign rating weaknesses compared to bank lenders. An important consideration is that bonds are junior to loans

¹² See OECD (2017) for an overview of how SOEs from EMDEs have become an increasingly important part of the global corporate landscape.

in repayment. Hence, it is consistent to see that state ownership (and with the implied backing) results in a larger borrowing cost advantage in the bond market, and more sensitivity toward sovereign ratings at the same time.¹³

Interestingly, even for non-investment-grade EMDEs, there is evidence (albeit weaker) of financing advantage for SOEs for bonds (at around -81 bps using simple regression, and -34 bps using PSM). We also note that in this specific subgroup, regression estimates differ more with PSM (as compared to other subgroups where regression and PSMs yield similar estimates). We interpret to show that while the financing advantage does exist for state ownership, there are significant non-linearities in the pricing of bonds in non-investment-grade EMDEs. Hence, the PSM estimate may be more reliable in this context.

4.1 Different Types of State Ownerships

We repeat the PSM estimates for bond issuances [corresponding to 2(a) to 2(d) of Table 6] – but with different SOE categorizations and report results in. First, this provides some robustness checks for the main regressions and PSM estimates, with various SOE subgroups. Second, this also allows us to distill more nuances regarding the financing advantage in different SOE subgroups.

¹³ This is consistent with Baum, Hackney, Medas and Sy (2019) that country-specific weaknesses do interact and affect SOEs, and this is priced into bonds.

Table 7: ATEs of Yields Using PSM (for different state ownerships)

	2(a) AE; hard currencies	2(b) EMDEs; hard currencies	2(c) EMDEs; EMDE currencies	2(d) Non- investment- grade EMDEs; hard currencies
SOEs as GUO with 25 percent state ownership, against	-62.36*** (8.055)	-125.2*** (34.52)	-82.37*** (6.023)	-51.53*** (13.88)
SOEs as GUO with 50 percent state ownership, against	-160.6*** (3.935)	-100.7*** (36.50)	-43.86*** (5.742)	-43.93 (31.25)
Private sector as GUO but with 25 percent state ownership, against private companies	-26.82*** (10.15)	-261.7*** (47.00)	-3.736 (18.90)	n/a

Notes: Standard errors are provided in parentheses below coefficients. *10 percent, **five percent and ***one percent significance, respectively.

In the first row (Table 7), we present the results when we restrict comparison of SOEs with 25 percent state ownership (but less than 50 percent) against private sector companies. In the second row, we present the results when we restrict to SOEs with at least 50 percent state ownership. The interesting observation here is that for the 50 percent ownership subgroup, the results are more varied compared to the 25 percent ownership group – ranging from large financing advantage for AEs (-161 bps) to generally smaller or even insignificant effects for some EMDEs.

A high level of state ownership provides significant benefits to SOEs in advanced economies, compared to the private sector. But in a sharp contrast for EMDE bonds, the high level of state ownership does not confer any added advantage, but a small disadvantage instead [see columns 2(b) to 2(d) of Table 7]. A high level of state ownership is not always well perceived by investors in EMDE bonds.

In the third row, we present the results when we restrict comparison to firms with state ownership, but also where there is the presence of a larger private sector owner (as described in the introduction). The state takes an ownership in a private sector company but without control in other words. In AEs, the presence of a stake by the state in such companies yields only a small effect (-27 bps). This is significantly smaller than the estimates in the rows above. Bond investors thus do not provide such companies with any much of a financing advantage.

Conversely, in EMDEs, the state's stake in a private company seems to provide a sizeable advantage in hard currency financing (-262 bps). For many private companies operating in EMDEs, access to hard currency is seen as uncertain because of the range of capital controls. For example, companies may have limited quota of foreign currency access, and/or would have to go through an application process. During

periods of balance of payment or macroeconomic stresses, there would often be further capital controls, and the assumption that sovereigns would prioritize hard currencies for national rather than private sector needs. Hence, it is perhaps not surprising that the market significantly benefits private sector companies with state participation (“halo effect”) compared to those without.

5. Conclusion

In this paper, we draw from ORBIS firm-level data on ownership and match these to large transaction data for syndicated loans and bonds. This allows us to leverage on large transaction-level datasets to draw our conclusions. We argue that this approach is more robust than the firm-level approach given that SOEs are inherently different from private companies.

Our key contribution is to document the magnitudes of financing advantage of SOEs in these two key financing markets, and for different currency types. In general, the advantage on the syndicated loan market is moderate, and larger financing advantage is seen in the bond market. The agreement between regressions and PSM estimates provides confidence to the key results.

It is important to reiterate that the financing advantage occurs for both advanced economies and EMDE SOEs, and it is not strictly an EMDE phenomenon as commonly perceived. In terms of currency, the SOE advantage is larger for hard currency financing. The results are robust in various subgroups of SOEs with different degrees of state ownership, and also subgroups of EMDEs. Even SOEs in non-investment-grade EMDEs have some financing advantage for bond issuances in hard currencies.

It is important to stress that our results do not imply that SOEs are necessarily crowding out the private sector. As we have argued in this paper, SOEs generally perform different economic and social roles compared to purely private sector firms. Rather, we emphasize SOEs’ significant financing advantage as an opportunity and policy tool for capital mobilization towards public goods (such as infrastructure or climate change mitigation), as described in the introduction. This would be a positive agenda.

References

- Altunbas, Y., Kara, A. and Marqués-Ibáñez, D. (2010). Large Debt Financing: Syndicated Loans versus Corporate Bond. *The European Journal of Finance*. 16(5).
- Asian Development Bank. (2020). *Reforms, Opportunities, and Challenges for State-owned Enterprises*.
- Asian Development Bank. (2021). *The Bankable SOE: Commercial Financing for State-Owned Enterprises*. Asian Development Bank.
- Baum, A., Hackney, C., Medas, P. and Sy, M. (2019). Governance and State-Owned Enterprises: How Costly is Corruption? *IMF Working Paper*.
- Borisova, G. and Megginson, W. (2011). Does Government Ownership Affect the Cost of Debts? Evidence from Privatization. *The Review of Financial Studies*. 24(8). pp. 2693- 2737.
- Borisova, G., Fotak, V., Holland, K. and Megginson, W. (2015). Government Ownership and the Cost of Debt: Evidence from Government Investments in Publicly Traded Firms. *Journal of Financial Economics*. 118(1). pp.168-191.
- Bova, E., Ruiz-Arranz, M., Toscani, F. and Ture, H. (2016). The Fiscal Costs of Contingent Liabilities: A New Dataset. *IMF Working Paper*.
- Cull, R. and Xu, L. (2003). Who Gets Credit? The Behavior of Bureaucrats and State Banks in Allocating Credit to Chinese State-Owned Enterprises. *Journal of Development Economics*. 71(2). pp. 533-559.
- European Commission. (2016). State-Owned Enterprises in the EU: Lessons Learnt and Ways Forward in a Post-Crisis Context. *European Economy Institutional Papers*.
- Hale, G. and Santos, J. (2009). Do Banks Price Their Informational Monopoly? *Journal of Financial Economics*. pp. 185-206.
- Hsieh, C.T. and Klenow, P. (2009). Misallocation and Manufacturing TFP in China and India. *Quarterly Journal of Economics*. 124(4). pp. 1403- 1448.
- IMF. (2020). *State Owned Enterprise: The Other Government*.
- Khwaja, A. and Mian, A. (2005). Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market. *Quarterly Journal of Economics*. 120(4).
- Kowalski, P., Büge, M., Sztajerowska, M. and Egeland, M. (2013). State-Owned Enterprises Trade Effects and Policy Implications. *OECD Trade Policy Papers*, No. 147.
- Lazzarini, S. and Musacchio, A. (2015). State Ownership and Firm-Level Performance” *Academy of Management Proceedings*. 2015(1).

- Li, H., Meng, L., Wang, Q. and Zhou, L.A. (2008). Political Connections, Financing and Firm Performance: Evidence from Chinese Private Firms. *Journal of Development Economics*. 87. pp. 283-299.
- Meggison, W. and Netter, J. (2001). From State to Market: A Survey of Empirical Studies on Privatization. *Journal of Economic Literature*. 39(2). pp. 321-389.
- Molnar, M. and Lu, J. (2019). State-Owned Firms Behind China's Corporate Debt. *OECD Working Paper*, No. 1536.
- Ng, T. and Menon, J. (2013). Are Government-Linked Corporations Crowding out Private Investment in Malaysia? *Asian Development Bank Economics Working Paper Series*, No. 345.
- OECD. (2017). *OECD Business and Finance Outlook 2017*. OECD.
- Omran, M. (2004). The Performance of State-Owned Enterprises and Newly Privatized Firms: Does Privatization Really Matter? *World Development*. 32(6). pp. 1019-1041.
- Phi, N., Taghizadeh-Hesary, F., Tu, C., Yoshino, N. and Kim, C. (2019). Performance Differential between Private and State-owned Enterprises: An Analysis of Profitability and Leverage. *Asian Development Bank Institute Working Paper Series*, No. 950.
- Putniņš, T. J. (2015). Economics of State-Owned Enterprises. *International Journal of Public Administration*. 38(11).
- Ramírez, C. and Tan, L. (2004). Singapore Inc. Versus the Private Sector: Are Government-Linked Companies Different? *IMF Staff Papers*. 51(3).
- Samphantharak, K. (2019). State Owned Enterprises in Southeast Asia. *Economic Development of Southeast Asia*.
- Shailer, G. and Wang, K. (2015). Government Ownership and the Cost of Debt for Chinese Listed Corporations. *Emerging Market Review*. 22. pp. 1-17.
- Simons, K. (1993). Why do Banks Syndicate Loans? *New England Economic Review*.
- World Bank. (2014). *Corporate Governance of State-Owned Enterprises: A Toolkit*. World Bank Group.
- World Bank. (2021). *Hidden Debt: How to Avert the Next Financial Crisis in South Asia*. World Bank Group.
- Yeh, Y.-H., Shu, P.-G. and Chiu, S.B. (2013). Political Connections, Corporate Governance and Preferential Bank Loans. *Pacific-Basin Finance Journal*. 21. pp. 1079-1101.
- Zhang, X., Yu, M. and Chen, G. (2020). Does Mixed-Ownership Reform Improve SOEs' Innovation? Evidence From State Ownership. *China Economic Review*. 61.