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# Private credit in dual banking countries: Does bank ownership type matter?

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**Abstract**
This study investigates how the effects of government and foreign bank ownership on private credit vary in the cases of Islamic and conventional banks using data extended from Claessens and van Horen (2014) of 29 dual banking countries from 1995 to 2017. In support of the political view of financial development, we find that the presence of state-owned Islamic banks seem to be slightly less harmful to private credit flows than their conventional peers, particularly in the period after the global financial crisis. We also document evidence showing that countries with a larger foreign Islamic bank presence tend to have deeper credit markets postcrisis. However, such advantages may often be outweighed by the costs associated with increased penetration by foreign conventional banks.

**KEYWORDS**
foreign banks, Islamic banking, private credit, state-owned banks

## 1 | INTRODUCTION

The financial liberalization since the 1980s has led to the privatization of state-owned banks and the removal of barriers to foreign bank entry in many countries. The bank ownership reform has given rise to policy concerns about the consequences it has for economic and financial development. One such concern pertains to whether the reform would result in banks extending less financial resources to the private sector (henceforth referred to as "private credit"). This study adds to this line of inquiry by providing evidence from countries where Islamic banks operate alongside their conventional counterparts. These so-called dual banking countries are often described as "bank-based" economies because firms in the countries, especially small and medium-sized ones, heavily rely on bank loans to finance their business operations. As shown in Figure 1, the ratio of private credit to gross domestic product (GDP) of the countries grew by more than half between 1995 and 2017, exceeding the world average in 2014.

The proposition that bank-lending decisions are largely driven by the nature and incentives of bank owners themselves is intuitively appealing, yet the existing evidence on this is at best inconclusive. On one hand, the *social* view of state banking asserts that insufficiently developed economic institutions and weak contracting environment make lending to small, riskier borrowers nearly impossible for private banks. In such markets, it is necessary for the governments through the banks they own to step in to compensate for market failures and extend credit to underserved borrowers (Andrianova, Demetriades, & Shortland, 2008; Gerschenkron, 1962). On the other hand, the alternative *political* view suggests that state-owned banks are often used by politicians to direct credit to their affiliates and supporters, who later return the favor by giving them votes, campaign donations, and bribes. This sort of political meddling is linked to economic inefficiency and consequently put a damper on credit depth (Sapienza, 2004; Shleifer & Vishny, 1994). Another plausible explanation would be that government bank managers tend to look less aggressively for lending opportunities due to lack of incentives to maximize profits, instead lump public savings into government borrowings (Micco & Panizza, 2006). As a result, private sector financing would be displaced or crowded out by huge government debts (Aschauer, 1989).
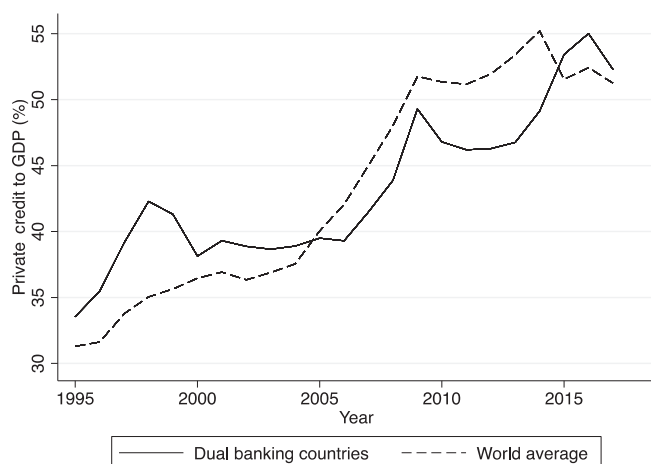
**FIGURE 1** Private credit in the dual banking countries, 1997–2017. *Source*: Authors' calculations

Proponents for opening the domestic markets to foreign competition argue that it would force local incumbent banks to improve their cost efficiency, resulting in a greater overall credit supply (Micco, Panizza, & Yañez, 2007).[1] Foreign banks may also bring about new and more advanced risk management technologies, as well as better financial infrastructure, such as accounting, supervision, and regulation (Kouretas & Tsoumas, 2016; Manlagñit, 2011). Furthermore, foreign banks have a wider access to large cross-border loanable funds, which can help them to achieve better economies of scale and risk diversification, allowing them to sustain higher lending levels (Bruno & Hauswald, 2014). On the other hand, critics point to information asymmetry caused by the cultural and geographical distance faced by foreign banks between their management and loan officers. This informational constraint leads the banks to "cherry pick" the most profitable and transparent clients while leaving out others (Beck & Martinez Peria, 2010; Detragiache, Tressel, & Gupta, 2008; Gormley, 2010; Mian, 2006). At worst, if foreign competition pushes domestic banks out of the market,[2] more firms in the low-end segment (i.e., small, opaque firms) will find themselves credit constrained.

One reason for the above mixed predictions is that previous studies rarely take into account the heterogeneity that exists within each ownership class. Those that have done so demonstrate that state-owned banks are not all the same, in particular, with respect to business models and asset allocation strategies, and hence perform intermediation functions differently (Berger, Klapper, Martinez Peria, & Zaidi, 2008; Zhu & Yang, 2016).[3] The same case also appears for foreign banks (Bonin & Louie, 2017; Zins & Weill, 2018).[4] In a similar vein, we aim to fill the gap in the literature by looking at the heterogeneity with respect to bank orientation to a religion. To date, the literature has yet to consider the specificities of Islamic banking as a possible explanation for the differences in the outcomes of the ownership reform on credit market depth. Theoretically, it is argued that Islamic banks are likely to discriminate less against nonpolitically connected firms and informationally difficult borrowers, owing to the paradigmatic structure of Islamic banking that is rooted in the sharing of rewards and risks with the goal of enhancing social welfare

(Abedifar, Hasan, & Tarazi, 2016; Bitar et al., 2017; Belkhir et al., 2019) (see the next section for further deliberation on this). As such, a higher state or foreign ownership of these banks is expected to positively contribute to private credit expansion. Nevertheless, the actual practice of Islamic banks, which is skewed towards sales- and lease-based financing resembling those of conventional banks, has casted doubt on this premise (Aggarwal & Yousef, 2000).

Our study is also motivated by the scant empirical evidence suggesting that Islamic banks tend to exhibit characteristics and lending behavior that are different from conventional banks. Among others, Beck, Demirgüç-Kunt, and Merrouche (2013) show that Islamic banks have higher-quality assets, and are better capitalized than conventional banks. Farooq and Zaheer (2015) show that Islamic banks face a lower likelihood of experiencing a bank run due to less sensitivity of their religion-oriented depositors to the rate of return. Baele, Farooq, and Ongena (2014) show that Islamic banks hold portfolios that are less likely to default. Aysan, Disli, and Ozturk (2018) find that Islamic banks' credits and deposits are significantly more responsive to policy rate changes. Farag, Mallin, and Ow-Yong (2018) and Mollah and Zaman (2015) show that the distinct governance structure in Islamic banks allow them to take higher risks and achieve better performance. Abedifar et al. (2016) and Ashraf, Ramady, and Albinali (2016) find that Islamic banks are more risk-averse and have a higher propensity to lend to the real economy. Ibrahim (2016) find that Islamic banks make lending decisions in a counter-cyclical manner, and otherwise in the case of conventional banks. Shaban, Duygun, Anwar, and Akbar (2014) show that Islamic banks benefit more from lending to small businesses and hold less capital with higher levels of loan portfolio diversification towards small business lending. Based on this evidence, we anticipate the presence of state-owned and foreign banks, should they operate under the Islamic principles, to have heterogeneous effects on private credit development that have not been tested to date.

We begin by extending the bank ownership database of Claessens and van Horen (2015). Our new database then contains both government and foreign ownership information of 1,038 banks operating in 29 countries, categorized as either Islamic or non-Islamic.[5] Our data reveal different patterns for Islamic and conventional banks. Between 1995 and 2018, on average, the share of bank assets held by state-owned banks declined from 31 to 23%, while that held by foreign banks rose from 11 to 26% (see Box 1 of Figure 2).[6] When dividing into different bank types, the opposing trends between government and foreign ownership were, however, only shown for conventional banks and not for Islamic banks. More specifically, the share of state-owned conventional banks fell from 29 to 19% and that of foreign conventional banks grew from 10 to 23% (see Box 3 of Figure 2). On the other hand, state-owned and foreign Islamic banks' presence, though awkwardly smaller than their conventional peers, is becoming increasingly pronounced as the industry continues to expand (see Figure 3). Their asset shares increased from 2 to 4.6% and from 0.2 to 3.7%, respectively (see Box 2 of Figure 2).

Next, we use the data to examine the roles of state-owned and foreign banks in private credit development. Our main empirical
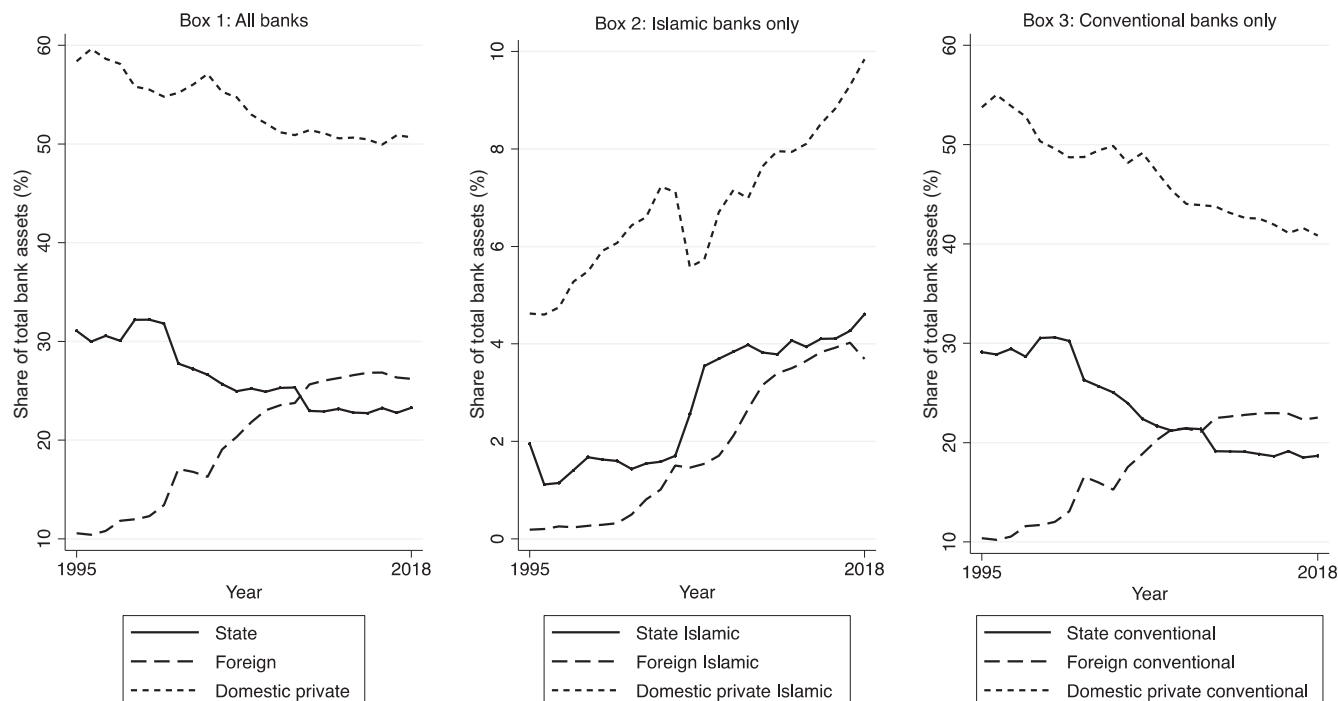
**FIGURE 2** Bank ownership structure in the dual banking countries, 1995–2018. *Source*: Authors' calculations

strategy is to run cross-country regressions that explain private credit to GDP in terms of the shares of total assets held by banks with different ownership types. We first run the regressions using data averaged over the entire sample period from 1995 to 2017. It is suggested that the global financial crisis (GFC) of 2007–2009 has prompted governments to reverse the liberalization (i.e., a process of re-regulation of financial markets). This is following the evidence showing that state-owned banks can help stabilize credit in time of financial instability, while the loan growth rate of foreign banks appears to be more volatile during crises (Bertay, Demirgüç-Kunt, & Huizinga, 2015; Cull & Martínez Pería, 2013). However, according to Saka, Campos, De Grauwe, Ji, and Martelli (2020), this policy reversal is only temporary before the liberalization restarts and backs to its precrisis level. Considering this, we repeat the regressions using data averaged over shorter horizons, namely, from 1995 to 2006 (i.e., the precrisis period), from 2007 to 2009 (i.e., the during-crisis period), and from 2010 to 2017 (i.e., the postcrisis period). We find that countries with a larger state bank presence have shallower credit markets in the postcrisis period. This adverse effect of government bank ownership is found to be less severe in the case of state-owned Islamic banks. In addition, we document that postcrisis entry of foreign Islamic banks has a positive role in promoting credit market development. The magnitude of the credit expansion benefit is however smaller than the harm caused by the same penetration by non-Islamic lenders.

Our results contribute to two different strands of literature. The first is the literature on the importance of bank ownership in explaining differences in private credit levels across countries (e.g., Detragiache et al., 2008; la Porta et al., 2002). We add to this literature by exploring the role of different business models, Islamic versus interest based.

Second, our study enriches the emerging literature examining the impact of Islamic banking at the microeconomic level (e.g., Boukhatem & Ben Moussa, 2018; Gheeraert & Weill, 2015; Imam & Kpodar, 2013, 2016). To our knowledge, there are only two studies that focus on private credit expansion, both of which conclude that more Islamic banks are always better (Abedifar et al., 2016; Gheeraert, 2014).[7] We add to their findings by showing that the credit deepening effect of Islamic bank presence might vary depending on ownership types.

The rest of the article is structured as follows. The next section provides a review of the previous studies on Islamic banking. Section 3 describes the data and empirical methodology. Section 4 presents the results. Lastly, Section 5 concludes with a summary of the main findings and their policy implications.

## 2 | PECULIARITIES OF ISLAMIC BANKING

Two important questions on Islamic banking are raised in the post-financial liberalization milieu. First, by constructing or owning more Islamic banks, would it leave the governments better positioned to attain social goals, or would it rather attract greater political intervention? Second, does foreign entry of Islamic banks lead to lending discrimination against small, opaque firms? From a demand-side perspective, it is suggested that Islamic banks tend to be perceived as morally superior by individuals and small businesses who initially refuse to participate in a formal (interest-based) financial system due to their religious and ethical beliefs (Demirguc-Kunt, Klapper, & Randall, 2013; Mohieldin, Iqbal, Rostom, & Fu, 2011).[8] In an economy populated with a significant number of these religiously concerned

Percentage of Islamic banks among total banks in 1995    1.49    75.00



Percentage of Islamic banks among total banks in 2018    4.76    66.67
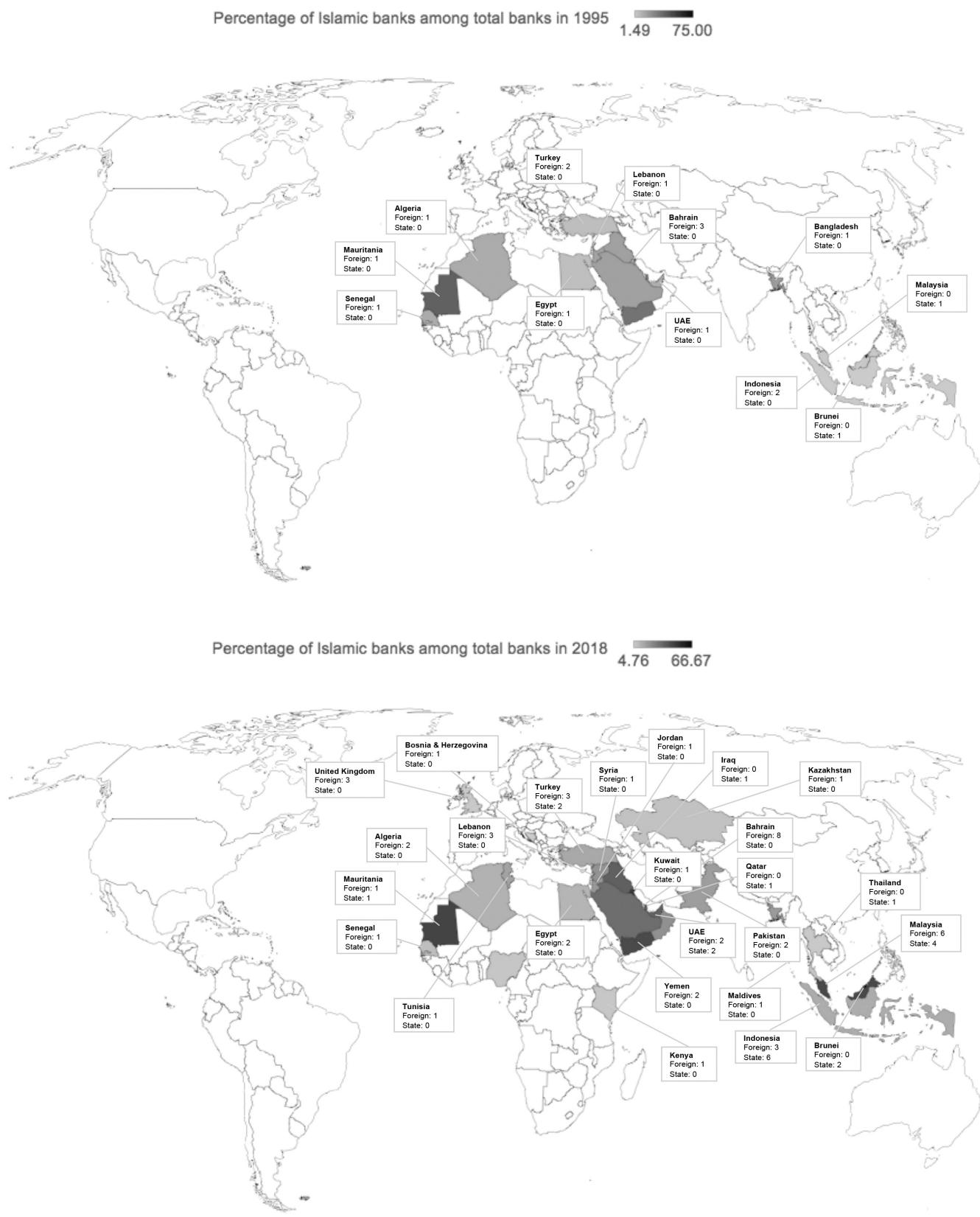


**FIGURE 3**    Presence of Islamic banks worldwide in 1995 and 2018. *Source*: Authors' calculations

borrowers, a higher presence of Islamic banks incorporated by states or foreigners would alleviate constraints in the use of credit, and subsequently improve welfare substantially (Kumru & Sarntisart, 2016).

Islamic banks are bound to pursue the fundamental objective of Islamic economics, that is, to promote economic development and social change by making the financial sector fairer and just

(Kuran, 1995). Thus, from a supply-side viewpoint, Islamic banks are expected to be more socially oriented than profit motivated when making lending choices (Hassan & Aliyu, 2018). Governments via Islamic banks they own would be prepared to priorities projects that have higher positive externalities on the society despite being financially and politically less attractive. Besides, preferential lending to large and more transparent borrowers while neglecting the vulnerable ones would contradict such objective. As a result, one can anticipate foreign Islamic banks to engage less in this sort of unfair lending. On the other hand, Moore (1990) suggests that Islamic banks have frequently been used to bind members of Islamic religious groups to their political patrons through the financing they receive. He adds that Islamic banks have demonstrated no preference for labor-intensive businesses in the past, favoring safe short-term projects over long-term ones. Likewise, Kuran (1995) as that Islamic banks' clientele consists of established producers and merchants more than new entrants having sound skills and ideas but carrying higher risk. In fact, the historical growth of small business lending by Islamic banks might not necessarily indicate the banks' genuine desire to direct capital towards disadvantaged borrowers (Aysan & Ozturk, 2018).

To attain the intended development objective, Islamic economists propose the use of profit-loss-sharing (PLS) arrangement as an alternative financing method for Islamic banks. Under the PLS system, Islamic banks, without recourse to borrowers, would split rewards and risks of actual business outcomes with entrepreneurs at a preagreed ratio.[9] This would increase banks' tendency to extend more credit to households and firms in productive sectors of the economy with sound business ideas and expertise but could not afford to borrow through traditional lending arrangements, which transfer entire risks onto them (Imam & Kpodar, 2016). This type of financing is said to be cost-effective for governments to restore fairness and justice in the financial system by making all transacting parties better-off in comparison to the standard debt contracts[10] (Khan, 1986). At the same time, PLS would encourage foreign Islamic banks to channel capital to small businesses for at least two reasons. First, PLS financing enables foreign lenders to better consider the needs of customers despite credit information constraints, particularly in low-income countries where credit registries and bureaus are lacking. This is because the equity principle makes information asymmetry less of a concern and the incentives for market discipline higher under PLS. (Imam & Kpodar, 2013). Since banks will only be paid if the underlying investment project succeeds, PLS would prompt them to closely monitor the project's performance. Contrariwise, in traditional money lending, the only thing that matters when screening borrowers is their creditworthiness since banks are merely interested in receiving interest and principal on the loan. Consequently, they become loss-averse when credit is tight. Second, PLS entails a stable financial system thanks to its "asset-liability" alignment,[11] which makes banks less susceptible to deposit withdrawal and therefore better positioned to sustain lending in the event of liquidity shocks (Farooq & Zaheer, 2015; Ibrahim & Rizvi, 2018; Khan, 1986).

Unfortunately, in practice, PLS financing is less adopted by Islamic banks due to common principal-agent problems such as adverse selection, asymmetric information, and moral hazards, as well as a shortage of expertise to design and operate risk-sharing instruments (Azmat, Skully, & Brown, 2015). As shown in a joint research by the World Bank and Islamic Development Bank Group (2017), debt contracts dominate a large fraction of Islamic banks' transactions. More specifically, *murabahah* (deferred sales) and *ijarah* (leasing and hire purchase) contracts account for 78.5% and 10.8%, respectively, while *mudarabah* (silent partnership) and *musharakah* (joint venture) contracts account for only 1.7% and 4.2%, respectively. The fall back on debt-based products makes Islamic banks operationally and economically indistinguishable from their conventional competitors, hence offer no value-added to credit deepening.[12] Its pricing has turned into yet another bone of contention after Islamic banks are found to mimic conventional rates under strong competitive pressure (Weill, 2011a). In addition, Islamic banks have been known to ask for additional collateral on top of the purchased goods under *murabahah* financing depending on the size of the transaction (Aggarwal & Yousef, 2000).

The other group of literature looks at the difference in corporate governance structure when explaining the different lending behavior between Islamic and conventional banks. On the one hand, it is suggested that the establishment of the Shariah Supervisory Board in addition to the regular board of directors may boost depositors' confidence on the purity of Islamic banks' business operations and mitigate multiple agency conflicts[13] (Farag et al., 2018; Safiullah, Hassan, & Kabir, 2020). With a larger deposit funding, the banks are more able to expand their credit base reaching out to the financially excluded. Advocates of this view also argue that the presence of the Shariah Board members would drive Islamic banks to realize their true commitments to social justice (i.e., through the adoption of the PLS scheme) (Beekun, Badawi, & Badawi, 2005; Belal, Abdelsalam, & Nizamee, 2015; Mollah & Zaman, 2015). They could do so by propelling the incorporation of moral values and social objectives into banks' credit policies. These include no discrimination with regard to lending process and requirements between politically affiliated individuals and the commoners, and between large and small firms.

However, organizational religiosity induced by the Shariah Board is said to suppress opportunistic behavior of bank managers, leading to credit rationing (Abdelsalam, Dimitropoulos, Elnahass, & Leventis, 2016; Mollah & Zaman, 2015; Weaver & Agle, 2002). The restrictive lending by Islamic banks could be exacerbated not just by the lack of regulatory harmonization, but also by the diverse interpretation of Islamic teachings according to different *mazhab* (i.e., Islamic schools of thought) in different countries (Abdullah, Shahimi, & Ghafar Ismail, 2011; Alam, Binti Zainuddin, & Rizvi, 2019). Moreover, fewer permissible instruments to hedge risks (e.g., options, futures and other derivatives) and to manage liquidity (e.g., central banks' repo and lender-of-last-resort facilities) would result in a concentration of Islamic banks' assets in a few large institutions (Beck et al., 2013; Daher, Masih, & Ibrahim, 2015). Critics also put forward that the role of the Shariah Board is limited to advising the Board and senior management on juristic or legal matters (e.g., which Shariah contracts should be utilized or avoided) only and has no substantial influence over corporate decision-making (e.g., the adoption of social and ethical goals) (Beekun et al., 2005; Mollah & Zaman, 2015).

Efficiency-wise, fewer managerial layers in Islamic banks given their younger age and smaller size may make lending to small

businesses easier (Beck et al., 2013). This is due to less coordination and communication problems between the loan officer and the borrowers often associated with large banks (Berger & Udell, 2006). However, because they are newer and smaller in size, they are less able to achieve economies of scale than their well-established conventional peers (Hasan & Dridi, 2011; Imam & Kpodar, 2016). This means that they could end up incurring a higher unit cost raising the lending rates and further rationing credit for riskier borrowers.

## 3 | METHODOLOGY

### 3.1 | Sample and variable definitions

Our study focuses on countries where Islamic and conventional banks coexist. Unlike previous related works, we do not restrict our sample to "Muslim" countries only.[14] In total, we gather data on 29 countries with a dual banking system from various backgrounds, such as geographical regions, religions, and income levels.[15] These countries are listed in Table A1. The sample used in the regressions may be smaller and may vary across specifications depending on data availability.

The dependent variable is the volume of private credit by deposit money banks from the World Bank's *Global Financial Development* database. All the private credit data are expressed as a percentage of GDP and extracted over the period from 1995 to 2017.[16] Our independent variables of interest are the shares of assets held by state-owned and foreign banks to total bank assets in each country. We divide banks into three mutually exclusive, collectively exhaustive categories of ownership, namely, state-owned, foreign, and domestic private. A bank is identified as state-owned if at least 50% of its equity is in the hands of the local government. An equivalent definition is also used to define foreign banks accordingly. In addition, for each ownership category, we further distinguish banks operating under Islamic principles (i.e., state-owned Islamic, foreign Islamic, and domestic private Islamic banks) from those operating based on interest (i.e., state-owned conventional, foreign conventional, and domestic private conventional banks).

Our approach for constructing the ownership variables is to make adjustments and add to the database of Claessens and van Horen (2015)[17] in several ways. First, for the sample countries with a dual banking system, we add more years so that the database now covers the period between 1995 and 2018. Second, we add stand-alone Islamic banks and Islamic subsidiaries (but not branches) of conventional banks that were initially omitted from the database. We also include four Islamic banking jurisdictions that were not covered by the database, namely, Brunei Darussalam, Iraq, Maldives, and Syria. Third, while Claessens and van Horen (2015) only coded a bank either foreign or domestic, we make a further distinction between privately and state-owned domestic banks. Lastly, apart from coding ownership, we also identify whether the bank was Islamic or interest based for each year it was active over the sample period. Through these steps, our enhanced database contains both state and foreign ownership information of 1,038 banks operating in 29 countries, categorized as either Islamic or non-Islamic.

Following the literature, we control for other factors than ownership structures shown to have influence over the flows of private credit. These include the size of the country's economy (Acemoglu, Johnson, & Robinson, 2001), GDP per capita growth (Clarke, Cull, & Martínez Pería, 2006), inflation (Boyd, Levine, & Smith, 2001; Chinn & Ito, 2006), access to credit information (Djankov, McLiesh, & Shleifer, 2007; Jappelli & Pagano, 2002; Pagano & Jappelli, 1993), enforceability of contracts (Bae & Goyal, 2009; Nketcha Nana, 2014), and control of corruption (Kaufmann, Kraay, & Zoido-lobatón, 1999). The definitions and sources of all variables used in our analysis are provided in Table B1.

### 3.2 | Summary statistics

Table 1 presents descriptive statistics. As Panel A of the table shows, private credit in the dual banking countries, on average, stands at more than one-third of GDP (41.88%) over the full sample period. It exhibits a rising trend from 36.94% before the crisis to 47.83% and 48.10% during and after the crisis, as shown in Panel B, C, and D of the table, respectively. With respect to bank shares, state-owned banks appear to be more dominant than foreign banks. However, this fact only holds for the periods before and during the crisis. The postcrisis restructuring and new growth has seen foreign participation in banking becomes about 3% higher than that by the local governments. When segregating banks by business models, this slight prevalence of foreign ownership only holds for conventional banks. The Islamic banking industry, on the other hand, continues to depend on government shareholding to pursue expansion following the crisis. As far as the macroeconomic conditions are concerned, the dual banking countries seem to sustain a positive growth although at a declining pace during- and postcrisis periods. However, there is a noticeably large variation in the inflationary pressures experienced by the countries. Also, it appears that the countries still fall short of providing access to credit information below the mid-level, though have remarkably improved following the crisis. The infrastructure for enforcing contracts reasonably vary across the countries and remains stagnant over time. Lastly, the control of corruption index registers negative values, indicating a poor governance environment.

### 3.3 | Estimation method

Consistent with previous studies on financial sector development (e.g., Beck, Levine, & Loayza, 2000; Claessens & van Horen, 2014; Detragiache et al., 2008; Djankov et al., 2007; la Porta et al., 2002), we adopt a cross-sectional framework as our baseline estimation method to examine the relationship between bank ownership and private credit. Our regression equation can be specified in the following form:

$$pc_i = \alpha + \beta_1 s_i + \beta_2 f_i + \delta X_i + \varepsilon_i, \tag{1}$$

**TABLE 1** Summary statistics

| Variable | Panel A: full sample period | | | | Panel B: precrisis period | | | | Panel C: during-crisis period | | | | Panel D: postcrisis period | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Min. | Max. | Mean | SD | Min. | Max. | Mean | SD | Min. | Max. | Mean | SD | Min. | Max. |
| PC | 41.880 | 32.491 | 5.368 | 135.685 | 36.940 | 32.017 | 2.259 | 115.164 | 47.834 | 36.768 | 2.638 | 177.562 | 48.102 | 34.669 | 5.258 | 152.107 |
| S | 26.580 | 25.475 | 0 | 97.453 | 29.174 | 29.521 | 0 | 100 | 25.130 | 26.818 | 0 | 100 | 23.232 | 25.650 | 0 | 92.679 |
| F | 19.451 | 22.268 | 0 | 82.169 | 14.230 | 20.585 | 0 | 80.940 | 22.786 | 26.004 | 0 | 91.205 | 26.032 | 25.788 | 0 | 93.373 |
| SI | 2.717 | 9.394 | 0 | 45.497 | 1.611 | 5.750 | 0 | 26.854 | 3.694 | 14.418 | 0 | 75.462 | 4.010 | 14.778 | 0 | 77.796 |
| SC | 23.863 | 26.071 | 0 | 97.453 | 27.563 | 30.468 | 0 | 100 | 21.436 | 25.744 | 0 | 100 | 19.222 | 23.734 | 0 | 92.679 |
| FI | 1.762 | 3.130 | 0 | 15.268 | 0.586 | 1.255 | 0 | 5.856 | 1.786 | 4.514 | 0 | 19.456 | 3.518 | 5.763 | 0 | 27.814 |
| FC | 17.689 | 20.884 | 0 | 75.354 | 13.644 | 19.897 | 0 | 75.084 | 21 | 24.611 | 0 | 90.148 | 22.514 | 23.616 | 0 | 88.962 |
| DI | 6.720 | 9.150 | 0 | 30.316 | 5.806 | 11.972 | 0 | 58.105 | 6.533 | 9.913 | 0 | 31.918 | 8.161 | 11.005 | 0 | 32.476 |
| GDP | 24.910 | 1.584 | 21.391 | 28.463 | 24.192 | 1.608 | 20.440 | 28.232 | 25.058 | 1.559 | 21.489 | 28.659 | 25.425 | 1.588 | 21.970 | 28.640 |
| GDPG | 6.428 | 2.854 | 2.445 | 14.149 | 9.013 | 5.909 | 3.458 | 30.601 | 7.507 | 6.643 | -7.278 | 20.970 | 2.814 | 2.983 | -2.012 | 10.574 |
| INF | 5.851 | 5.273 | 0.597 | 24.072 | 7.060 | 8.814 | 0.507 | 38.758 | 6.253 | 3.482 | 1.188 | 13.815 | 4.578 | 3.703 | -0.156 | 13.404 |
| CI | 3.052 | 2.194 | 0 | 6.462 | 1.341 | 2.055 | 0 | 6 | 2.040 | 2.282 | 0 | 6 | 3.651 | 2.469 | 0 | 6.750 |
| EP | 42.152 | 6.136 | 29.667 | 55 | 42.03 | 6.685 | 30 | 55 | 42.267 | 6.539 | 30 | 55 | 41.996 | 6.221 | 29.333 | 55 |
| CC | -0.288 | 0.749 | -1.374 | 1.840 | -0.269 | 0.762 | -1.433 | 1.994 | -0.294 | 0.752 | -1.417 | 1.686 | -0.305 | 0.772 | -1.400 | 1.744 |

*Note*: Data for the entire sample period are average over 1995–2017, while those for the precrisis, during-crisis, and postcrisis periods are averaged over 1995–2006, 2007–2009, and 2010–2017, respectively. For definition and sources of variables, see Table B1.

Abbreviations: CC, control of corruption; CI, credit information; DI, domestic private Islamic bank presence; EP, enforcement procedures; F, foreign bank presence; FC, foreign conventional bank presence; GDPG, GDP per capita growth; INF, inflation; S, state bank presence; SC, state conventional bank presence; SI, state Islamic bank presence.

where $pc_i$ is the ratio of private credit to GDP in country $i$. $s$ and $f$ are the shares of bank assets held by state-owned and foreign banks, respectively. The (omitted) benchmark category is $d$ or the share of bank assets held by domestic private banks. $X$ is a vector of country-level control variables. $\varepsilon$ is the error term. $\alpha$, $\beta_1$, $\beta_2$, and $\delta$ are parameters to be estimated.

To uncover the role of business models, we split the bank ownership variables in Equation (1) (i.e., $s$, $f$, and $d$) according to business orientations (i.e., Islamic vs. conventional) and estimate the following extended equation:

$$pc_i = \alpha + \beta_1 si_i + \beta_2 sc_i + \beta_3 fi_i + \beta_4 fc_i + \beta_5 di_i + \delta X_i + \varepsilon_i, \qquad (2)$$

where $si$ and $sc$ are the shares of bank assets held by state-owned Islamic and conventional banks, respectively. $fi$ and $fc$ are the shares of bank assets held by foreign Islamic and conventional banks, respectively. $di$ is the share of bank assets held by domestic private Islamic bank. The (omitted) benchmark category is $dc$ or the share of bank assets held by domestic private conventional banks. $X$ is a vector of country-level control variables. $\varepsilon$ is the error term. $\alpha$, $\beta_1 \ldots \beta_5$, and $\delta$ are parameters to be estimated.

We estimate the parameters in Equations (1) and (2) using ordinary least squares (OLS) regressions with standard errors that are robust to arbitrary heteroskedasticity and autocorrelation. In the regressions, the data are averaged over the entire sample period 1995–2017 such that there is one observation per country in each interval as done by Beck and Levine (2004). Doing so helps to ensure that the results are not driven by single business cycle or seasonal trends and reduce measurement errors. In addition, we rerun the regressions using data averaged over three nonoverlapping subsample periods. The first period spans a 12-year pre-crisis period from 1995 to 2006, while the second spans a 3-year during-crisis period from 2007 to 2009, and the third spans an eight-year postcrisis period from 2010 to 2017.

## 4 | RESULTS

### 4.1 | Basic results

Table 2 reports the results of the cross-sectional estimations on the relationship between state and foreign bank presence and private credit using data averaged over the full sample period 1995–2017. We add the control variables in the regressions in stages. First, apart from bank ownership, the variation in the dependent variable is explained by macroeconomic conditions only in the regressions in the Columns (1) and (4) of the table. Next, two institutional quality indicators are added as controls in the regressions in Columns (2) and (5). Lastly, the results of estimating the full model, which include the governance index, are presented in Columns (3) and (6).

Starting with the control variables, Table 2 shows that while all of them enter with the theoretically expected signs, only inflation, contract enforceability, and freedom from corruption are found to be statistically significant determinants of private credit in the dual banking countries. Our results indicate that in countries characterized by high-inflation rates, credit rationing becomes more severe because the real rate of return on money is driven down. At the same time, price distortions caused by inflation may reduce the willingness of customers to engage in financial contracting (Clarke et al., 2006). We also find that a higher number of procedures to enforce contracts may result in less credit to the private sector. This corroborates the creditor power theory saying that banks are less willing to lend when the courts are less efficient in resolving commercial disputes (Aghion & Bolton, 1992; Townsend, 1979). On the other hand, lack of corruption is found to contribute positively to private credit creation. In line with the findings of Beck, Demirgüç-Kunt, Laeven, and Maksimovic (2006), this implies that corruption reflecting poor governance could stand as a financing obstacle. However, it contradicts the view of many political economists who suggest that bribing bank officials can serve as a "lubricant" for smoothing bank lending (Weill, 2011b).

Turning to our variables of interest, our results in Column (1) show a weak support for the *political* instead of *development* or *social* view of state banking at the 10% level. However, the impact is not economically trivial: a one *SD* increase in the asset share of state-owned banks (25.48%), or put differently, roughly the mean difference in the share between low-income (47.74%) and high-income (22.12%) countries, causes a decline in private credit of about 10% points of GDP ($25.48* - 0.41 = -10.45$). This is equivalent to a quarter of the average ratio of private credit to GDP in our sample ($-10.45/41.88 = -0.25$), or about half the difference in the ratios between Saudi Arabia (33.71%), a high-income country, and Syria (11.17%), a low-income country, where both located in the same geographical region. Our negative result, though less significant, seems to be larger in magnitude than those found in related country-level studies by la Porta et al. (2002) and Taboada (2011), which cover more countries.[18] The broad thrust of the result is also somewhat consistent with bank-level studies focusing on a narrower set of financial institutions (Dinç, 2005; Micco & Panizza, 2006; Sahul Hamid, 2020; Sapienza, 2004). Further, we find that the negative effect of government bank ownership is statistically significant in the case of conventional banks but not Islamic banks when splitting the ownership variables into the two bank types and controlling only for macroeconomic factors in the regression in Column (4). More specifically, as the asset share of conventional banks majority owned by local governments rises by one *SD* (26.07%), the private credit ratio drops by approximately 13% points ($26.07* - 0.49 = -12.77$), or one-third of its *SD* ($26.07* - 0.49/32.49 = -0.39$). This evidence then becomes statistically insignificant when we introduce more controls. As for the coefficients on foreign bank presence, they remain statistically insignificant across different specifications.

Next, we replicate the estimations of Equations (1) and (2) for the pre, during-, and postcrisis subsamples separately and present the results in Table 3. As shown in Panel A in the table, the adverse role of state-owned banks is driven by the pre and postcrisis periods (i.e., normal times) and not necessarily representative for the behavior of the banks in crisis times. On the other hand, the findings on the

**TABLE 2** Bank ownership and private credit in dual banking countries: cross-sectional estimations, the full sample period

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| GDP | 9.140** | 4.625 | 3.747 | 9.370** | 5.534 | 3.952 |
| | (3.693) | (3.168) | (2.599) | (4.123) | (3.706) | (3.210) |
| GDPG | −0.827 | −1.613 | −0.632 | 0.082 | −1.054 | −0.267 |
| | (1.228) | (1.339) | (1.347) | (1.672) | (1.676) | (1.702) |
| INF | −3.450** | −2.986*** | −2.325*** | −3.737*** | −3.233*** | −2.467** |
| | (1.235) | (0.895) | (0.807) | (1.187) | (0.981) | (0.927) |
| CI | | 2.558 | 1.496 | | 1.955 | 0.955 |
| | | (2.191) | (2.184) | | (2.516) | (2.369) |
| EP | | −2.128*** | −2.130*** | | −2.068*** | −2.026*** |
| | | (0.638) | (0.614) | | (0.672) | (0.677) |
| CC | | | 11.990* | | | 12.613* |
| | | | (6.411) | | | (6.763) |
| S | −0.408* | −0.230 | −0.205 | | | |
| | (0.202) | (0.137) | (0.121) | | | |
| F | −0.127 | −0.114 | −0.072 | | | |
| | (0.213) | (0.182) | (0.189) | | | |
| SI | | | | 0.001 | −0.092 | −0.204 |
| | | | | (0.402) | (0.426) | (0.387) |
| SC | | | | −0.486** | −0.277 | −0.249 |
| | | | | (0.232) | (0.164) | (0.149) |
| FI | | | | 1.656 | 0.819 | 0.558 |
| | | | | (1.243) | (1.252) | (1.324) |
| FC | | | | −0.462 | −0.251 | −0.214 |
| | | | | (0.375) | (0.305) | (0.338) |
| DI | | | | −1.035 | −0.342 | −0.404 |
| | | | | (0.699) | (0.743) | (0.691) |
| Observations | 29 | 29 | 29 | 29 | 29 | 29 |
| R-squared | 0.570 | 0.747 | 0.784 | 0.615 | 0.752 | 0.791 |

*Note*: This table reports the results of cross-sectional regressions using a sample of dual banking countries. The dependent variable is private credit by deposit money banks to GDP. All control variables are defined in Table B1. The variables in the regressions are averaged over the full sample period 1995–2017. *Domestic private bank presence* and *domestic private conventional bank presence* are the (omitted) benchmark categories. All regressions are estimated using OLS. Robust standard errors are in parentheses.

Abbreviations: CC, control of corruption; CI, credit information; DI, domestic private Islamic bank presence; EP, enforcement procedures; F, foreign bank presence; FC, foreign conventional bank presence; GDPG, GDP per capita growth; INF, inflation; OLS, ordinary least squares; S, state bank presence; SC, state conventional bank presence; SI, state Islamic bank presence.

*Significance at 10%.
**Significance at 5%.
***Significance at 1%.

insignificance of foreign bank presence prevails across the three sub-periods. Evidence emerges in Panel B in Table 3 that the presence of both types of state-owned banks postcrisis is linked to the formation of shallower credit markets. In comparison, the credit-reducing effect is lesser when it comes to Islamic banks across all specifications. Take the specification in Column (9), for example, a one *SD* increase in the shares of state Islamic and conventional banks (14.78% and 23.73%, respectively) is associated with a decline in private credit to GDP of about 10% points (14.78*−0.70 = −10.35) and 12% points

(23.73*−0.50 = −11.87), respectively. Our evidence here implies less exposure to political interference in Islamic banking given its moral foundation that necessitates a fairer treatment of borrowers regardless of their political affiliation (Askari, Iqbal, Krichne, & Mirakhor, 2012; Kuran, 1995).

What is more intriguing is that in the same regression we find that the entry of foreign Islamic banks exerts a positive influence on private credit flows in the postcrisis era, while the opposite is true for foreign conventional banks. Economically, the benefit that foreign

**TABLE 3**  Bank ownership and private credit in dual banking countries: cross-sectional estimations, the subsample periods

| | Precrisis period | | | During-crisis period | | | Postcrisis period | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Panel A: State vs. foreign bank presence | | | | | | | | | |
| S | −0.383** | −0.116 | −0.098 | −0.133 | 0.005 | 0.044 | −0.335 | −0.332** | −0.467*** |
| | (0.163) | (0.151) | (0.165) | (0.253) | (0.244) | (0.192) | (0.226) | (0.137) | (0.131) |
| F | −0.097 | −0.217 | −0.198 | −0.054 | −0.114 | −0.092 | −0.166 | −0.243 | −0.241 |
| | (0.206) | (0.260) | (0.303) | (0.217) | (0.295) | (0.302) | (0.208) | (0.201) | (0.175) |
| Observations | 27 | 20 | 20 | 29 | 25 | 25 | 28 | 28 | 28 |
| R-squared | 0.498 | 0.761 | 0.762 | 0.421 | 0.596 | 0.689 | 0.509 | 0.775 | 0.826 |
| Panel B: Role of different business models (Islamic vs. conventional banking) | | | | | | | | | |
| SI | 0.224 | 0.124 | 0.133 | −0.592 | −0.365 | −0.219 | −0.759** | −0.536** | −0.701*** |
| | (0.912) | (0.800) | (0.846) | (0.375) | (0.434) | (0.389) | (0.309) | (0.188) | (0.175) |
| | | | | | | | [−0.327] | [−0.231] | [−0.302] |
| SC | −0.374* | −0.153 | −0.141 | −0.232 | −0.150 | −0.079 | −0.537** | −0.438** | −0.496*** |
| | (0.199) | (0.193) | (0.266) | (0.299) | (0.261) | (0.296) | (0.255) | (0.172) | (0.142) |
| | | | | | | | [−0.371] | [−0.303] | [−0.343] |
| FI | −1.513 | −7.227 | −7.411 | 0.851 | 0.518 | 0.979 | 1.283* | 1.207*** | 0.824* |
| | (3.602) | (10.022) | (10.856) | (0.811) | (1.571) | (1.416) | (0.614) | (0.355) | (0.391) |
| | | | | | | | [0.211] | [0.199] | [0.136] |
| FC | −0.054 | −0.263 | −0.245 | −0.382 | −0.370 | −0.342 | −0.684** | −0.551*** | −0.483** |
| | (0.403) | (0.417) | (0.533) | (0.291) | (0.276) | (0.371) | (0.309) | (0.175) | (0.185) |
| | | | | | | | [−0.468] | [−0.377] | [−0.330] |
| DI | −0.248 | −0.582 | −0.546 | −1.277* | −1.051 | −0.803 | −1.232** | −0.533 | −0.383 |
| | (0.428) | (1.375) | (1.577) | (0.641) | (0.684) | (0.783) | (0.579) | (0.403) | (0.414) |
| Observations | 27 | 20 | 20 | 29 | 25 | 25 | 28 | 28 | 28 |
| R-squared | 0.513 | 0.813 | 0.813 | 0.510 | 0.647 | 0.723 | 0.652 | 0.834 | 0.862 |
| Macroeconomic controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Institutional quality controls | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Governance control | No | No | Yes | No | No | Yes | No | No | Yes |

*Note*: This table reports the results of cross-sectional regressions using a sample of dual banking countries. The dependent variable is private credit by deposit money banks to GDP. All control variables are defined in Table B1. The variables in the regressions are averaged over three subsample periods of 1995–2006 in Columns (1)–(3), 2007–2009 in Columns (4)–(6), and 2010–2017 in Columns (7)–(9). *Domestic private bank presence* and *domestic private conventional bank presence* are the (omitted) benchmark categories. All regressions are estimated using OLS. Robust standard errors are in parentheses. Standardized coefficients are in brackets.

Abbreviations: DI, domestic private Islamic bank presence; F, foreign bank presence; FC, foreign conventional bank presence; OLS, ordinary least squares; S, state bank presence; SC, state conventional bank presence; SI, state Islamic bank presence.

*Significance at 10%.
**Significance at 5%.
***Significance at 1%.

Islamic banks bring to the host country is more than two times smaller than the harm caused by foreign conventional bank penetration. To be specific, a one *SD* increase in the share of foreign Islamic banks (5.76%) leads to a five-percentage points increase in private credit to GDP (5.76*0.82 = 4.72). On the other hand, a one *SD* increase in the share of foreign conventional banks (23.62%) leads to an 11% points decline in private credit to GDP (23.62*−0.48 = −11.34). Our positive result suggests that foreign Islamic banks, unlike typical foreign lenders that would "cherry-pick" low-risk (high-quality) borrowers given their disadvantages in monitoring soft information (Detragiache

et al., 2008), have a tendency towards "bottom-fishing" high-risk (low-quality) borrowers, allowing the deepening of credit markets. Several possible reasons can explain this unconventional lending practice. First, it can be ascribed to the distinguishing features of Islamic banking highlighted by previous authors, including the use of lending contracts that are favorable to smaller, more opaque firms (e.g., PLS arrangements) (Aysan & Ozturk, 2018; Gheeraert, 2014; Imam & Kpodar, 2016) and the existence of Shariah Board, which closely monitors the bank's adherence to equitable and more inclusive lending (Abdelsalam et al., 2016; Meslier, Risfandy, & Tarazi, 2020; Mollah &

**TABLE 4** Robustness check with a broader definition of private credit

| | Full sample period | | Precrisis period | | During-crisis period | | Postcrisis period | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| GDP | 3.765 | 4.631 | 5.144 | 4.492 | −1.020 | −1.836 | −0.421 | 3.085 |
| | (2.689) | (3.385) | (3.196) | (4.198) | (4.429) | (5.300) | (4.053) | (3.871) |
| GDPG | −1.018 | −0.212 | −0.253 | −0.668 | 1.083 | 0.737 | 0.833 | 0.683 |
| | (1.488) | (1.760) | (1.381) | (1.621) | (1.002) | (1.363) | (1.440) | (1.339) |
| INF | −2.563*** | −2.953** | −1.617** | −1.117 | −1.966 | −2.759 | −3.979 | −6.144** |
| | (0.820) | (1.028) | (0.613) | (0.990) | (1.338) | (1.767) | (2.513) | (2.860) |
| CI | 2.791 | 2.062 | 5.774 | 4.748 | 5.969* | 5.120 | 4.828** | 3.865** |
| | (2.408) | (2.221) | (4.725) | (5.153) | (3.207) | (3.552) | (2.012) | (1.766) |
| EP | −1.944*** | −1.875** | −1.733* | −2.249** | −1.698* | −1.514 | −2.301** | −2.296*** |
| | (0.621) | (0.705) | (0.810) | (0.792) | (0.817) | (1.029) | (0.836) | (0.628) |
| CC | 10.420 | 10.548 | 0.821 | 0.973 | 29.689** | 27.860* | 15.988 | 8.496 |
| | (6.706) | (7.133) | (11.965) | (15.051) | (11.464) | (14.142) | (10.959) | (10.373) |
| S | −0.217 | | −0.151 | | 0.025 | | −0.475*** | |
| | (0.135) | | (0.161) | | (0.198) | | (0.153) | |
| F | −0.020 | | −0.285 | | 0.020 | | −0.178 | |
| | (0.237) | | (0.285) | | (0.256) | | (0.255) | |
| SI | | −0.250 | | −0.162 | | −0.496 | | −0.720*** |
| | | (0.359) | | (0.820) | | (0.357) | | (0.220) |
| SC | | −0.289 | | −0.110 | | −0.031 | | −0.544*** |
| | | (0.173) | | (0.255) | | (0.260) | | (0.173) |
| FI | | 1.568 | | −13.215 | | 0.645 | | 1.913*** |
| | | (1.428) | | (9.437) | | (1.259) | | (0.512) |
| FC | | −0.249 | | −0.117 | | −0.195 | | −0.590** |
| | | (0.372) | | (0.530) | | (0.319) | | (0.263) |
| DI | | −0.375 | | 0.289 | | −0.622 | | −0.607 |
| | | (0.693) | | (1.287) | | (0.673) | | (0.498) |
| Observations | 29 | 29 | 20 | 20 | 25 | 25 | 28 | 28 |
| R-squared | 0.785 | 0.799 | 0.806 | 0.856 | 0.718 | 0.754 | 0.764 | 0.851 |

*Note*: This table reports the results of cross-sectional regressions using a sample of dual banking countries. The dependent variable is private credit by deposit money banks and other financial institutions to GDP. All control variables are defined in Table B1. The variables in the regressions in Columns (1) and (2) are averaged over the entire sample period 1995–2017, while those in Columns (3)–(8) are averaged over the three subsample periods of 1995–2006, 2007–2009, and 2010–2017, respectively. *Domestic private bank presence* and *domestic private conventional bank presence* are the (omitted) benchmark categories. All regressions are estimated using OLS. Robust standard errors are in parentheses.
Abbreviations: CC, control of corruption; CI, credit information; DI, domestic private Islamic bank presence; EP, enforcement procedures; F, foreign bank presence; FC, foreign conventional bank presence; GDPG, GDP per capita growth; INF, inflation; OLS, ordinary least squares; S, state bank presence; SC, state conventional bank presence; SI, state Islamic bank presence.
*Significance at 10%.
**Significance at 5%.
***Significance at 1%.

Zaman, 2015). Second, foreign Islamic subsidiaries could be seen as a preferred mechanism to move funds from their large parent banks or from international debt markets into financially less developed countries where borrowers are mostly Shariah-oriented firms and households. Third, foreign Islamic banks are expected to lower the cost of financial intermediation and increase its volume by fostering competition and introducing new technology that facilitates the creation of more diverse Islamic financial products and enables better risk management for dealing with informationally difficult customers. On the other hand, the negative result indicates that foreign conventional banks in facing not only cultural and geographical but also "religious" distance constraints are likely to lend predominantly to large domestic firms, multinational corporations, or local governments, and leave out a large portion of small entrepreneurs, who appear to be more sensitive to Shariah compliance.

We conduct a battery of robustness checks on our main results. First, we test using a broader measure of private credit that includes claims on

**TABLE 5** Robustness check with alternative bank presence variables (in numbers)

| | Full sample period | | Precrisis period | | During-crisis period | | Postcrisis period | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| GDP | 3.615 | 2.792 | 4.042 | 3.663 | 0.881 | 0.981 | 1.088 | 7.364** |
| | (2.837) | (3.218) | (4.212) | (4.997) | (5.712) | (6.385) | (2.478) | (3.349) |
| GDPG | −0.734 | −1.053 | −0.467 | −1.189 | 0.719 | 0.550 | 0.153 | 0.126 |
| | (1.441) | (1.533) | (1.452) | (1.606) | (1.112) | (1.578) | (1.117) | (1.137) |
| INF | −2.279*** | −2.130** | −1.289 | −0.806 | −2.299 | −2.601 | −3.631** | −4.257*** |
| | (0.773) | (0.801) | (0.798) | (0.905) | (1.405) | (1.876) | (1.498) | (1.425) |
| CI | 1.812 | 2.078 | 5.931 | 5.760 | 4.134 | 3.712 | 3.321* | 1.795 |
| | (2.212) | (2.443) | (5.301) | (4.818) | (4.325) | (5.191) | (1.704) | (1.630) |
| EP | −2.206*** | −2.149*** | −1.805* | −1.460* | −1.611* | −1.606 | −2.531*** | −2.398*** |
| | (0.663) | (0.705) | (0.869) | (0.671) | (0.872) | (1.038) | (0.590) | (0.478) |
| CC | 12.593* | 13.207* | 4.464 | 4.033 | 29.194** | 28.960* | 16.148** | 12.236* |
| | (6.482) | (6.905) | (13.128) | (14.436) | (13.056) | (15.683) | (7.397) | (6.296) |
| S | −0.137 | | −0.069 | | 0.169 | | −0.609*** | |
| | (0.159) | | (0.145) | | (0.231) | | (0.173) | |
| F | 0.047 | | −0.031 | | 0.054 | | −0.098 | |
| | (0.221) | | (0.423) | | (0.295) | | (0.203) | |
| SI | | −0.174 | | 0.362 | | −0.028 | | −0.674*** |
| | | (0.288) | | (2.155) | | (0.403) | | (0.168) |
| SC | | −0.086 | | −0.002 | | 0.180 | | −1.549*** |
| | | (0.235) | | (0.187) | | (0.252) | | (0.404) |
| FI | | −0.251 | | −3.435* | | 0.008 | | 0.997** |
| | | (0.506) | | (1.527) | | (1.167) | | (0.445) |
| FC | | 0.103 | | 0.475 | | 0.007 | | −0.479** |
| | | (0.349) | | (0.596) | | (0.365) | | (0.210) |
| DI | | −0.019 | | 0.104 | | −0.111 | | −0.628 |
| | | (0.626) | | (0.796) | | (0.510) | | (0.387) |
| Observations | 29 | 29 | 20 | 20 | 25 | 25 | 28 | 28 |
| R-squared | 0.772 | 0.775 | 0.757 | 0.836 | 0.690 | 0.693 | 0.811 | 0.867 |

*Note*: This table reports the results of cross-sectional regressions using a sample of dual banking countries. The dependent variable is private credit by deposit money banks to GDP. All control variables are defined in Table B1. The variables in the regressions in Columns (1) and (2) are averaged over the entire sample period 1995–2017, while those in Columns (3)–(8) are averaged over the three subsample periods of 1995–2006, 2007–2009, and 2010–2017, respectively. *Domestic private bank presence* and *domestic private conventional bank presence* are the (omitted) benchmark categories. All regressions are estimated using OLS. Robust standard errors are in parentheses.

Abbreviations: CC, control of corruption; CI, credit information; DI, domestic private Islamic bank presence; EP, enforcement procedures; F, foreign bank presence; FC, foreign conventional bank presence; GDPG, GDP per capita growth; INF, inflation; OLS, ordinary least squares; S, state bank presence; SC, state conventional bank presence; SI, state Islamic bank presence.

*Significance at 10%.
**Significance at 5%.
***Significance at 1%.

the private sector given by other financial institutions.[19] Second, we confirm the results by using alternative indicators that measure bank share in numbers instead of in assets. Third, we exclude two countries, namely, the UK and Malaysia because they are outliers with respect to private credit to GDP (most of the time above 100%) to ensure that our results are not driven by their extreme values. The results of these tests with all controls included are reported in Tables 4–6, respectively. From these tables, it can be seen that our earlier conclusions about the relationships of interest remain unchanged.

## 4.2 | Addressing potential endogeneity

A main concern about the use of cross-sectional design is that our relationship of interest may be disturbed by the fact that state-owned and foreign banks could self-select into financially well- or less-developed markets. On the one hand, where less credit is available to the private sector for exogenous reasons, the governments may have a stronger incentive to own banks to alleviate credit constraints, while foreign banks are more prone to enter such markets as they expect

**TABLE 6** Robustness check by removing outliers (i.e., the UK and Malaysia)

| | Full sample period | | Precrisis period | | During-crisis period | | Postcrisis period | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| GDP | 2.093 | 1.651 | 3.086 | 1.233 | −3.998 | −3.709 | −1.261 | 0.150 |
| | (3.206) | (4.388) | (4.759) | (9.613) | (4.397) | (5.705) | (3.172) | (3.199) |
| GDPG | −0.762 | −0.632 | −0.356 | −0.807 | 0.625 | 0.725 | 0.392 | 0.294 |
| | (1.152) | (1.600) | (1.342) | (2.068) | (1.195) | (1.531) | (1.281) | (1.390) |
| INF | −2.058* | −2.069 | −1.212 | −0.853 | −1.776 | −2.071 | −3.082 | −4.213* |
| | (0.998) | (1.246) | (0.815) | (1.298) | (1.557) | (1.936) | (1.831) | (2.131) |
| CI | 2.044 | 1.658 | 5.605 | 5.528 | 5.305 | 4.839 | 3.855** | 3.207* |
| | (2.151) | (2.451) | (5.787) | (7.219) | (3.393) | (3.741) | (1.685) | (1.765) |
| EP | −1.568* | −1.441 | −1.333 | −1.510 | −0.918 | −0.627 | −1.976** | −1.872** |
| | (0.819) | (0.898) | (0.842) | (1.297) | (1.014) | (1.292) | (0.871) | (0.868) |
| CC | 8.621 | 9.911 | 1.853 | −1.837 | 21.044 | 20.539 | 14.872* | 11.757 |
| | (6.186) | (6.620) | (15.987) | (27.139) | (12.507) | (14.916) | (7.628) | (7.944) |
| S | −0.205 | | −0.137 | | 0.041 | | −0.431*** | |
| | (0.119) | | (0.164) | | (0.181) | | (0.138) | |
| F | −0.093 | | −0.260 | | −0.116 | | −0.232 | |
| | (0.179) | | (0.280) | | (0.313) | | (0.179) | |
| SI | | −0.354 | | −0.386 | | −0.175 | | −0.692*** |
| | | (0.412) | | (1.481) | | (0.412) | | (0.195) |
| SC | | −0.236 | | −0.206 | | −0.068 | | −0.456** |
| | | (0.164) | | (0.430) | | (0.293) | | (0.157) |
| FI | | 0.159 | | −8.082 | | 0.994 | | 0.774* |
| | | (1.488) | | (10.513) | | (1.453) | | (0.407) |
| FC | | −0.205 | | −0.319 | | −0.347 | | −0.473** |
| | | (0.357) | | (0.673) | | (0.396) | | (0.198) |
| DI | | −0.334 | | −0.454 | | −0.704 | | −0.405 |
| | | (0.716) | | (1.633) | | (0.786) | | (0.446) |
| Observations | 27 | 27 | 18 | 18 | 23 | 23 | 26 | 26 |
| R-squared | 0.617 | 0.633 | 0.595 | 0.683 | 0.487 | 0.550 | 0.681 | 0.749 |

*Note*: This table reports the results of cross-sectional regressions using a sample of dual banking countries. The dependent variable is private credit by deposit money banks to GDP. All control variables are defined in Table B1. The variables in the regressions in Columns (1) and (2) are averaged over the entire sample period 1995–2017, while those in Columns (3)–(8) are averaged over the three subsample periods of 1995–2006, 2007–2009, and 2010–2017, respectively. *Domestic private bank presence* and *domestic private conventional bank presence* are the (omitted) benchmark categories. All regressions are estimated using OLS. Robust standard errors are in parentheses.

Abbreviations: CC, control of corruption; CI, credit information; DI, domestic private Islamic bank presence; EP, enforcement procedures; F, foreign bank presence; FC, foreign conventional bank presence; GDPG, GDP per capita growth; INF, inflation; OLS, ordinary least squares; S, state bank presence; SC, state conventional bank presence; SI, state Islamic bank presence.

*Significance at 10%.
**Significance at 5%.
***Significance at 1%.

them to grow faster. Under this condition, the OLS coefficients would be biased downward. On the other hand, countries where credit is more abundant seem to attract political control of banks and may offer better business prospects for foreign banks, making them more inclined to enter. In this case, the OLS coefficients would be biased upward. Another potential source of endogeneity comes from measurement errors in our Islamic banking indicators in Equation (2), as also pointed out by Imam and Kpodar (2016). It is important to note that these indicators do not include the assets held by Islamic windows[20] of conventional banks due to data limitation. Conventional banks often do not record Islamic assets separately from those bearing interest in their balance sheets. This underestimation of Islamic asset shares in countries under investigation would result in a downward bias of the estimated coefficients, and thus give rise to endogeneity problems since the unmeasured effects of Islamic windows would be captured by the error term.

**TABLE 7** Addressing potential endogeneity using panel estimations

| | Fixed effects | | System GMM | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| $GDP_{t-1}$ | 0.283*** | 0.284*** | −0.294* | −0.125 |
| | (0.098) | (0.098) | (0.163) | (0.184) |
| $GDPG_{t-1}$ | −0.001 | −0.002 | −0.005 | −0.007* |
| | (0.006) | (0.005) | (0.004) | (0.004) |
| $INF_{t-1}$ | −0.023*** | −0.021*** | −0.003 | −0.005 |
| | (0.004) | (0.003) | (0.007) | (0.005) |
| $S_{t-1}$ | −0.006** | | 0.000 | |
| | (0.003) | | (0.016) | |
| $F_{t-1}$ | −0.011*** | | −0.008 | |
| | (0.003) | | (0.008) | |
| $SI_{t-1}$ | | −0.009 | | −0.015* |
| | | (0.009) | | (0.008) |
| $SC_{t-1}$ | | −0.003 | | −0.025** |
| | | (0.007) | | (0.013) |
| $FI_{t-1}$ | | −0.018 | | −0.015 |
| | | (0.011) | | (0.019) |
| $FC_{t-1}$ | | −0.011*** | | −0.013 |
| | | (0.004) | | (0.009) |
| $DI_{t-1}$ | | −0.000 | | −0.009* |
| | | (0.008) | | (0.005) |
| $PC_{t-1}$ | | | 0.981*** | 0.831*** |
| | | | (0.282) | (0.253) |
| $PC_{t-2}$ | | | −0.363 | −0.367 |
| | | | (0.275) | (0.330) |
| Country fixed effects | Yes | Yes | Yes | Yes |
| Time fixed effects | Yes | Yes | Yes | Yes |
| Observations | 177 | 177 | 153 | 153 |
| Number of countries | 29 | 29 | 29 | 29 |
| R-squared | 0.437 | 0.443 | | |
| $p$ value for Hansen test | | | .133 | .120 |
| $p$ value for AR(2) test | | | .416 | .282 |

*Note*: This table reports the results of panel regressions using a sample of dual banking countries. The dependent variable is private credit by deposit money banks to GDP (in natural logs). All control variables are defined in Table B1. The variables in the regressions are averaged into eight nonoverlapping intervals: 1995–1996, 1997–1999, 2000–2002, 2003–2005, 2006–2008, 2009–2011, 2012–2014, and 2015–2017. The controls are lagged one period in all regressions. *Domestic private bank presence* and *domestic private conventional bank presence* are the (omitted) benchmark categories. The regressions in Columns (1) and (2) are estimated using OLS with country and time fixed effects, while those in Columns (3) and (4) are estimated using one-step system GMM. Robust standard errors are in parentheses.
Abbreviations: CC, control of corruption; CI, credit information; DI, domestic private Islamic bank presence; EP, enforcement procedures; F, foreign bank presence; FC, foreign conventional bank presence; GDPG, GDP per capita growth; GMM, generalized method of moments; INF, inflation; OLS, ordinary least squares; S, state bank presence; SC, state conventional bank presence; SI, state Islamic bank presence.
*Significance at 10%.
**Significance at 5%.
***Significance at 1%.

To address these endogeneity issues, we now turn to a panel approach. One advantage of moving to a panel from pure cross-sectional data set is that it introduces substantial additional variability through exploitation of the time-series dimension of the data (Beck et al., 2000; Beck & Levine, 2004). The other is that, by using fixed effects estimator, it is now possible for us to control for country-

specific unobserved characteristics, and thus rely on the within-country dimension to estimate the parameters of interest (Baltagi, Bresson, & Pirotte, 2003). We construct a panel of 29 dual banking economies over the period 1995–2017 with a maximum of eight observations per country. The first observation covers a two-year span from 1995 to 1996, with the rest of the observations cover a three-year span (i.e., 1997–1999, 2000–2002, 2003–2005, 2006–2008, 2009–2011, 2012–2014, and 2015–2017). Averaging data in this way is intended to achieve a balance between smoothing business cycle effects and ensuring an adequate number of observations in the estimations. Note that, as done by Detragiache et al. (2008), we drop the indices measuring institutional quality and governance practice from the specifications since they are quasi time-invariant.[21]

We first estimate the panel using OLS with country and time fixed effects and present the results in Table 7. To further lessen the endogeneity concerns, all regressors are lagged one period making changes in state and foreign bank presence preceded changes in private credit. First, it can be seen in Column (1) of the table that the coefficient on state-owned bank share appears to be negative and statistically significant at the 5% level, confirming the cross-sectional association. As for the negative effect of foreign bank entry, it is now found to be significant at the 1% level. Besides, when looking at different types of banks in Column (2), we find that this effect could be ascribed to the presence of foreign conventional banks.

Next, we also attempt to account for the fact that the dependent variable (i.e., private credit) may display considerable persistence over time[22] by including its lagged values as an explanatory variable in our panel model. Because these values are, by construction, correlated with the country-specific time-invariant effect, applying a traditional within-group fixed estimator to the dynamic panel would yield a downward biased OLS coefficient on the lagged dependent variable (Nickell, 1981). To overcome this, we employ the system generalized method of moments (GMM) estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998), which simultaneously uses lagged levels of the series as instruments in equations in first differences, and lagged differences of the series as instruments for equations in levels. Our small sample size tells us to cautiously apply the system GMM estimator in particular ways to avoid instrument proliferation problem (see Roodman, 2009 for details). First, we use one-step instead of two-step estimator.[23] Second, we treat only the variables of interest as endogenous in all specifications. Third, we use only up to three lags of instruments and collapse the instrument matrix. Note that these methods are not uncommon in the financial development literature with small samples (e.g., Beck & Levine, 2004; Dombi & Grigoriadis, 2020; Imam & Kpodar, 2016; Law, Kutan, & Naseem, 2018). Two tests are performed to confirm the appropriateness of our dynamic GMM estimations. The first is the Arellano-Bond AR(1) and AR(2) tests for the first- and second-order autocorrelation in the first-difference residuals and the second is the Hansen test of overidentifying restrictions.

Columns (3) and (4) of Table 7 report the results of the system GMM estimations. The positive and highly significant coefficients on the dependent variable found with magnitudes close to one are suggestive that previous period's volume of private credit may inflate the present one but with a slower speed of adjustment. We continue to add the second lag and find it to be insignificant along with the first lag. The over-identification tests in both columns generate $p$ values greater than .1 for the AR(2) and Hansen J-statistics suggesting that our models are correctly specified as the second-order serial correlation is absent and the utilized instruments are valid. Note also that the unit root tests employed reveal that most of the variables are stationary at level.[24] The dynamic specification results are consistent with our cross-sectional evidence on the adverse role of state ownership of Islamic and conventional banks in the development of private credit markets.

## 5 | CONCLUSION AND POLICY IMPLICATIONS

While the effect of the bank ownership reform arising from the 1980s financial liberalization on credit market development has been studied for some time, little is known about how it varies between Islamic and conventional banks. In this study, we provide such evidence using a sample of 29 dual banking countries. Our results show that, postcrisis, state bank presence is associated with a decline in private credit, consistent with the *political* view. In terms of magnitude, the adverse effect is however somewhat lesser for state-owned Islamic banks. We also document that, opposite to what is observed for their conventional counterparts, foreign Islamic bank penetration contributes positively to private credit in the postcrisis period although in a smaller scale than the costs associated with foreign conventional banks' entry.

As a note of caution, our findings by no means dismiss the importance of state-owned banks in the development of credit markets, especially those in countries with high-under-banked populations. Rather, they alert policymakers that government bank ownership, although is initially intended to enhance credit availability, is likely to politicize credit allocation process, hence reducing efficiency. Thus, policies geared to safeguarding banks against political interference have to be put in place. Such incentive schemes that encourage state-owned banks' managers to vigorously looking for creditworthy firms and individuals rather than overinvesting in government securities and large corporations are also needed to be designed. These are of importance to the Islamic banking industry, which continues to benefit from a government-led expansion. In Turkey, three brand new government participation banks were founded over five consecutive years, namely, Ziraat in 2015, Vakif in 2016 and Emlak in 2019 in the effort to increase the size of the country's Shariah-compliant banking industry to 15% by 2025 as per the Turkish government's banking sector master plan.[25] Meanwhile, in Indonesia, the recent merger of the Islamic banking arms of three state-owned Islamic banks, namely, Bank Negara Indonesia, Bank Rakyat Indonesia and Bank Mandiri, and the Islamic business unit of Bank Tabungan Negara forming a giant-sized Islamic bank is anticipated to strengthen the country's Islamic banking industry share up to 20%.

Meanwhile, the positive result for foreign Islamic bank presence, although should be cautiously interpreted as causal because it may be

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disturbed by omitted country characteristics, provides a hint to policy-makers that market liberalization (i.e., allowing foreign parent banks seeking to diversify their revenues to open up an Islamic subsidiary or branch, or to acquire existing local Islamic banks) could be one plausible way to increase Islamic bank dominance. In fact, this approach has been adopted by countries like Malaysia back in 2008 when a number of multinational banks such as HSBC Holdings PLC, Standard Chartered PLC, and Oversea-Chinese Banking Corporation Limited were given permission to incorporate their Islamic banking subsidiaries as the country looks to make headway in becoming a global hub for Islamic banking.

This study has few limitations that provide avenues for future research. First, future studies may look at other multiple aspects of credit market development such as access or outreach, efficiency, and stability rather than a depth point of view alone. Second, this article is written within an assumption that private credit expansion is desirable. However, there is a latest concern that too rapid increase in private credit could threaten financial stability and lead to an economic slowdown and increased unemployment, following the famous work of Mian et al. (2017). This becomes the reason why the policymakers since the GFC through their microprudential policies have been looking into limiting private credit creation, especially in developing and poor countries where investment opportunities are lacking resulting in misallocation of resources. Lastly, future studies may add information on the variations across Islamic banks, such as the use of various types of Islamic contracts and the differences in Shariah scholar's interpretations that could influence the banks' roles in promoting financial development.

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## ENDNOTES

[1] Some studies show that costs to keep up with large foreign banks incurred in the short run will be offset by larger cost reduction among domestic banks in the long run (Hermes & Lensink, 2004; Xu, 2011).

[2] Previous studies have shown that the risk of domestic banks increases and their profitability and margins diminishes with the presence of foreign banks (Claessens, Demirgüç-Kunt, & Huizinga, 2001; Wu, Chen, Jeon, & Wang, 2017).

[3] Berger et al. (2008) find that the State Bank of India and its associates, which have substantial rural footprint, are more likely to serve rural and state-owned enterprises than nationalized large banks. While, Zhu and Yang (2016) show that Chinese government-owned rural commercial banks, which focus on local economic development and small enterprises, take more risks than bigger state-owned banks.

[4] Bonin and Louie (2017) find that unlike other foreign-controlled banks, the subsidiaries of the "Big Six" multinational banks, which maintain a strong commitment to their customers in emerging European countries prioritizing them as a "second home market," do not aggressively reduce lending during crises. While, Zins and Weill (2018) find that Pan-African banks, which use an "indigenization" strategy that capitalizes more on local labor and information technology, lend less procyclically than foreign banks originated from outside the region. In a similar vein as these studies, we aim to fill the gap in the literature by looking at the heterogeneity with respect to bank orientation to a religion (i.e., Islamic vs. interest-based banking models).

[5] Access to the database can be requested by emailing the corresponding author.

[6] Our observation is similar to those in previous studies using a much larger sample of countries, including, among others, La Porta, Lopez-De-Silanes, and Shleifer (2002), Claessens and van Horen (2014), Cull and Martínez Pería (2013), and Taboada (2011). La Porta et al. (2002) show that the percentage of the equity of the 10 largest banks owned by the government in 92 countries reduced from 59% in 1970 to 42% in 1995. Claessens and van Horen (2014) show that the share of foreign banks in 137 countries, on the other hand, increased substantially from 20% in 1995 to 34% in 2009. Cull and Martínez Pería (2013) find a similar differing trend in most developing countries, where the share of banks assets held by governments, between 1999 and 2009, declined from 28% to 19%, while that held by foreign investors rose from 26% to 46%. Taboada (2011) shows that state ownership of the top 10 banks in 63 countries decreased from 35% in 1995 to 20% in 2005, while foreign ownership increased from 9% to 23%.

[7] More specifically, Abedifar et al. (2016) find that the market share of medium-size Islamic banks in predominantly Muslim countries and countries with high uncertainty avoidance countries is positively linked with the volume of private credit. Likewise, Gheeraert (2014) documents that the development of Islamic banking sector in Muslim countries improves credit allocation and does not crowd out their non-Islamic competitors.

[8] In principle, Islamic banks are subject to Shariah notions that prohibit the charging interest on loans. Other Shariah prohibitions include transactions that involve excessive risk or uncertainty (*gharar*), game of chance (*maysir*), and illicit business activities (e.g., weapons, pornography, alcohol, and pork).

[9] PLS financing can be constructed either using *mudarabah* or *musharakah* contracts. Under the *mudarabah* contract, profits are shared between the bank and the entrepreneur at a pre-determined ratio, while losses are borne exclusively by the bank as a the sole provider of financial capital. The *musharakah* contract, on the other hand, allows profits and losses to be shared between the bank and the entrepreneur who both contribute capital to the business venture.

[10] Fixing interest rates to be paid by borrowers is considered exploitative and unjust from an Islamic point of view because the borrower is left responsible for the entire project's risk, while the lender receives a pre-determined return regardless of whether the project is doing good or bad.

[11] The same risk sharing structure is mirrored on the liability side in such a way that depositors act as residual claimants on the bank's profits or losses from investment activities on the asset side, instead of creditors of the bank who earn predetermined returns for bearing a very minimal or no risk at all like those in conventional banks (Beck et al., 2013).

[12] On the other hand, Shaban, Duygun, and Fry (2016) argue that the use of *murabahah* contracts may help Islamic banks to expand their financing portfolios towards small businesses because it allows the banks to maintain the ownership of the purchased goods until the terms of the contract come to an end, and seize them in cases of default. Capitalizing on this "collateral-by-contract" feature not only eases credit constraints faced by customers (i.e., the requirement to provide any collateral in advance should they seek lending from a conventional bank), but also reduces transaction costs (e.g., due diligence and monitoring costs) and the default risk under information asymmetry, which is common for small business lending in the absence of collateral.

[13] Other than the typical agency conflict between management and shareholders, an Islamic bank is also subject to a unique type of agency

conflict between the bank's managers and investment account holders arisen from discretionary investment decisions under PLS financing.

[14] Gheeraert (2014) include dual banking countries with a 5% minimum Muslim population only, while Abedifar et al. (2016) include countries with OIC membership only.

[15] Countries such as Germany, Gambia, Philippines, and Singapore are not included in our sample because either Islamic bank presence in the countries is relatively extremely small (i.e., some operate as branches rather than as separately incorporated entities), making Islamic banking too trivial to be a policy option, or the ownership information of respective Islamic banks cannot be obtained.

[16] The 2017 is the most recent period for which data were available at the time of writing.

[17] The database is a natural choice given its greater coverage than that of others. It consists of foreign ownership information of 5,498 banks in 138 countries that were active at least one year between 1995 and 2013. In comparison, Barth, Caprio, and Levine (2000) capture the degree of state ownership of banks in 60 countries in 1997. La Porta et al. (2002) compute the shares of the assets of the ten largest banks in 92 countries that is owned by the government in 1970 and 1995. Micco et al. (2007) classify banks across countries into government-owned, foreign and domestic private banks for the period 1995–2002. Lastly, Cull and Martínez Pería (2013) focus on banks operating in Eastern Europe and Latin America during 2004–2009. The database is available online at https://www.dnb.nl/en/onderzoek-2/databases/bank.jsp. A more detailed description of how we extend Claessens and van Horen's (2015) data set can be requested from the corresponding author.

[18] Note that these studies, which use a sample of 92 countries as of 1970 and 55 countries between 1995 and 2000, respectively, on the other hand, compute country-level state ownership using the actual percentage of shares owned by the government in a given bank instead of a dummy approach like in our study.

[19] Other financial institutions are those that do not accept transferable deposits, but do perform financial intermediation by accepting other types of deposits or close substitutes for deposits (e.g., savings and mortgage institutions, post offices, building and loan associations, finance companies and many more).

[20] Islamic window is a banking facility set up within a conventional bank through which Islamic products can be offered to customers side-by-side with the interest-based products in the same physical or virtual location (e.g., bank branches, online banking, and many more).

[21] The fact that fixed effects estimation is effectively running regression on the deviations of each variable from its corresponding time series mean causes the institutional quality variables to lose their variations greatly when including country fixed effects. This in turns reduces the likelihood of detecting statistically significant relations (Plumper & Troeger, 2007).

[22] According to Baltagi, Demetriades, and Law (2009), the demand for and supply of bank loans are subject to a bank's customer base and its scale of operations (e.g., balance sheet size, number of loan officers and branches), which are expected to fluctuate little from year to year. However, the need to capture the dynamics in private credit is more obvious when using annual rather than time-averaged data in our case because it may not represent long-run equilibrium values in any given year due to slow adjustment towards the steady state.

[23] Theoretically speaking, the two-step estimator is asymptotically more efficient than the one-step estimator because it uses optimal weighting matrices (Blundell & Bond, 1998). However, in practice, "blind use of the two-step procedure could do more harm than good" (Hwang & Sun, 2018, p. 398). As shown in Monte Carlo simulations (e.g., Hwang & Sun, 2018; Soto, 2009; Windmeijer, 2005), in such finite

sample inferences as ours, the two-step estimator does not outperform the one-step estimator in terms of accuracy and precision, while the supposed efficiency gain of going one step further remains minuscule, if not almost nonexistent.

[24] To identify the stationarity of the panel, we use Fisher-type unit root tests using the Augmented Dickey Fuller and Phillips–Perron procedures, which unlike others do not require balanced panels. Details of the unit root tests are available upon request from the authors.

[25] For further details, see Action 1.1.3 (Act 7) of the Participation Banking Strategy Document 2015–2025 issued by the Participation Banks Association of Turkey.

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## APPENDIX

**TABLE A1**  List of countries in sample

| Country | Region | Income group[a] | Share of Muslim population[b] (%) | Share of Islamic banking assets[c] (%) |
|---|---|---|---|---|
| Algeria F | Middle East and North Africa | Upper middle income | 98 | 1.5 |
| Bahrain | Middle East and North Africa | High income | 81.2 | 17.9 |
| Bangladesh | South Asia | Lower middle income | 89.6 | 13.7 |
| Bosnia and Herzegovina | Europe and Central Asia | Upper middle income | 45.2 | 1.4 |
| Brunei Darussalam | East Asia and Pacific | High income | 67.2 | 75.9 |
| Egypt | Middle East and North Africa | Lower middle income | 94.6 | 4.1 |
| Indonesia | East Asia and pacific | Lower middle income | 88.2 | 2.0 |
| Iraq | Middle East and North Africa | Upper middle income | 99 | 17.3 |
| Jordan | Middle East and North Africa | Upper middle income | 98.2 | 7.6 |
| Kazakhstan | Europe and Central Asia | Upper middle income | 56.4 | 0.0 |
| Kenya | Sub-Saharan Africa | Lower middle income | 7 | 0.5 |
| Kuwait | Middle East and North Africa | High income | 74.1 | 25.7 |
| Lebanon | Middle East and North Africa | Upper middle income | 59.3 | 0.2 |
| Malaysia | East Asia and Pacific | Upper middle income | 60.4 | 13.7 |
| Maldives | South Asia | Upper middle income | 98.4 | 3.0 |
| Mauritania | Sub-Saharan Africa | Lower middle income | 99.1 | 39.0 |
| Nigeria | Sub-Saharan | Lower middle income | 50.4 | 0.1 |
| Oman | Middle East and North Africa | High income | 87.7 | 0.7 |
| Pakistan | South Asia | Lower middle income | 96.3 | 3.0 |
| Qatar | Middle East and North Africa | High income | 77.5 | 17.9 |
| Saudi Arabia | Middle East and North Africa | High income | 93 | 17.2 |
| Senegal | Sub-Saharan | Lower middle income | 96 | 2.7 |
| Syria | Middle East and North Africa | Low income | 92.2 | 11.5 |
| Thailand | East Asia and Pacific | Upper middle income | 5.8 | 0.3 |
| Tunisia | Middle East and North Africa | Lower middle income | 99.5 | 1.6 |
| Turkey | Europe and Central Asia | Upper middle income | 98 | 3.2 |
| United Arab Emirates | Middle East and North Africa | High income | 76.2 | 14.9 |
| United Kingdom | Europe and Central Asia | High income | 2.7 | 0.0 |
| Yemen | Middle East and North Africa | Low income | 99.1 | 36.6 |

[a]This is based on the World Bank's country classifications by income level as of June 2019.
[b]The data are as of 2009 taken from Lugo, Cooperman, O'Connell, and Stencel (2011).
[c]The mean values of the ratios of Islamic banks' assets to total bank assets in the country during the period of 1995–2018.

**TABLE B1**  Variable definitions

| Variable | Definition | Time period | Source |
|---|---|---|---|
| Private credit (*PC*) | The ratio of private credit by deposit money banks to GDP | 1995–2017 | World Bank's Global Financial Development |
| State bank presence (*S*) | Assets of all banks that are 50% or more owned by the government as a percentage of total bank assets | 1995–2017 | Authors' calculations |
| Foreign bank presence (*F*) | Assets of all banks that are 50% or more owned by foreigners as a percentage of total bank assets | 1995–2017 | Claessens and van Horen (2015) and authors' calculations |
| State Islamic bank presence (*SI*) | Assets of Islamic banks that are 50% or more owned by the government as a percentage of total bank assets | 1995–2017 | Authors' calculations |
| State conventional bank presence (*SC*) | Assets of conventional banks that are 50% or more owned by the government as a percentage of total bank assets | 1995–2017 | Authors' calculations |
| Foreign Islamic bank presence (*FI*) | Assets of Islamic banks that are 50% or more owned by foreigners as a percentage of total bank assets | 1995–2017 | Authors' calculations |
| Foreign conventional bank presence (*FC*) | Assets of conventional banks that are 50% or more owned by foreigners as a percentage of total bank assets | 1995–2017 | Authors' calculations |
| Domestic private Islamic bank presence (*DI*) | Assets of Islamic banks that are 50% or more owned by domestic private investors as a percentage of total bank assets | 1995–2017 | Authors' calculations |
| Log of GDP (*GDP*) | Natural logarithm of gross domestic product (current US dollars) | 1995–2017 | World Bank's World Development Indicators |
| GDP per capita growth (*GDPG*) | Annual growth in gross domestic product divided by midyear population | 1995–2017 | World Bank's World Development Indicators |
| Inflation (*INF*) | Log difference in the consumer price index | 1995–2017 | World Bank's World Development Indicators |
| Credit information (*CI*) | The index that measures the coverage, scope, and accessibility of credit information available through credit reporting service providers such as credit bureaus or credit registries. The index ranges from 0 to 6 based on the methodology in the DB05-14 studies, and from 0 to 8 based on the methodology in the DB15-20 studies. Higher values indicate the availability of deeper credit information | 2005–2017 | World Bank's Doing Business |
| Enforcement procedures (*EP*) | The number of procedures to enforce a contract. A procedure is defined as any interaction, required by law or commonly carried out in practice, between the parties or between them and the judge or court officer. | 2004–2015 | World Bank's Doing Business |
| Control of corruption (*CC*) | A score that captures perceptions of the extent to which public power is exercised for private gain, ranging from approximately −2.5 to –2.5. Higher values indicate better governance outcomes | 1996–2017 | World Bank's Worldwide Governance Indicators |