Exploring the nexus between bank market power and international trade

Tamilyam Memanova
Department of Economics, University of Ioannina
University of Ioannina Campus, 45110, Greece
Email: mt89@email.cz

Nikolaos Mylonidis
Department of Economics, University of Ioannina
University of Ioannina Campus, 45110, Greece
E-mail: nmylonid@uoi.gr

Abstract

This paper explores the impact of bank market power on exports using multi-year data from a maximum of 133 countries. The literature proposes two competing mechanisms through which bank market structure may affect export financing. The traditional industrial organization approach posits that in a perfectly competitive market, banks provide the greatest quantity of credit at the lowest price, whereas the information hypothesis argues that banks with greater monopoly power are more willing to offer credit, and at a lower cost, to establish lending relationships, in particular, with opaque borrowers. The empirical results indicate that bank market power is beneficial to export activity, and that this effect is more evident in high income countries. These findings are robust to the inclusion of country fixed effects, to alternative measures of market power and to the use of restrictions on bank entry as an instrumental variable.

Keywords: Exports; Bank market power; World sample.

JEL: F14; G21; D40

1. Introduction

Trade literature has long identified that firms' export activity is not only affected by trade liberalization policies, but it also depends on firm attributes (Melitz, 2003; Eaton, Kortum and Kramarz, 2011; Bernard and Jensen, 1995, 1997, 2004), industrial characteristics (Berman and Hericourt, 2010; Rajan and Zingales, 1998), and financial factors (Kletzer and Bardhan, 1987; Beck, 2002, 2003; Svaleryd and Vlachos, 2005). This paper focuses on the latter factor and, more specifically, it explores the possible linkages between bank market structure and exports. Several papers posit that banks facilitate international trade by providing financing to exporters and importers (e.g., Beck, 2002; Manova, 2013). However, to the best of our knowledge, no study so far has examined the role of bank market power in trade.

There is an ongoing debate among economists whether bank competition is beneficial for economic activities or not. On the one hand, the traditional industrial organization (IO) approach posits that in a perfectly competitive market, banks are price takers and their profit-maximizing behavior ensures that the greatest quantity of credit is supplied at the lowest price (Freixas and Rochet, 2008). Or, conversely, banks with monopoly power are able to extract rents by charging higher lending interest rates, thereby worsening firms' access to finance (Cetorelli, 2001). Thus, according to the traditional IO approach we expect a negative relationship between bank market power and credit availability with concomitant negative effects on firms' export performance.

On the other hand, it is argued that bank competition may exacerbate moral hazard, adverse selection and commitment problems leading to worsened credit availability especially for informational opaque borrowers (Bonaccorsi Di Patti and Dell'Ariccia 2004). As such, the information hypothesis (Petersen and Rajan, 1995) argues that market power results in greater investment in banking relationships, reduced information asymmetries and agency costs. Therefore, banks with greater monopoly power are more willing to offer credit, and at a lower cost, to establish lending relationships, in particular, with opaque borrowers. In line with this hypothesis, credit availability and export activity, can thereby improve in banking markets that exhibit higher market power.

This paper makes four contributions to the literature. First, in contrast to the previous literature that analyzes the role of bank credit in export activity, we evaluate for the first time the impact of bank market power on aggregate exports. Second, we use estimates of bank market power (provided by Clerides et al., 2015) which overcome the shortcomings of concentration measures employed in previous published papers on firm financing constraints. The industrial organization literature, indeed, argues that structural competition measures (and especially the Lerner index) are superior to concentration or other industry-wide measures because they are more inclusive in capturing the factors that drive market power (Aghion, Bloom, Blundell, Griffith and Howitt, 2005). Third, while most empirical papers assessing the effect of bank concentration on credit availability focus on a specific country, this paper uses a wide cross-country analysis, including developed, developing, and transition economies. Finally, and even though we have a preference for the Lerner index estimates provided by Clerides et al. (2015), we show that our main results, to a large extent, also hold when using alternative measures of bank market power or when employing different estimation techniques, thus verifying the robustness of our analysis.

To account for biases introduced by omitted variables and unobserved country-specific effects, we estimate a series of panel regressions with country-fixed effects and an array of control variables at the country-year level describing the macroeconomic, demographic, financial and institutional environment. Thus, we obtain identification from within country changes in bank market power. Furthermore, we attempt to mitigate potential reverse causality issues by lagging bank market power. Finally, and given the potential existence of further unobserved within country time-varying characteristics that correlate with both bank market power and exports, we also resort to instrumental variables (IV) and generalized method of moments (GMM) estimators.

By way of preview, we find robust evidence that bank market power is an important factor in determining exports activity at the country level. In particular, we document that in a sample of maximum 133 countries over the period 1997 – 2010, higher bank market power (i.e., higher values of the country-level Lerner indices) is associated with higher share of exports over GDP. This finding accords with the information-based hypothesis which predicts a positive

relation between bank market power and credit availability. The effect is also economically relevant. For example, an increase in market power by one standard deviation (12.13) results in an increase in exports over GDP by 1.64% (0.135*12.13) *ceteris paribus*. For the average share of exports in GDP in our sample (40.18%), this effect is equivalent to a 4.1% increase. A more careful investigation reveals that this result appears to be driven primarily by high income countries which exhibit even stronger pattern than that described above (a one standard deviation increase in bank market power leads to a 3.55% increase in exports). This result is robust to a number of alternative specifications and to the use of two-stage IV and GMM for dynamic panel data models.

The rest of the paper is structured as follows. Section 2 provides an overview of the related literature. Section 3 describes the data used in our work and Section 4 discusses the empirical strategy. In Section 5 we present the empirical results. Section 6 concludes the paper.

2. Literature review

2.1 The role of finance in international trade

External finance plays a key role in international trade. The theoretical rationale underlying the linkages between financial dependence and trade activity dates back to Kletzer and Bardhan (1987) and Baldwin (1989). Baldwin (1989) argues that financial development allows for better risk diversification, thereby affecting the output and trade decisions of firms. Kletzer and Bardhan (1987), in turn, adapt the classical Heckscher-Ohlin-Samuelson international trade model, and consider two-country, two-sector, two-factor general equilibrium models. To assess the role of financial dependence in international trade, they assume that in each country, the output of one sector is used as an intermediate good for the production of the other (final) good. Furthermore, they assume that the intermediate good must be committed as an input one period before the final good production. The final good sector, thus, requires external funds to finance working capital. However, due to varying legal frameworks across countries, which affect the payoffs to firms' lenders and equity holders in case of bankruptcy, and moral hazard problems, due to information asymmetries, producers are relatively more credit rationed in the country with weaker financial system. It follows that the relatively less

financially developed country specializes in the production of the intermediate good (since this sector does not require external financing), while the relatively more financially advanced country has a comparative advantage in the production of the final good.

Based on the aforementioned work, Beck (2002) shows that financial development matters for both exports and the trade balance of manufactured goods. In his model he assumes that both sectors rely on external financing while at the same time one of them exhibits constant returns to scale (food) and the other one is subject to increasing returns to scale (manufacturing). Furthermore, he assumes that financial intermediaries incur search costs when transferring funds from savers to entrepreneurs and that financial development lowers these search costs and improves credit availability. It follows that the sector exhibiting increasing returns to scale profits more from external financing than the sector with constant returns to scale. Consequently, a relatively high level of financial development should be associated with exporting manufactured goods while a relatively low level of financial development should be associated with exporting food goods.

Beck empirically tests this hypothesis using aggregate data at the country level (Beck, 2002) and disaggregated data at the country-industry level (Beck, 2003). The results are very clear. Countries with a better-developed financial system have a higher export share and trade balance in manufactured goods (Beck, 2002) as well as in industries that rely more heavily on external finance (Beck, 2003).

The latter finding is replicated by Svaleryd and Vlachos (2005) who treat the financial sector as an immobile factor of production and a source of comparative advantage in a way consistent with the Heckscher-Ohlin-Vanek (HOV) model. Using OECD data, they verify that countries with well-functioning financial systems tend to specialize in industries highly dependent on external financing. More importantly, however, they find that the size of this effect is stronger than the corresponding effect of more *traditional* endowments, such as human and physical capital.

A common critique of the aforementioned studies is that they base their analyses on classical models of international trade which adopt a representative firm approach. As such, they do not allow for firm heterogeneity, and thus fail to account for the fact that within each

sector, only the most productive firms participate in international trade. Therefore, a number of recent contributions attempt to introduce the notion of external financial dependence into trade models with heterogeneous firms. Financial frictions are introduced by assuming that exporters face both fixed costs, which determine firms' export decisions, and variable costs which affect the level of firm exports. Within this context, Manova (2013) incorporates credit constraints into a heterogeneous-firm trade model where companies' need for external capital and ability to pledge collateral depend on the sector in which they are active. Using data from 107 countries and 27 sectors, she empirically shows that financially developed economies export significantly more in sectors intensive in external capital and intangible assets. Moreover, she documents that the effect of credit conditions on trade patterns is comparable to that of human capital and significantly larger than that of physical capital.

Manova, Wei and Zhang (2015) reach similar conclusions when using micro-level data for a single country (China). Specifically, they show that credit constraints severely restrict companies' overall export sales, hamper their capacity to enter more destination markets, and limit the range of products they trade. They also demonstrate that foreign ownership can mitigate the detrimental effects of credit market frictions on trade as multinational companies' affiliates and joint ventures in China have access to additional funding from their parent company.

2.2 Bank market structure and credit availability

The previous discussion highlights the importance of financial sector's function to provide credit to firms, and especially to exporters who rely relatively more to external finance. [1] Among the various financial intermediaries, banks play a pivotal role in international trade by providing, besides liquidity, safety and transparency in the flow of documents and money. The importance of banking sector in financing exports has found strong empirical support. Paravisini

[1] This link assumes that the causality runs from the financial sector to the private sector. However, the link between financial and private sector might also be demand-driven, so that economies with higher export shares in sectors with scale economies have better developed financial systems. Huang and Temple (2005), for instance, report strong positive effects of trade openness on financial development using a sample of 88 countries, with the effects being more prominent and persistent for lower income countries. The linkage may even be the outcome of a third factor (such as government policies) that affect both the development of the financial sector and export shares (Beck, 2002). In our empirical analysis we attempt to control for possible reverse causality and simultaneity bias.

et al. (2014) show that 10% decline in credit supply to Peruvian exporters is associated with a 1.95% reduction in export volumes in the following year. Molina and Roa (2014) and Minetti and Zhu (2011) provide similar evidence for Colombian and Italian exporting firms, respectively.

The theoretical literature on the relationship between bank competition and the supply of credit proposes two competing mechanisms through which market power may impact positively or negatively on credit availability. First, the traditional industrial organization (IO) approach posits that greater competition in the banking market is beneficial for all borrowers, and thus for exporters, by making credit more available and cheaper. Specifically, under competitive conditions, equilibrium interest rates are pre-determined by market forces and banks are price takers and their profit-maximizing behavior ensures that the greatest quantity of credit is supplied at the lowest price (Freixas and Rochet, 2008). To put it differently, lack of competition can exacerbate loan availability as dominating banks can exert their market power to quote higher interest rates (Beck et al, 2006).

The main drawback of the standard IO framework is that it treats banks like any other firm and disregards the unique characteristics of the banking sector (e.g., information asymmetries and agency costs). Other theoretical approaches take explicitly into consideration these characteristics and indicate that credit supply can actually decrease with higher levels of bank competition as competitive conditions tend to weaken relationship lending. In general, banks engage in both relationship and transactional lending. The latter is based on *hard* quantitative data, such as financial statements. Relationship lending, in turn, implies close ties between borrowers and lenders which facilitate the exchange of *soft* information between the two parties. Relationship banking is primarily demanded by informationally-opaque borrowers (e.g., small, young firms or firms with low tangibility of assets) that face hold up problems and cannot obtain arm-length transactions due to limited transparency.

In their seminal paper, Petersen and Rajan (1995) develop the information hypothesis which posits that bank competition and relationship lending are not compatible as banks become reluctant to investing in *soft* information. The intuition of their model is straightforward: new entrepreneurs are subject to credit constraints due to information asymmetry inducing adverse selection, moral hazard and credit rationing problems. However,

banks with monopoly power can better extract future rents from profitable projects undertaken by opaque firms, and thus they are willing to provide credit with better terms. Their empirical results confirm the theoretical predictions. They find that banks with higher market power offer lower-than-competitive nominal interest rates to small, young US firms, while more intense bank competition translates into lower credit availability for this type of borrowers.[2]

Given that the aforementioned theoretical channels provide contrasting predictions about the direction of the effect of bank market power on credit availability, most work has focused on resolving this question empirically. Nevertheless, reflecting these mixed predictions, the empirical work also yields mixed evidence. Some contributions find evidence that bank competition leads to more credit availability (Black and Strahan, 2002; Beck, Demirgüç-Kunt and Maksimovic, 2004; Love and Pería, 2015). Others find instead that credit quality and availability is higher in less competitive environments especially for younger firms (Petersen and Rajan, 1995; Cetorelli and Gambera, 2001; Yoshiaki, 2007). Finally, some researchers find that the relationship between bank concentration and credit availability is U-shaped (Bonaccorsi di Patti and Dell'Ariccia, 2004; Presbitero and Zazzaro, 2011). The evidence thus seems to indicate that bank competition matters for credit availability, but also that there is ambiguity about the sign of the relationship.

Taken together, the forces described in this section, even though sometimes quite opposing as regards their effects on credit availability, point to an obvious common element; bank market structure can have important implications for firms' export financing. Our empirical analysis aims to identify these effects.

3. Data

We use panel data for a maximum of 133 countries during 1997 – 2010. The selection of the sample period is dictated by data availability on bank market power. The large number of

[2] Boot and Thakor (2000) question the information hypothesis and show that when banks engage in both relationship and transaction lending, a substitution effect arises across these two forms of lending. Under specific conditions, this substitution effect can lead banks to invest more in relationship lending when interbank competition rises because such lending provides better insulation against pure price competition.

countries indicates that the panel includes countries from all regions and income groups. As in virtually all empirical studies employing macroeconomic data, our panel is unbalanced in the sense that some observations are missing for some years and specific countries. Table 1 includes definitions and data sources for the variables used in the empirical analysis. Table 2 provides basic descriptive statistics and Table 3 reports the correlation coefficients between the explanatory variables of export shares. The results indicate the absence of any serious multicollinearity between the explanatory variables, except from the variables characterizing the level of human capital, banking efficiency and trade openness.

[Insert Tables 1, 2, and 3 about here]

The dependent variable of our study is the value of total exports to GDP at the country-year level. The average value in our dataset is 40.18%. The lowest value is recorded for Myanmar in 2003 (18.29%) and the highest for Singapore in 2008 (230.27%). Information for bank market power is from Clerides et al. (2015). Our baseline measure is the Lerner index which measures departures from the competitive benchmark of marginal cost pricing. Generally, the index ranges between zero and one hundred, with zero corresponding to perfect competition and larger values reflecting more market power, i.e. less competition. Clerides et al. (2015) apply a two-stage procedure in the computation of the Lerner index. In the first stage, they collect information at the individual bank level and calculate the Lerner Index at the bank-year level as follows:

$$LI_{i,c,t} = \frac{P_{i,c,t} - MC_{i,c,t}}{P_{i,c,t}} \quad (1)$$

where *P* and *MC* are the price and marginal cost of bank *i* in country *c* at time *t,* respectively. Their novelty rests in the estimation of the marginal cost using a semi-parametric method (the partial linear smooth coefficient model) which allows for improved flexibility in the functional

form of the cost function.[3] In the second stage, the authors take averages of the Lerner indices at the country – year level.

We also examine the sensitivity of our findings to several variants of our baseline Lerner index (again provided by Clerides et al., 2015). The first variant (named *adjusted Lerner Index*) allows for the possibility that banks do not choose the prices and input levels in a profit-maximizing way. In other words, the adjusted Lerner index measures *potential* market power. We also experiment with a different measure of bank market power, namely the Boone indicator, which is estimated using the elasticity of profits to marginal cost. The profit equation is estimated using the same semi-parametric approach with the Lerner indices, and estimates are obtained for each observation (i.e. at the bank – year level) and then averaged by country and year. As a final exercise, we consider the equivalent country-year Lerner index from the World Bank where marginal cost is estimated with the usual parametric techniques and a translog cost function.

To assess the impact of market power on exports, we need to control for a number of macroeconomic, demographic, institutional and financial variables that may affect exports. First, we use the ratio of the credit provided to the private sector (relative to GDP) to control for the impact of financial development on exports. This variable reflects the ability of commercial banks and other financial institutions to mobilize savings and provide external financing, and it has been extensively employed in the trade and finance literature (see *inter alia* Beck, 2002). To capture all other elements of financial development and liberalization that might affect exports, we also employ the financial freedom index. This index is a measure of banking efficiency as well as a measure of independence from government control and interference in the financial sector, with higher values reflecting higher financial liberalization.

Following Manova et al. (2015), we also incorporate foreign direct investment (FDI) inflows (as a percentage of GDP) since FDI can alleviate the impact of domestic financial market imperfections on trade, especially in financially underdeveloped economies. We further control

[3] Delis, Iosifidi and Tsionas (2012) show that estimation of marginal cost using semiparametric and nonparametric methods produces significantly better results than parametric techniques and commonly used functional forms like the translog.

for the population size of a country, since changes in the dynamics of population can influence export performance (Morrison, 1977), and the GDP growth rate. The latter captures the effect of macroeconomic conditions on exports. Thus, controlling for this variable is essential to avoid attributing such macroeconomic effects on export performance to bank market power.

We also account for a country's trade policy regime by using the trade freedom index. This is a composite measure, based on tariff rates and non-tariff barriers, and it ranges between 0 and 100, with higher scores indicating a more open trade policy. Trade literature outlines that barriers to trade tend to exacerbate trade activity (and thus exports), while their abolition allows for greater efficiency gains (Krugman and Obstfeld, 2005) and knowledge-spillover effects (Grossman and Helpman, 1991) both resulting in higher trade activity. Furthermore, this index allows us to ascertain that our bank market power measure (or any other of our financial indicators) is not a proxy for trade openness. For example, in their seminal paper, Rajan and Zingales (1998) show that when trade flows are liberalized, more private interests favor financial deregulation. In this view, trade openness exerts a positive effect on financial development and market structure.

Finally, we use data on total enrollment in tertiary education as a percentage of the population of official education age to account for the strong linkages between exports and human capital (Findlay and Kierzkowski, 1983; Contractor and Mudanbi, 2008). The prediction is that, on average, countries with a relatively large endowment of human capital also experience greater exports.

4. Methodological considerations

The empirical model we use to study the relation between bank market power and export shares is of the following general form:

$$exp_{i,t} = a_0 + a_1 bmp_{i,t-1} + a_2 Z_{i,t} + v_i + u_{i,t} \qquad (2)$$

Our dependent variable (*exp*) is the share of exports over GDP of country *i* at year *t*. Exports are regressed on the measure of bank market power (*MP*) and a vector of variables *X*

observed at the country-year level. The last term, $u_{i,t}$, is the stochastic term, and v_i are country fixed effects.

In equation (2) we are interested in identifying a causal relation running from bank market power to export shares. In this sense, endogeneity can arise both from reverse causality and omitted-variable bias. If causality is reversed, the degree of market power will depend on exports and the market power indicator will be correlated with the error term. For instance, the willingness of banks to cater for the needs of their exporting clients might lead to lower net interest margins. This, in turn, affects banks' pricing policies and their resultant Lerner index estimates.[4] To overcome this potential reverse causality issues, market power is lagged once. From a statistical viewpoint, the literature (e.g., Beck, De Jonghe, and Schepens, 2013) suggests that explanatory variables in lags can potentially diminish endogeneity issues arising from reverse causality. We also attempt to mitigate endogeneity issues due to time-invariant omitted-variable bias by using country fixed effects, to control for all missing country level characteristics.

These empirical strategies, however, are not adequate in establishing causality in the presence of country-year unobserved factors that influence the dynamics of both bank market structure and export shares. A solution for this problem is to identify at least one instrumental variable (IV) that satisfies the exclusion restriction and use appropriate estimation techniques. Therefore, in robustness checks we re-estimate equation (2) employing two-stage least squares (2SLS) model and use as an instrument the index called *general entry restrictions*. We construct this index using information from the database by Barth et al. (2013) and previous versions from the same authors. In particular, we add a value of 1 to our index when the following information is required of applicants for a banking license: (1) draft by-laws, (2) intended organizational chart, (3) financial projections for first three years, (4) financial information on main potential shareholders, (5) background/experience of future directors, (6) background/experience of future managers, (7) sources of funds to be used to capitalize the new bank, and (8) market differentiation intended for the new bank. Thus, this bank entry index takes values from zero to eight, with higher values indicating greater stringency. We

[4] Rajan and Zingales (1998) also argue that international trade flows shape financial development.

expect this index to be a good instrumental variable, as it seems unlikely that exports affects directly the decision to change relevant laws and regulations, while *entry restrictions on banks* should strongly explain bank market structure.

We further examine the statistical properties of our instrument in the context of our model and our sample. *General entry restrictions* has a correlation coefficient with the Lerner Index variable equal to 0.172, which is statistically significant at conventional levels. The respective correlation coefficient with exports is only 0.045. Moreover, regressing the exports on our instrument shows that entry restrictions are statistically insignificant determinants of exports (results available on request).

Another potential identification problem is that the true model should incorporate some dynamics and take the form:

$$exp_{i,t} = a_0 + \sum_{j=1}^{p} \beta_j \, exp_{i,t-j} + a_1 bmp_{i,t-1} + a_2 Z_{i,t} + v_i + u_{i,t} \qquad (3)$$

or the form:

$$exp_{i,t} = a_0 + \sum_{j=1}^{p} a_j bmp_{i,t-j} + a_2 Z_{i,t} + v_i + u_{i,t} \qquad (4)$$

where *p* denotes the number of lags. In fact, the true empirical model could be a combination of equations (3) and (4) that includes lags on both *exp* and *bmp*. These are sensible models as they reflect the possibilities that export performance is affected by its past values, or that bank market power further back than one year exerts a substantial statistical influence on the dependent variable.

Equation (4) can be estimated using conventional econometric techniques. Equation (3), however, will produce invalid results primarily because the lagged dependent variable is endogenous to the fixed effects in the error term (Nickell, 1981). Therefore, we estimate equation (3) by GMM for dynamic panels (Arellano and Bond, 1991). This method allows using IV-style instruments, but also allows instrumenting for the presence of the lagged dependent variable among the regressors to remove endogeneity bias stemming from the presence of

$exp_{i,t-j}$. This procedure purges fixed effects by first-differencing, and is therefore robust to omitted-variable bias stemming from unobserved country effects. A common critique of GMM estimators is that their properties can be biased and imprecise in panel data with a relatively small number of cross-sectional units (Bruno, 2005). As a robustness test, we also estimate equation (3) using least squares dummy variables (LSDV) and then correcting appropriately the results for the dynamic panel bias (Bruno, 2005; Kiviet, 1995). Bearing these issues in mind, we proceed with the estimation and discussion of our results.

5. Estimation results

In Table 4 we report the baseline regression results from the estimation of equation (2). All regressions are estimated with country-fixed effects and robust standard errors clustered at the country level. In column 1 we use the basic Lerner index and the core set of control variables, and confirm the presence of a highly significant, positive association between (lagged) bank market structure and exports. This effect is also economically significant. For example, an increase in market power by one standard deviation (12.13) results in an increase in exports over GDP by 1.64% (12.13*0.135) in the following year. For the average export shares in GDP in our sample (40.18%), this effect is equivalent to a 4.1% increase. This finding provides support for the information based hypothesis which postulates that higher bank market power ensures better credit availability through relationship lending (Petersen and Rajan 1998, Black and Strahan, 2002; Beck, Demirgüç-Kunt and Maksimovic, 2005).[5]

Interestingly, the effect of the Lerner index remains qualitatively unaltered when adding a number of explanatory variables related to financial freedom (column 2), trade freedom (column 3) and human capital (column 4), albeit its magnitude becomes somewhat economically smaller. Specifically, it remains statistically significant (at the 5% significance level or higher) and positive across all specifications with its magnitude ranging from 0.089 (in column 4) to 0.125 (in column 2).

[5] We also tested for non-linearities by including the squared value of the Lerner index as an additional regressor. Nevertheless, this term was never statistically significant and its inclusion had little impact on the coefficients of the other variables. It was therefore dropped from the empirical specification.

Concerning the effect of the control variables, FDI inflows and GDP growth exert a statistically significant positive impact on exports in accordance with our prior expectations. In contrast, neither population, nor financial deepening (as proxied by the ratio of private credit to GDP) seems to matter for export performance. The latter finding, combined with the statistically significant coefficient of Lerner index, indicates that the previously reported positive association between financial development and exports (Beck, 2002) was likely due at least in part to the rising bank market power over most of our sample period.[6]

The export effects of financial freedom are also statistically insignificant, while trade freedom carries a significant and positive coefficient. Taken together, these two findings might suggest that financial freedom affects exports indirectly through trade freedom, consistent with the hypothesis of Rajan and Zingales (1998) which states that trade openness fosters financial development. Finally, and in line with our prior expectations, we find that tertiary education is positively correlated with exports, thereby suggesting that countries with higher quality of labour are more likely to experience higher factor productivity and greater advantages on exports.

[Insert Table 4 around here]

We test the robustness of our baseline results in a number of ways. First, we investigate whether the main results hold when using alternative measures of bank market power at the country level. Thus, we carry out the same analysis by using the lagged value of the adjusted Lerner index, which measures *potential* rather than *actual* market power. Compared to Table 4, the results, reported in columns 1 - 3 of Table 5, remain similar with the coefficient on market power being positive and significant at the 10% level or better. The economic significance of this effect is, nevertheless, smaller than that previously reported. A one standard deviation increase in the adjusted Lerner index (12.62) induces a mere 0.98% (0.078*12.62) rise in export shares over GDP in the following year, *ceteris paribus*. Furthermore, in column 4, we find that the estimated coefficient of adjusted Lerner index is positive but statistically insignificant. We

[6] Clerides et al. (2015) show that average bank market power peaks in 2003 – 2004, declines in the period 2007 – 2008, and increases again in the post-2008 period.

obtain very similar results when experimenting with the Boone indicator at the country level. Specifically, the relevant estimated coefficients are negative and highly significant in columns 5 - 7, suggesting that the prevalence of less competitive conditions in the bank markets leads to higher export shares in GDP.

[Insert Table 5 around here]

Next, we re-estimate our baseline regressions using the equivalent country-year Lerner index from the World Bank (Table 6). In this way, we test the robustness of our results for a relatively larger sample, since the World Bank dataset is available for the period 1995 - 2014. We use the same explanatory variables as in Table 4, along with country-fixed effects, and report standard errors clustered by country. Again, the estimated effect of the (lagged) average Lerner index on export performance is positive and highly significant in columns 1 - 3.

[Insert Table 6 around here]

In Table 7, we investigate whether the main findings hold for sub-samples of countries, grouped by their level of economic development. To this end, we explore the sensitivity of our results by re-estimating the baseline regression of column 1 in Table 4 for specific income groups of countries in turn. This procedure controls for the possibility that our general conclusions are driven by groups of countries with different levels of economic development. The reported results show that our main findings hold only for high income countries as the Lerner index is statistically insignificant in all other sub-samples. The bank market power effect on exports in high income countries merits particular attention as a one standard deviation (10.64) increase in the Lerner index is associated with a 3.54% (0.333*10.64) increase in exports, or a 7% improvement in the exports performance for the average country in the high income sample.[7]

Before exploring the robustness of this finding, it is important to briefly comment on the lack of a statistically significant relation between bank market power and export shares in all

[7] The statistically significant impact of bank market power on export shares holds after the inclusion of the additional control variables in Table 4, or when using alternative measures of bank market power (adjusted Lerner index and Boone indicator). Results are available upon request.

other income country groups. Our results suggest that exporters in these countries may actually face barriers in accessing banking products, thereby resorting to the use of alternative sources of funding such as liquid reserves and personal savings. This conjecture accords with Beck et al. (2008) who find that price and nonprice barriers prevent large parts in the developing world from accessing and using formal banking services. Interestingly, our results also show a statistically significant negative correlation between private credit and export shares in low-income countries. This may indicate that private credit in low income countries is largely biased towards domestic production. Alternatively, it may be associated with the institutional quality in this group of countries. Low income countries are often characterized by political instability, corruption, government ineffectiveness and limited application of rule of law, all of which hinder banking sector development (Law and Azman-Saini, 2008).

[Insert Table 7 around here]

We now further explore the impact of bank market structure on exports in high income countries only. Although the use of the lagged value of Lerner index eases concerns of reverse causality, the causal effect of bank market power on exports is still hard to pin down due to other aspects of endogeneity (omitted variables bias and measurement error). Therefore, to be on the safe side, we interpret the estimated coefficients on market power in Tables 4 – 7 as correlations rather than causal relationships. Therefore, as a final exercise, we check the robustness of our findings for high income countries using IV techniques. Specifically, we estimate equation (2) using two-stage least squares (2SLS) with fixed effects and robust standard errors. The results are reported in column 1 of Table 8. The instrumental variable is the *general entry restrictions* on banks. Besides the discussion in Section 4, the choice of the appropriate instrument is dictated by the under-identification LM test (UIT) and the weak-identification Wald F-test (WIT).[8] In a nutshell, the estimation results indicate that our instrument is strongly correlated with export shares (see middle panel of Table 8).

In regression, Lerner index carries a statistically significant (at the 5% level) and positive coefficient (0.592). This, in turn, verifies that higher bank market power in high income

[8] For expositional brevity, in all tables we include the first stage results only for the instrumental variable. The results on the rest of the variables of the first stage regressions are available on request.

countries leads to higher export shares in GDP. In columns 2 - 5 we introduce some dynamics. The regressions in columns 2 and 3 are estimated with panel fixed effects, whereas those reported in columns 4 and 5 with the GMM estimator of Arellano and Bond (1991). The results in columns 2 and 3 indicate that both the second and third lag of the Lerner index exert a positive and statistically significant effect (at the 5% level or better) on exports, thereby providing evidence for the presence of lasting export effects of bank market power. Similarly, the coefficient on the one-period lagged value of the dependent variable in columns 4 and 5 is highly significant, indicating a considerable level of persistence in export performance. To account for the relatively small number of cross sectional units, we re-estimate the regression in column 4 using the bias corrected LSDV estimator (Bruno, 2005). The results (reported in column 6) further support our previous findings.

[Insert Table 8 around here]

6. Concluding remarks

Trade literature has long identified that countries endowed with financial resources enjoy comparative advantages in sectors reliant on external financing. This paper attempts to shed further light on this issue by empirically examining the linkages between bank market power and exports performance at country level. To this end, we employ the Lerner index as an indicator of bank market power and conduct a series of panel regressions with country-fixed effects for a world sample over the period 1997 – 2010. Our results provide support for the information hypothesis (Petersen and Rajan, 1995) which claims that market power results in greater investment in relationship lending, reduced information asymmetries and agency costs. These, in turn, increase credit availability to the private sector at a lower cost and improve overall exports. The estimated effect is also economically significant. Specifically, our baseline regressions indicate that a one standard deviation increase in Lerner index accounts for 1.64% rise in exports share in GDP in the consequent year for the average country in our sample. We further document that this effect is even more pronounced in high income countries, where a one standard deviation increase in bank market power is associated with a 3.54% increase in

exports. These results are robust to a number of control variables which relate to the institutional, demographic, economic and financial environment, as well as to alternative measures of market power and empirical specifications, and to the use of instrumental variables to control for the endogeneity of the Lerner index.

Conclusively, our findings suggest that higher bank market power in high income countries promotes exports performance. Policy interventions should therefore address both demand and supply side constraints. They should reduce the bottlenecks that prevent exporting firms from accessing bank funding, and at the same time they should promote the supply of relationship lending, especially to informationally-opaque borrowers. In light of our findings, it would be interesting to examine the concomitant effects of consolidation of the banking industry on credit supply and exports. The theory predicts that as banking organizations grow larger and more organizationally complex through consolidation, they are less likely to choose to make relationship loans (Berger and Udell, 2002). Clearly, additional research is needed on this front, particularly for advanced economies, where substantial bank consolidation is most likely to occur. We leave this and other issues for future research.

References

Aghion P., Bloom N., Blundell R., Griffith R., Howitt P., 2005: Competition and Innovation: an Inverted-U Relationship, *The Quarterly Journal of Economics* 120, 701-728.

Arellano M., Bond S., 1991: Some Tests of Specifications for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, *The Review of Economic Studies 58,* 277-297.

Baldwin, R.E., 1989: Exporting the Capital Markets: Comparative Advantage and Capital Market Imperfections, in: Audretsch D. B., Sleuwaegen L., Yamawaki H. (Eds.): The Convergence of International and Domestic Markets, North-Holland, Amsterdam, 135-152.

Barth J.R., Caprio G., Jr., Levine R., 2013: Bank Regulation and Supervision in 180 Countries from 1999 to 2011, *NBER Working Paper* No. 18733.

Beck T., 2002: Financial Development and International Trade. Is There a Link? *Journal of International Economics* 57, 107-31.

Beck T., 2003: Financial Dependence and International Trade, *Review of International Economics* 11, 296-316.

Beck T, Demirgüç-Kunt A., Maksimovic V., 2005: Financial and Legal Constraints to Firm Growth: Does Size Matter? *Journal of Finance* 60, 137-77.

Beck T, Demirgüç-Kunt A., Levine R., 2006: Bank Concentration, Competition and Crises: First Results, *Journal of Banking and Finance*, 30, 1581-1603.

Beck T, Demirgüç-Kunt A., Peria M.S.M., 2008: Banking Service for Everyone? Barriers to Bank Access and Use around the World, *The World Bank Economic Review 22,* 397-430.

Beck T., De Jonghe O., Schepens G., 2013: Bank Competition and Stability: Cross-Country Heterogeneity, *Journal of Financial Intermediation,* 22, 218-244.

Berger A.N., Udell G.F., 2002: Small business credit availability and relationship lending: The importance of bank organisational structure, *The Economic Journal* 112, 32-53.

Berman N., Héricourt J., 2010: Financial factors and the margins of trade: Evidence from cross-country firm-level data, *Journal of Development Economics* 93, 2, 206-217.

Bernard A.B., Jensen B.J., 1995: Exporters, Jobs, and Wages in U.S. Manufacturing: 1976-1987, *Brookings Papers on Economic Activity, Microeconomics*, 67-119.

Bernard A.B., Jensen B.J., 1997: Exporters, Skill-Upgrading, and the Wage Gap, *Journal of International Economics* 47, 1, 1-25.

Bernard A.B., Jensen B.J., 2004: Why Some Firms Export, *The Review of Economics and Statistics* 86, 2, 561-569.

Black S.E., Strahan P.E., 2002: Entrepreneurship and Bank Credit Availability, *Journal of Finance* 57, 2807-2833.

Blundell R., Bond S., 1998: Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, *Journal of Econometrics* 87, 115-143.

Bonaccorsi di Patti E., Dell'Ariccia G., 2004: Bank Competition and Firm Creation, *Journal of Money, Credit and Banking* 36, 2, 225-51.

Bruno G.S.F, 2005: Estimation and Inference in Dynamic Unbalanced Panel Data Models with a Small Number of Individual, *Università Bocconi*, w.p. 165.

Cetorelli N., 2001: Does bank concentration lead to concentration in industrial sectors? *Working paper 01-01*, Federal Reserve Bank of Chicago.

Cetorelli N, Gambera M., 2001: Banking Market Structure, Financial Dependence and Growth: International Evidence from Industry Data, *Journal of Finance* 56, 2, 617-648.

Clerides S., Delis M.D., Kokas S., 2015: A New Data Set on Competition in National Banking Markets, *Financial Markets, Institutions & Instruments* 24, 2-3, 267-311.

Contractor F.J., Mudambi S.M., 2008: The influence of human capital investment on the exports of services and goods: an analysis of the top 25 services outsourcing countries, *Management International Review* 48, 433-445.

Delis M.D., Iosifidi M., Tsionas E.G, 2012: On the Estimation of Marginal Cost, *Operations Research* 52, 3, 543-556.

Eaton J., Kortum S., Kramarz F., 2011: An Anatomy of International Trade: Evidence from French Firms, *Econometrica* 79, 5, 1453-98.

Findlay R., Kierzkowski H., 1983: International Trade and Human Capital: A Simple General Equilibrium Model, *Journal of Political Economy* 91, 6, 957-978.

Freixas X., Rochet J-C., 2008: Microeconomics of Banking, *MIT Press*, Second Edition, ISBN: 9780262062701, 392.

Grossman G., Helpman E., 1991: Innovation and Growth in the Global Economy*, MIT Press,* ISBN 9780262071369, 384

Huang Y., Temple J., 2005: Does External Trade Promote Financial Development? *University of Bristol,* Discussion Paper 05/575.

Kiviet J.F., 1995: On Bias, Inconsistency, and Efficiency of Various Estimators in Dynamic Panel Data Models, *Journal of Econometrics 68,* 53-78.

Kletzer K., Bardhan P., 1987: Credit Markets and Patterns of International Trade, *Journal of Development Economics* 27, 57-70.

Krugman P.R., Obstfeld M., 2005: International Economics: Theory and Policy, *Adison Wesley,* Seventh Edition, ISBN-10: 0321278844, 784.

Law S.H., Azman-Saini W.N.W., 2008: The Quality of Institutions and Financial Development, *Universiti Putra Malaysia,* MPRA Paper 12107.

Love I., Pería M.S.M., 2015: How Bank Competition Affects Firms' Access to Finance, *World Bank Economic Review 29*, 413-448

Nickell S., 1981: Biases in Dynamic Models with Fixed Effects, *Econometrica 49,* 1417-1426.

Melitz, M. 2003: The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity, *Econometrica* 71, 1695-725.

Manova K., 2013: Credit Constraints, Heterogeneous Firms, and International Trade, *Review of Economic Studies*, 80, 2, 711-744.

Manova K., Wei S., Zhang Z., 2015: Firm Exports and Multinational Activity under Credit Constraints, *Review of Economics and Statistics* 97, 3, 574-588.

Minetti R., Zhu S.C., 2011: Credit Constraints and Firm Export: Microeconomic Evidence from Italy, *Journal of International Economics* 83, 109-125.

Molina D., Roa M., 2014: The Effect of Credit on the Export Performance of Colombian Exporters, *Inter-American Development Bank*.

Morrison T.K., 1977: The effects of population size and population density on the manufactured exports of developing countries, *Southern Economic Journal*, 1368-1371.

Paravasini D., Rappoport V., Schnabl P., Wolfenzon D., 2014: Dissecting the Effect of Credit Supply on Trade: Evidence from Matched Credit-Export Data, *Review of Economic Studies* 01, 1-26.

Petersen M. A., Rajan R. G., 1995: The Effect of Credit Market Competition on Lending Relationship, *Quarterly Journal of Economics* 110, 407-443.

Presbitero A., Zazzaro A., 2011: Competition and Relationship Lending: Friends or Foes? *Journal of Financial Intermediation* 20, 3, 387-413.

Rajan R., Zingales L., 1998: Financial Dependence and Growth, *American Economic Review* 88, 559-86.

Svaleryd H., Vlachos J., 2005: Financial Markets, the Pattern of Industrial Specialization and Comparative Advantage: Evidence from OECD Countries, *European Economic Review* 49, 113-44

Teorell J., Dahlberg S., Holmberg S., Rothstein B., Khomenko A., Svensson R., 2017: The Quality of Government Standard Dataset, *University of Gothenburg*: The Quality of Government Institute, http://www.qog.pol.gu.se doi:10.18157/QoGStdJan17.

Yoshiaki O., 2007: Lending Competition, Relationship Banking, and Credit Availability for Entrepreneurs, *RIETI Discussion Paper Series*, Working Paper No. 07-E-036

Table 1. Variable definition and sources

Variable	Definition	Source
Exports	The value of all goods and other market services exported to the rest of the world as a percentage of GDP.	Teorell et al. (2017), WDI
Lerner index	Lerner index by country and year where marginal cost is estimated using a log-linear production function and total output is measured by total earning assets. It measures actual (exercised) market power and it ranges from 0 to 100, with higher values indicating greater market power.	Clerides et al. (2015)
Adjusted Lerner Index	It measures potential market power by country and year. It ranges from 0 to 100, with higher values indicating greater market power.	Ibid
Boone Indicator	It measures the elasticity of profits to marginal cost by country and year. It takes negative values with larger absolute values indicating more competitive market conditions.	Ibid
GDP growth	Annual percentage GDP growth rate at market price based on constant local currency.	Teorell et al. (2017), WDI
FDI inflow	Net inflows of Foreign Direct Investments as a percentage of GDP.	Teorell et al. (2017), WDI
Private Credit	Domestic credit to private sector by financial institutions as a share of GDP.	World Bank
Financial Freedom	It reflects the relative openness of each country's banking and financial system. It takes values from 0 to 100, where 100 indicate maximal degree of financial freedom.	Teorell et al. (2017), Heritage Foundation
Trade Freedom	A composite measure of the trade-weighted average tariff rate and non-tariff barriers. It ranges from 0 to 100, with 100 representing the highest degree of trade freedom.	Teorell et al. (2017), Heritage Foundation
Population	Total population by country and year.	Teorell et al. (2017), WDI
Tertiary education	Total enrollment in tertiary education, regardless of age, expressed as a percentage of the total population.	Ibid
Lerner World Bank	The World Bank's Lerner index by country and year, where marginal cost is estimated with the usual parametric techniques and a translog cost function.	World Bank
General entry restrictions	This index is based on whether or not the following information is required of applicants for a banking license: (1) Draft by-laws; (2) Intended organizational chart; (3) Financial projections for first three years; (4) Financial information on main potential shareholders; (5) Background/experience of future directors; (6) Background/experience of future managers; (7) Sources of funds to be used to capitalize the new bank; and (8) Market differentiation intended for the new bank. The values of the index of entry into banking range from 0 to 8, with higher values indicating greater stringency.	Barth et al. (2013) and previous versions

Table 2. Descriptive statistics

Variable	Obs.	Mean	S.D.	Min.	Max.
Exports	2,457	40.183	25.467	0.183	230.269
Lerner index	1,798	26.80111	12.13938	-12.4	82.4
Adjusted Lerner Index	1,814	21.3505	12.62238	-17.9	82.2
Boone indicator	1,816	-45.6084	8.01703	-70.3	-33.1
FDI inflow	2,477	4.940	8.453	-58.978	173.450
GDP growth	2,577	4.190	6.141	-33.101	149.973
Private credit	2,391	43.759	41.958	0.001	312.118
Population	2,651	33.5 millions	127 millions	9,298	1.34 billions
Financial freedom	2,212	50.362	20.326	0	90
Trade freedom	2,212	65.895	16.432	0	90
Tertiary education	1,609	31.864	25.099	0.221	117.891

Notes: The table reports summary statistics (number of observations, mean, standard deviation, minimum, and maximum) for the variables included in the empirical analysis. Variables are defined in Table 1. The maximum number of countries is 133. The panel spans the period 1997 – 2010.

Table 3. Correlation matrix

	Lerner index	Adjusted Lerner index	Boone indicator	FDI inflow	GDP growth	Private credit	Population	Financial freedom	Trade freedom	Tertiary education
Lerner index	1.0000									
Adjusted Lerner Index	0.8229	1.0000								
Boone indicator	0.3944	0.3558	1.0000							
FDI inflow	0.0005	0.0378	-0.0180	1.0000						
GDP growth	0.2424	0.3385	0.1536	0.0590	1.0000					
Private credit	-0.1652	-0.1849	-0.0723	0.0999	-0.2430	1.0000				
Populations	0.0529	0.0364	0.0200	-0.0754	0.1428	0.1164	1.0000			
Financial freedom	-0.2091	-0.1749	-0.0836	0.1860	-0.2008	0.4500	-0.2139	1.0000		
Trade freedom	-0.1749	-0.1748	-0.0282	0.1541	-0.1665	0.4096	-0.2931	0.4605	1.0000	
Tertiary education	-0.2623	-0.2664	-0.0732	0.0384	-0.1877	0.5170	-0.1237	0.3994	0.5568	1.0000

Table 4. Exports and bank market power: Baseline regressions

	1	2	3	4
Lerner Index	0.135***	0.125***	0.113***	0.089**
	(0.041)	(0.036)	(0.034)	(0.034)
FDI inflow	0.048**	0.040**	0.031*	0.065*
	(0.023)	(0.019)	(0.019)	(0.034)
GDP growth	0.282***	0.304***	0.311***	0.238***
	(0.077)	(0.080)	(0.078)	(0.070)
Private Credit	0.023	0.027	0.016	-0.01
	(0.023)	(0.023)	(0.023)	(0.028)
Population	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Financial Freedom		-0.007	-0.005	0.012
		(0.035)	(0.034)	(0.036)
Trade Freedom			0.107***	0.073**
			(0.040)	(0.034)
Tertiary education				0.139**
				(0.066)
Constant	33.555***	33.824***	28.581***	25.917***
	(1.743)	(2.560)	(3.345)	(3.847)
Observations	1490	1454	1454	1082
Countries	133	130	130	118
R-squared	0.0751619	0.078732	0.095046	0.134245
F-statistic	7.719883	7.552808	7.132793	5.127173

Notes: The table reports estimated coefficients and standard errors (in brackets). Dependent variable is the share of exports in GDP. Variables are defined in Table 1. All regressions are with country-fixed effects and standard errors clustered at the country level.

The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10 % level, respectively.

Table 5. Exports and bank market power: Alternative measures of bank market structure

	1	2	3	4	5	6	7	8
Adjusted Lerner index	0.078**	0.064**	0.059*	0.018				
	(0.037)	(0.031)	(0.030)	(0.029)				
Boone indicator					-0.164***	-0.146***	-0.128**	-0.035
					(0.055)	(0.052)	(0.049)	(0.045)
FDI Inflow	0.048**	0.040**	0.031	0.066*	0.052**	0.044**	0.035*	0.068*
	(0.023)	(0.020)	(0.019)	(0.034)	(0.024)	(0.020)	(0.020)	(0.035)
GDP growth	0.290***	0.316***	0.321***	0.265***	0.265***	0.288***	0.298***	0.256***
	(0.078)	(0.081)	(0.078)	(0.072)	(0.074)	(0.076)	(0.074)	(0.072)
Private Credit	0.038	0.042*	0.029	0.002	0.044*	0.046*	0.034	0.004
	(0.024)	(0.025)	(0.024)	(0.029)	(0.024)	(0.024)	(0.023)	(0.029)
Population	0.000*	0.000*	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Financial freedom		-0.011	-0.008	0.004		-0.006	-0.004	0.007
		(0.036)	(0.034)	(0.037)		(0.034)	(0.033)	(0.036)
Trade freedom			0.117***	0.079**			0.108***	0.080**
			(0.041)	(0.036)			(0.039)	(0.036)
Tertiary education				0.156**				0.152**
				(0.068)				(0.070)
Constant	34.172***	34.637***	28.743***	26.221***	43.537***	42.638***	36.239***	28.114***
	(1.642)	(2.430)	(3.299)	(3.807)	(3.152)	(3.499)	(3.721)	(3.977)
Obs.	1,516	1,480	1,480	1,095	1,518	1,482	1,482	1,097
Countries	135	132	132	120	135	132	132	120
R-squared	0.062	0.066	0.085	0.127	0.074	0.077	0.093	0.128
F-statistic	6.391	5.637	5.731	5.383	6.473	5.383	5.540	5.319

Notes: The table reports estimated coefficients and standard errors (in brackets). Dependent variable is the share of exports in GDP. Variables are defined in Table 1. All regressions are with country-fixed effects and standard errors clustered at the country level.
The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10 % level, respectively.

Table 6. Exports and bank market power: Lerner Index from the World Bank

	1	2	3	4
World Bank Lerner Index	0.078***	0.086***	0.074***	0.038
	(0.026)	(0.027)	(0.026)	(0.024)
FDI Inflow	0.025	0.024	0.015	0.055
	(0.023)	(0.023)	(0.023)	(0.040)
GDP growth	0.208***	0.211***	0.223***	0.150**
	(0.069)	(0.071)	(0.067)	(0.070)
Private Credit	0.057**	0.059**	0.035	-0.004
	(0.027)	(0.028)	(0.026)	(0.032)
Population	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Financial Freedom		-0.026	-0.016	-0.007
		(0.041)	(0.039)	(0.040)
Trade Freedom			0.173***	0.123***
			(0.048)	(0.045)
Tertiary Education				0.192***
				(0.061)
Constant	33.819***	35.378***	26.334***	23.797***
	(1.791)	(2.829)	(3.934)	(4.062)
Obs.	2,062	2,019	2,019	1,411
Countries	133	131	131	124
R-squared	0.049	0.054	0.087	0.140
F-statistic	4.996	4.528	5.425	5.341

Notes: The table reports estimated coefficients and standard errors (in brackets). Dependent variable is the share of exports in GDP. Variables are defined in Table 1. All regressions are with country-fixed effects and standard errors clustered at the country level.

The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10 % level, respectively.

Table 7. Exports and bank market power: Specific income groups of countries

	High income	Upper middle	Lower middle	Low income
Lerner Index	0.333***	0.030	0.037	0.068
	(0.098)	(0.059)	(0.050)	(0.049)
FDI Inflow	0.054**	0.100	-0.365**	0.007
	(0.025)	(0.118)	(0.160)	(0.261)
GDP growth	0.141	0.474***	0.221	0.127
	(0.138)	(0.130)	(0.151)	(0.102)
Private Credit	0.006	0.060	-0.030	-0.240**
	(0.028)	(0.070)	(0.062)	(0.094)
Population	0.000	0.000***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	36.008***	26.563***	32.277***	9.819
	(6.041)	(2.079)	(3.331)	(9.985)
Obs.	575	423	319	173
Countries	49	38	30	16
R-squared	0.136	0.131	0.082	0.120
F-statistic	4.800	21.777	2.127	2.649

Notes: The table reports estimated coefficients and standard errors (in brackets). Dependent variable is the share of exports in GDP. Variables are defined in Table 1. All regressions are with country-fixed effects and standard errors clustered at the country level.

The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10 % level, respectively.

Table 8. Exports and bank market power: Results from alternative estimation methods and controls

	1	2	3	4	5	6
Lerner index (1 lag)	0.592**	0.110*	0.082*	0.186***	0.174***	0.112***
	(0.259)	(0.055)	(0.048)	(0.054)	(0.056)	(0.037)
Lerner index (2 lags)		0.235***	0.085**			
		(0.052)	(0.036)			
Lerner index (3 lags)			0.246***			
			(0.063)			
Exports (1 lag)				0.589***	0.562***	0.827***
				(0.064)	(0.072)	(0.037)
Exports (2 lag)					0.020	
					(0.037)	
FDI Inflow	0.049	0.039**	0.036*	0.026*	0.024	0.014
	(0.039)	(0.018)	(0.020)	(0.015)	(0.015)	(0.016)
GDP growth	-0.062	0.188	0.140	0.372***	0.397***	0.286***
	(0.186)	(0.136)	(0.130)	(0.128)	(0.124)	(0.057)
Private Credit	-0.021	0.009	-0.004	0.047*	0.045*	0.003
	(0.027)	(0.030)	(0.030)	(0.027)	(0.026)	(0.012)
Population	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant		34.706***	35.388***	10.874**	11.784***	
		(6.373)	(5.969)	(4.523)	(4.165)	
First stage						
General entry restrictions	1.282***					
	(0.342)					
Obs.	534	527	485	510		510
Countries	48	49	49	49		49
R-squared	0.105	0.146	0.167			
F-statistic	5.253	7.380	7.196			
UIT	14.868					
p-value	0					
WIT	14.065					
AR(2)				0.766	1.159	
p-value				0.444	0.247	

Notes: The table reports estimated coefficients and standard errors (in parentheses). Dependent variable is the share of exports in GDP. Variables are defined in Table 1. Regression 1 is estimated using 2SLS with fixed effects and robust standard errors. Regressions 2 - 3 are estimated with panel fixed effects and standard errors clustered at the country level. Regressions 4 and 5 are estimated with the GMM estimator of Arellano and Bond (1991). Regression 6 is estimated with bias corrected LSDV and bootstrapped standard errors (1,000 repetitions). UIT is the under-identification LM test by Kleibergen and Paap. WIT is the Wald F-statistic of the weak identification test by Kleibergen and Paap. Staiger and Stock's rule of thumb suggests rejecting the null hypothesis of a weak instrument when F≥10. AR2 is the p-value of the test for second-order serial correlation in the first differenced GMM errors. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10 % level, respectively.