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FINANCIAL DEVELOPMENT AND THE CHOICE OF TRADE PARTNERS

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ABSTRACT

What determines the choice of countries' trade partners? Is there an order that firms follow when entering foreign markets? We show theoretically and empirically that financial market imperfections affect the number and identity of exporters' destinations. Bigger economies with lower trade costs are relatively more attractive markets because they offer cross-border sellers higher profits. This generates a pecking order of destinations such that exporters serve all countries above a cut-off level of market potential. Credit constraints raise this cut-off and prevent firms from entering some markets that they could profitably service in the first-best. Financially advanced exporters thus have more trade partners and go further down the pecking order of importers, especially in sectors that rely more heavily on the financial system. Our results provide the first systematic evidence that countries follow a hierarchy of export destinations, that market size and trade costs determine this hierarchy, and that financial frictions interact importantly with it. Methodologically, we show how to construct a model-consistent ranking of countries by market potential, and derive model-consistent estimating equations to test the pecking order hypothesis. Our findings have implications for various economic effects of international trade linkages that depend crucially on the number and identity of countries' trade partners.

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1 Introduction

For many developing countries, international trade contributes significantly to aggregate output and economic growth. Exporting provides access to a bigger consumer market, enabling firms to expand production, increase domestic employment and reap higher profits. This can in turn boost firms' productivity by allowing them to benefit from scale economies under existing manufacturing practices, as well as to invest in innovation and technology upgrading. The very exposure to international know-how, and the frequent use of imported inputs in the production for foreign countries, can mediate productivity spillovers across borders. Aside from increasing income levels and growth rates, exporting can also reduce volatility over time. By diversifying across consumer markets, exporters may be able to hedge fluctuations in country-specific demand and insure against downturns at home.

These arguments suggest that being able to not only export more, but also to sell to more destinations matters for aggregate welfare. In practice, the most successful economies in the world indeed export a lot, and to many countries. For example, nations that shipped to more destinations in 1985 exported substantially more over the next 10 years, 1986-1995 (Figure 1). They sustained faster average annual growth in both exports and GDP per capita (Figures 2a and 2b). They also experienced less volatility, as reflected in lower standard deviations of these growth rates over time (Figures 3a and 3b). As the regressions in Appendix Table 1 show, these correlations are not driven by the volume of total exports. These patterns indicate that it is important to understand what determines countries' ability to establish more trade links. Among other things, financial development appears strongly correlated with exporters' destination count (Figure 4).

This paper examines the effect of financial market imperfections on the number and characteristics of exporters' trade partners. Because market size and trade costs vary across countries, bigger economies with lower trade costs are relatively more profitable export targets. This generates a pecking order of destinations, based on their market potential. In the absence of credit constraints, countries export to all destinations above a cut-off level of market potential. Financial frictions, however, raise this cut-off and prevent firms from servicing some markets that they would serve in the first-best. Financially advanced exporters thus have more trade partners and go further down the pecking order of destinations, especially in sectors that rely more heavily on the financial system.

We study these questions formally by expanding the theory developed in Manova (2007). In the model, heterogeneous firms incur trade costs in each market they enter. They face liquidity problems and require financing for a fraction of these costs, which they can raise in the capital market by pledging collateral. Financial contracts are, however, imperfectly enforced and creditors face default risks. Producers are thus unable to pursue all profitable export opportunities because they have limited access to loans. To maximize total returns, companies optimally add destinations in decreasing order of profitability until they exhaust their financial resources. Aggregating across firms, this implies that credit constraints restrict countries' number of trade partners to suboptimal levels and change the composition of these trade partners.

The theory illustrates how these distortions vary systematically across exporting countries and sectors. The strength of financial contractibility depends on how developed the exporter's financial institutions are. The funding that firms need and the availability of collateralizable assets differ across industries for technological reasons, exogenous from the perspective of individual producers. All countries are thus able to export to the most attractive destinations in the world, but financially advanced exporters also sell to economies with less market potential. Importantly, these effects are more pronounced in sectors that require more external capital and in sectors that are endowed with fewer tangible assets.

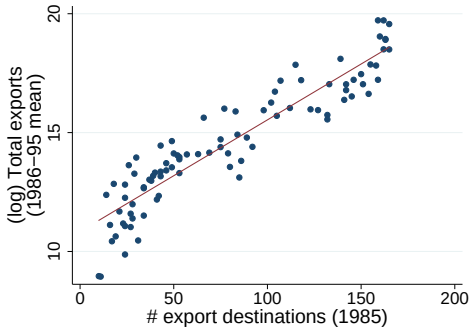
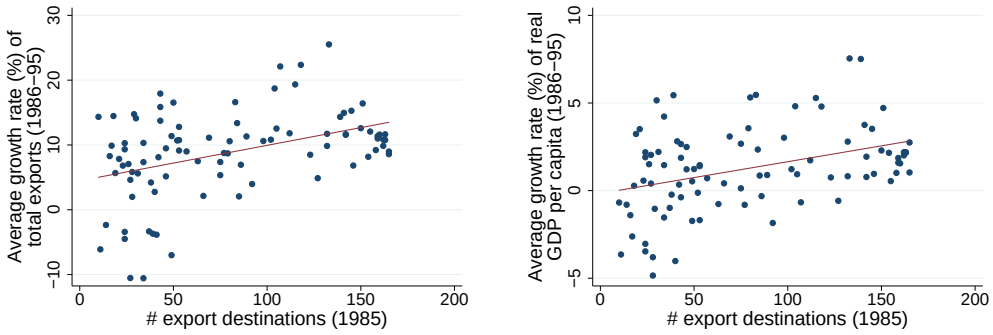
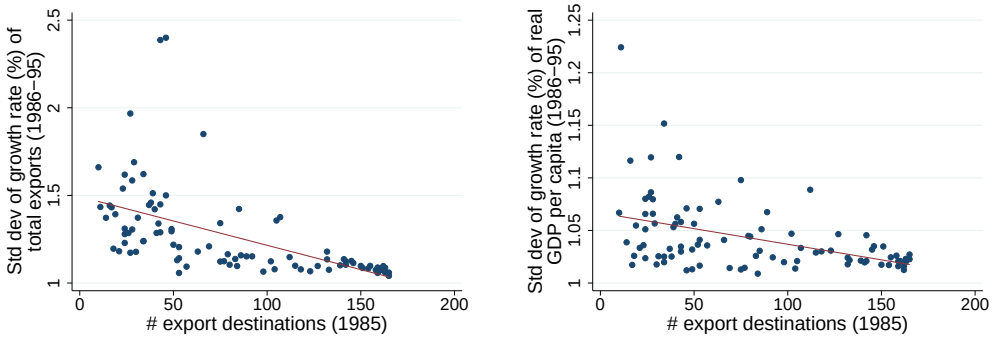


Fig. 1: Export partners and total exports. Slope (t-stat) of the fitted line: 0.047 (23.1). $N = 90$.



(a) (b)

Fig. 2: (a) Export partners and growth rate of total exports; (b) Export partners and growth rate of GDP per capita. Slope (t-stat) of the fitted line: (a) 0.054 (4.2); (b) 0.018 (3.8). $N = 90$.



(a) (b)

Fig. 3: (a) Export partners and std. dev. of growth rate of total exports; (b) Export partners and std. dev. of growth rate of GDP per capita. Slope (t-stat) of the fitted line: (a) -0.003 (-6.2); (b) -0.0003 (-4.6). $N = 90$.

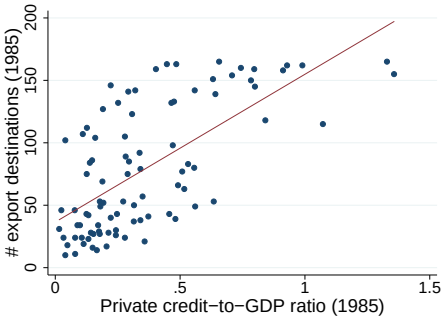


Fig. 4: Private credit and export partners. Slope (t-stat) of the fitted line: 118.4 (8.5). $N = 90$.

We provide strong empirical support for these predictions using panel data on bilateral trade for 78 export countries and 27 industries in 1985-1995. We first derive model-consistent estimating equations that relate characteristics of an exporter's destination countries to its number of destinations and credit conditions at home. We then develop a model-consistent ranking of destinations by market potential, and record the highest and lowest destination market potential among an exporter's trade partners. In line with the theory, we document no systematic variation in the maximum value across export countries and industries. By contrast, the minimum value falls with the exporter's level of financial development disproportionately faster in financially vulnerable sectors. In other words, in such sectors financially advanced exporters go further down the pecking order and are able to service lower-ranked destinations. Indeed, once we explicitly control for the number of destinations, we find that it fully explains the minimum destination market potential, and there is no residual direct effect of financial conditions.

These results have two key implications. First, they indicate that there exists a hierarchy of destinations that exporters observe, and that this hierarchy is governed by market size and trade costs. Second, they show how credit constraints interact with this pecking order, intensify its relevance to export decisions, and ultimately affect the choice (both number and identity) of countries' trade partners.

Our empirical strategy relies on exploiting the variation in financial development across export countries and in financial vulnerability across sectors. Following common practice, we measure the former with countries' private credit, and the latter with sectors' external finance dependence and sectors' asset tangibility.[1] Since financial development is correlated with other country characteristics that could influence export activity, interpreting its direct, main effect as causal is problematic. It can also become theoretically ambiguous in general equilibrium. On the other hand, the differential effect of financial development across industries survives in general equilibrium and cannot easily be attributed to alternative explanations. For this reason, this difference-in-difference approach has been widely used in the literature as a means of establishing a causal effect of credit constraints on various economic outcomes (see below). It permits the inclusion of a rigorous set of control variables such as Heckscher-Ohlin sources of comparative advantage, country and sector fixed effects. We further ensure that our results do not capture the effect of overall development or other institutions by controlling for the interactions of GDP per capita, rule of law and corruption with the sector measures of financial vulnerability.

As a methodological contribution, we propose two ways to gauge destinations' relative position in the pecking order. We first examine different proxies for market size and trade costs as the sole determinants of destinations' desirability. We then pursue an alternative approach, which remains agnostic about the exact drivers of market potential and is based on the principle of revealed preferences: If a market is particularly attractive and profitable, more exporters will enter it. The number of nations selling to a given country thus implicitly signals its market potential. By the same logic, we also adopt a semi-structural two-stage estimation approach. In the first stage, we run a probit regression of an indicator for positive bilateral exports on exporter, importer and sector fixed effects. We then use the coefficients on the importer dummies from this regression as an index of market desirability. We find very strong and robust results consistent with the model's predictions with these agnostic measures of market potential.

Our findings extend three lines of research in the prior literature. Most directly, the paper adds to the growing body of work at the intersection of international trade and finance. A number of theoretical models have examined the mechanisms through which credit constraints disrupt trade activity (e.g., Manova 2007, Feenstra et al. 2011). These frameworks have illustrated that financially developed

[1] "Private credit" is the amount of credit extended to the private sector as a share of GDP. "External finance dependence" is the share of capital expenditures not financed from internal cash flows from operations. "Asset tangibility" is the share of plant, property and equipment in total assets. See Section 4 for more details.

countries have a comparative advantage in financially vulnerable sectors. They have also emphasized the heterogeneous impact of imperfect financial markets across firms. On the empirical side, overwhelming evidence suggests that credit constraints impede firms' export operations and distort aggregate trade flows, both in normal times and during crisis episodes (e.g., Manova 2007, Berman and Héricourt 2010, Bricongne et al. 2012, Amiti and Weinstein 2011, Minetti and Zhu 2011, Chor and Manova 2012, Feenstra et al. 2011). Our contribution is in identifying another dimension of international trade that is affected by financial frictions: the choice of countries' trade partners.

Our paper also advances a large literature that seeks to understand why the incidence and magnitude of cross-border transactions varies substantially across countries, sectors and firms. At the aggregate level, about half of all country pairs conduct no bilateral trade, and another 15% or so initiate only one-way flows (Helpman et al. 2008). At the micro level, export sales are highly concentrated in a few large and productive firms that ship to many countries (Bernard et al. 2007). Both of these patterns can be rationalized if economies differ in their market potential and exporters observe a pecking order of destinations. While recent work-horse models of international trade with firm heterogeneity deliver this result (Melitz 2003, Eaton and Kortum 2002), it has received relatively little attention in the empirical literature to date. To the best of our knowledge, the only paper that takes the pecking order hypothesis to the data is Eaton et al. (2011a). They show that French companies which export to more markets also tend to enter less popular markets, i.e. destinations served by fewer manufacturers. Our analysis thus provides the first systematic evidence that countries follow a hierarchy of destinations, that market size and trade costs determine this hierarchy, and that financial frictions interact importantly with it.[2]

More broadly, our results inform studies that relate international trade linkages to economic growth, cross-country technology spillovers, and contagion. Trade openness is typically associated with faster income growth, although results are somewhat mixed (Rodrik 2005). Countries' number of trade partners too appears positively correlated with growth after controlling for other covariates, reinforcing our motivating evidence from Figure 2 (Kali et al. 2007). Evidence also suggests that access to imported inputs allows firms in developing countries to improve product quality and to expand into manufacturing more products (Verhoogen 2008, Manova and Zhang 2012, Goldberg et al. 2010). In addition, firms from developing economies appear to learn from exporting and experience productivity gains when selling to developed nations (de Loecker 2007). Separately, business cycles are more synchronized between countries that trade with each other (Frankel and Rose 1998, Clark and van Wincoop 2001, Baxter and Kouparitsas 2005). Moreover, demand or cost shocks originating in one economy tend to propagate to its trade partners (Eaton et al. 2011b, Burstein et al. 2008).

The direction and magnitude of these cross-country interdependencies and spillovers clearly hinge on the identity of the economies in question, in terms of their size, average income, overall development, TFP, and role in global financial and trade markets. It is therefore essential to better understand what determines countries' choice of trade partners. Our work highlights the importance of financial development and credit constraints as one such determinant.

The remainder of the paper is organized as follows. The next section outlines the theoretical framework, while Section 3 derives model-consistent estimating equations. We introduce the data in Section 4 and present the empirical results in Section 5. The last section concludes.

[2]In work subsequent to ours, Muûls (2008) has confirmed that our results for the maximum and minimum GDP across an exporter's destinations hold not only in the aggregate, but also at the firm level: Financially healthier firms in Belgium are able to export to smaller destinations than credit constrained firms.

2 Theoretical framework

We adopt the theoretical model developed in Manova (2007) to study how financial market imperfections affect the choice of countries' trade partners. We provide a variation of that model here, focusing specifically on the predictions for the pecking order of export destinations. The underlying production and market structure follows Melitz (2003) in a static, partial-equilibrium set-up. Correspondingly, the exposition moves quickly and refers the reader to Manova (2007) for further details.

2.1 Set up

The world consists of I countries and S sectors. Within each country and sector, a continuum of heterogeneous firms produce differentiated goods. The representative consumer in country i has utility $U_i = \prod_s C_{is}^{\theta_s}$, where $C_{is} = \left[\int_{\omega \in \Omega_{is}} q_{is}(\omega)^{\alpha} d\omega\right]^{\frac{1}{\alpha}}$, Ω_{is} spans the set of available varieties, and θ_s gives the share of expenditure on industry s. The constant elasticity of substitution across products is given by $\varepsilon = 1/(1-\alpha) > 1$ with $0 < \alpha < 1$. Demand for variety ω in sector s is thus $q_{is}(\omega) = \frac{p_{is}(\omega)^{-\varepsilon} \theta_s Y_i}{P_{is}^{1-\varepsilon}}$, where $p_{is}(\omega)$ is the price of that variety, Y_i equals total spending in country i, and $P_{is} = [\int_{\omega \in \Omega_{is}} p_{is}(\omega)^{1-\varepsilon} d\omega]^{\frac{1}{1-\varepsilon}}$ reflects an ideal price index.

2.2 Firms' export behavior

Firms in country j pay a sunk cost $c_{js} f_{ej}$ in order to enter industry s. At that point, they observe their productivity level $1/a$, drawn from a cumulative distribution function $G(a)$ with support $[a_L, a_H]$, $a_H > a_L > 0$. This productivity draw uniquely determines manufacturers' production and trade behavior. The marginal cost of making one unit of output is $c_{js} a$, where c_{js} is the country-sector specific cost of a cost-minimizing bundle of inputs. Exporting to market i entails fixed ($c_{js} f_{ij} > 0$) and variable trade costs of the iceberg variety ($\tau_{ij} > 1$) in each period of trading. These costs could, for example, relate to researching consumer demand, building and maintaining foreign distribution networks, product customization, and transportation. Setting $\tau_{jj} = 1$ would correspond to operations in the domestic market. Given our interest, we concentrate on companies' export decisions. In other words, we study the selection of domestic producers into exporting, and leave the selection of entrants into domestic production in the background.

Firms face liquidity needs because a portion $d_s \in (0,1)$ of the fixed trade cost is incurred up-front and cannot be financed with internal cash flows from operations or retained earnings. In order to raise these funds in the external capital market, companies must pledge collateral. Their available tangible assets constitute a fraction $t_s \in (0,1)$ of the initial entry cost, which can be interpreted as investments in plant, property, and equipment. Financially more vulnerable sectors thus have relatively higher d_s and lower t_s.

Entrepreneurs obtain outside financing by making a take-it-or-leave-it offer to potential (risk-neutral) investors. However, agents operate in an environment with imperfect contractibility. With an exogenous probability $\lambda_j \in (0,1)$, financial agreements are enforced and lenders are repaid a pre-specified amount F. Otherwise, with probability $(1-\lambda_j)$, the firm defaults, and the creditor claims the borrower's collateral $t_s c_{js} f_{ej}$. Manufacturers then have to replace this collateral to continue operations in the future. The parameter λ_j can thus be thought of as an indicator of the strength of financial institutions or the level of financial development in the exporting country j.

Profit-maximizing exporters choose: (1) which destination markets to enter, (2) the optimal price p_{ijs} and quantity q_{ijs} in each destination, and (3) the terms of the financial contract they propose to investors

(total loan size, repayment F, and collateral posted $t_s c_{js} f_{ej}$).[3] If $TP(a)$ is the set of trade partners that a firm with productivity $1/a$ sells to, its total liquidity needs will amount to $\sum_{i \in TP(a)} d_s c_{js} f_{ij}$. The company's maximization problem can therefore be expressed as follows:

$$\max_{TP,p,q,F} \pi_{js}(a) = \sum_{i \in TP(a)} \{p_{ijs}(a) q_{ijs}(a) - q_{ijs}(a) \tau_{ij} c_{js} a - (1 - d_s) c_{js} f_{ij}\} - \lambda_j F_{js}(a) - (1 - \lambda_j) t_s c_{js} f_{ej} \tag{2.1}$$

$$\begin{aligned} s.t. \quad & (1)\ q_{ijs}(a) = \frac{p_{ijs}(a)^{-\varepsilon} \theta_s Y_i}{P_{is}^{1-\varepsilon}}, \\ & (2)\ A_{js}(a) \equiv \sum_{i \in TP(a)} \{p_{ijs}(a) q_{ijs}(a) - q_{ijs}(a) \tau_{ij} c_{js} a - (1 - d_s) c_{js} f_{ij}\} \geq F_{js}(a), \text{ and} \\ & (3)\ B_{js}(a) \equiv - \sum_{i \in TP(a)} d_s c_{js} f_{ij} + \lambda_j F_{js}(a) + (1 - \lambda_j) t_s c_{js} f_{ej} \geq 0. \end{aligned}$$

The expression for profits reflects the fact that the firm finances all of its variable costs $q_{ijs}(a) \tau_{ij} c_{js} a$ and a fraction $(1 - d_s)$ of its fixed costs internally, pays the investor $F_{js}(a)$ when the contract is enforced (with probability λ_j), and replaces the collateral in case of default (with probability $(1 - \lambda_j)$). In the absence of credit constraints, exporters maximize profits subject to demand (1). With liquidity needs, two additional conditions bind manufacturers' decisions. In case of repayment, entrepreneurs can offer at most their net revenues to the creditor, i.e. $A_{js}(a) \geq F_{js}(a)$. Also, investors only fund the firm if their net return $B_{js}(a)$ exceeds their outside option, here normalized to 0.

With competitive credit markets, investors always break even in expectation. This implies that producers adjust their payment $F_{js}(a)$ so as to bring the financier to his participation constraint, i.e. $B_{js}(a) = 0$. The optimization problem therefore reduces to a familiar Melitz-type formulation with the additional credit constraint (2):

$$\max_{TP,p,q} \pi_{js}(a) = \sum_{i \in TP(a)} \{p_{ijs}(a) q_{ijs}(a) - q_{ijs}(a) \tau_{ij} c_{js} a - c_{js} f_{ij}\} = \sum_{i \in TP(a)} \pi_{ijs}(a) \tag{2.2}$$

$$\begin{aligned} s.t. \quad & (1)\ q_{ijs}(a) = \frac{p_{ijs}(a)^{-\varepsilon} \theta_s Y_i}{P_{is}^{1-\varepsilon}}, \text{ and} \\ & (2)\ A_{js}(a) \geq \frac{1}{\lambda_j} \left\{ \sum_{i \in TP(a)} d_s c_{js} f_{ij} - (1 - \lambda_j) t_s c_{js} f_{ej} \right\}. \end{aligned}$$

The profits $\pi_{ijs}(a)$ from any market are unaffected by financial considerations (conditional on exporting there). This occurs because companies require external capital only for their fixed costs. They thus optimally set the same price and quantity in every destination they choose to serve as in the absence of financial frictions. Incorporating the demand condition (1), the maximization problem finally becomes:

$$\max_{TP} \pi_{js}(a) = \sum_{i \in TP(a)} \left\{ (1 - \alpha) \left(\frac{\tau_{ij} c_{js} a}{\alpha P_{is}} \right)^{1-\varepsilon} \theta_s Y_i - c_{js} f_{ij} \right\} = \sum_{i \in TP(a)} \pi_{ijs}(a) \tag{2.3}$$

$$s.t. \quad \sum_{i \in TP(a)} \left\{ (1 - \alpha) \left(\frac{\tau_{ij} c_{js} a}{\alpha P_{is}} \right)^{1-\varepsilon} \theta_s Y_i - c_{js} f_{ij} \right\} \geq \frac{1 - \lambda_j}{\lambda_j} \left\{ \sum_{i \in TP(a)} d_s c_{js} f_{ij} - t_s c_{js} f_{ej} \right\}.$$

We build intuition for the solution to this problem in steps. Note first that profitability will vary

[3] To maximize their chance of obtaining the loan, it is in firms' interest to pledge all of their collateralizable assets.

across export markets. From the perspective of firms in country j, destinations can be uniquely ranked in terms of their relative profitability: While profits $\pi_{ijs}(a)$ increase with productivity $1/a$, one can verify that $\pi_{xjs}(a') > \pi_{yjs}(a')$ whenever $\pi_{xjs}(a) > \pi_{yjs}(a)$. In other words, if destination x is more profitable than destination y for firm a, it is also more desirable for firm a'.

Observe also that importing countries with a larger market size Y_i and lower trade costs, τ_{ij} and f_{ij}, are more attractive because they guarantee higher profits. We jointly refer to these characteristics as *market potential* (MP), and to the ranking of destinations in decreasing order of market potential as *the pecking order*. A summary statistic for the market potential of destination i is $MP_{ijs} = Y_i/(\tau_{ij} f_{ij})$, where we have implicitly conditioned on exporter j and sector s characteristics.

With perfect financial contractibility ($\lambda_j = 1$), each firm would export to all countries that give non-negative profits. For a firm with productivity $1/a$, there will be a minimum level of market potential such that the firm serves all destinations more attractive than it, pinned down by $\pi_{ijs}(a) = 0$. We denote this first-best group of trade partners $TP^{FB}(a)$, and the number of countries in it $\#TP^{FB}(a)$.

On the other hand, under credit constraints ($\lambda_j < 1$), entrepreneurs might have to forgo exporting to some countries in their ideal set $TP^{FB}(a)$. This arises because each destination not only brings extra profits, but also imposes additional liquidity needs. However, the limited collateral a firm possesses restricts the total loan it can access. This implies that the marginal country the producer ships to will have to generate strictly positive profits to warrant the extra burden it places on the overall financial contract. We restrict our attention to the interesting case when the total loan size needed to access all destinations in $TP^{FB}(a)$ exceeds the value of available collateral, i.e., $\sum_{i \in TP^{FB}(a)} d_s c_{js} f_{ij} > t_s c_{js} f_{ej}$.

Formally, the exporter's constrained optimal choice of trade partners $TP^*(a)$ satisfies:

$$\sum_{i \in TP^*(a)} \pi_{ijs}(a) \geq \frac{1-\lambda_j}{\lambda_j} \left\{ \sum_{i \in TP^*(a)} d_s c_{js} f_{ij} - t_s c_{js} f_{ej} \right\} \text{ and}$$

$$\sum_{i \in TP^*(a)+1} \pi_{ijs}(a) < \frac{1-\lambda_j}{\lambda_j} \left\{ \sum_{i \in TP^*(a)+1} d_s c_{js} f_{ij} - t_s c_{js} f_{ej} \right\}, \tag{2.4}$$

where the set $TP^*(a)+1$ includes all countries in $TP^*(a)$ plus the destination ranked next in the pecking order according to its market potential.

By construction, $\#TP^*(a) \leq \#TP^{FB}(a)$ necessarily holds. $\#TP^*(a)$ will be strictly below the first-best value $\#TP^{FB}(a)$ whenever $\sum_{i \in TP^{FB}(a)} \pi_{ijs}(a) < \frac{1-\lambda_j}{\lambda_j} \left\{ \sum_{i \in TP^{FB}(a)} d_s c_{js} f_{ij} - t_s c_{js} f_{ej} \right\}$. Note that the left-hand side of this inequality (profits) rises monotonically with productivity, while the right-hand side is invariant across firms. This implies that more productive firms will be able to go further down the pecking order and export to more destinations. Moreover, only companies below a certain productivity cut-off will be affected by financial concerns and forced to reduce their number of trade partners below their first-best.

2.3 Countries' trade partners

We next turn to the implications of imperfect financial markets for countries' aggregate export behavior. Recall that all producers target destinations in decreasing order of market potential and follow the same pecking order (for given exporter-sector characteristics). In the aggregate, country j will export to country i as long as at least one firm in j can afford to do so. This will in turn depend on importer i's position in the hierarchy of destinations. For example, if i is the fifth most attractive market, at least one firm in j should sell to five or more nations in order to ship to i; if i is ranked tenth, at least one

firm should serve ten or more markets; etc. This implies a one-to-one mapping between the number of country j's trade partners $\#TP_{js}$ and the identity of these trade partners.

For any given set (number) of export destinations TP_{js} ($\#TP_{js}$), there is a minimum productivity level $1/a_{TP_{js}}$ above which firms can sustain this many trade links. This cut-off is determined by the liquidity constraint in equation (2.3):

$$\sum_{i \in TP_{js}} \left\{ (1-\alpha) \left(\frac{\tau_{ij} c_{js} a_{TP_{js}}}{\alpha P_{is}} \right)^{1-\varepsilon} \theta_s Y_i - c_{js} f_{ij} \right\} = \frac{1-\lambda_j}{\lambda_j} \left\{ \sum_{i \in TP_{js}} d_s c_{js} f_{ij} - t_s c_{js} f_{ej} \right\}. \tag{2.5}$$

The left-hand side of this equality is increasing in the productivity cut-off. Taking derivatives, simple comparative statics describe the effect of financial market imperfections on the right-hand side RHS:

$$\begin{aligned} \frac{\partial RHS}{\partial \lambda_j} &= -\frac{1}{\lambda_j^2} \left\{ \sum_{i \in TP_{js}} d_s c_{js} f_{ij} - t_s c_{js} f_{ej} \right\} < 0, \\ \frac{\partial RHS}{\partial d_s} = \frac{1-\lambda_j}{\lambda_j} \sum_{i \in TP_{js}} c_{js} f_{ij} > 0, \; \frac{\partial RHS}{\partial t_s} &= -\frac{1-\lambda_j}{\lambda_j} c_{js} f_{ej} < 0, \\ \frac{\partial^2 RHS}{\partial \lambda_j \partial d_s} = -\frac{1}{\lambda_j^2} \sum_{i \in TP_{js}} c_{js} f_{ij} < 0, \; \frac{\partial^2 RHS}{\partial \lambda_j \partial t_s} &= \frac{1}{\lambda_j^2} c_{js} f_{ej} > 0. \end{aligned} \tag{2.6}$$

This immediately implies that the productivity cut-off for exporting from j to i is higher in sectors that require more external finance or have fewer tangible assets, $\frac{\partial \left(1/a_{TP_{js}}\right)}{\partial d_s} > 0$ and $\frac{\partial \left(1/a_{TP_{js}}\right)}{\partial t_s} < 0$. The threshold also falls with the strength of financial contractibility, $\frac{\partial \left(1/a_{TP_{js}}\right)}{\partial \lambda_j} < 0$. Importantly, financial development reduces the export cut-off relatively more in financially vulnerable industries, $\frac{\partial^2 \left(1/a_{TP_{js}}\right)}{\partial \lambda_j \partial d_s} < 0$ and $\frac{\partial^2 \left(1/a_{TP_{js}}\right)}{\partial \lambda_j \partial t_s} > 0$.[4] If no firm in country j has productivity above this cut-off (i.e., if $1/a_{TP_{js}} > 1/a_L$), then j will sell to fewer than $\#TP_{js}$ markets and will certainly not export to the destination country in position $\#TP_{js}$ of the pecking order.

The following three propositions summarize the key testable implications of the model which we take to the data:

Proposition 1. *(Export cut-off) The productivity cut-off for exporting from country j to country i falls with the exporter's level of financial development. This effect is stronger in financially vulnerable sectors, i.e.,*

$$\frac{\partial \left(1/a_{TP_{js}}\right)}{\partial \lambda_j} < 0, \; \frac{\partial^2 \left(1/a_{TP_{js}}\right)}{\partial \lambda_j \partial d_s} < 0, \; \frac{\partial^2 \left(1/a_{TP_{js}}\right)}{\partial \lambda_j \partial t_s} > 0.$$

Proposition 2. *(Trade partners) The number of export destinations increases with the exporter's level of financial development. This effect is stronger in financially vulnerable sectors, i.e.,*

$$\frac{\partial \left(\#TP_{js}\right)}{\partial \lambda_j} > 0, \; \frac{\partial^2 \left(\#TP_{js}\right)}{\partial \lambda_j \partial d_s} > 0, \; \frac{\partial^2 \left(\#TP_{js}\right)}{\partial \lambda_j \partial t_s} < 0.$$

Proposition 3. *(Pecking order) Exporters follow a pecking order of destinations, determined by market potential. All exporters sell to the destination with the greatest market potential. Financially developed countries go further down the pecking order and also export to destinations with lower market potential.*

[4] While the level effect of financial development can become ambiguous in general equilibrium, its differential impact across sectors would persist. See Manova (2007) for more details.

This latter effect is more pronounced in financially vulnerable sectors, i.e.,

$$\frac{\partial \max_{i\in TP_{js}} MP_{ijs}}{\partial \lambda_j} = \frac{\partial^2 \max_{i\in TP_{js}} MP_{ijs}}{\partial \lambda_j \partial d_s} = \frac{\partial^2 \max_{i\in TP_{js}} MP_{ijs}}{\partial \lambda_j \partial t_s} = 0, \text{ and}$$
$$\frac{\partial \min_{i\in TP_{js}} MP_{ijs}}{\partial \lambda_j} < 0, \ \frac{\partial^2 \min_{i\in TP_{js}} MP_{ijs}}{\partial \lambda_j \partial d_s} < 0, \ \frac{\partial^2 \min_{i\in TP_{js}} MP_{ijs}}{\partial \lambda_j \partial t_s} > 0.$$

The first two propositions restate theoretical results from Manova (2007), which we have re-derived in the present version of the model. Manova (2007) also provides empirical support for these predictions. The last proposition is novel, and it is the one we focus on in our empirical analysis.

3 Empirical specification

Our model delivers clear predictions for exporters' choice of destination countries in the presence of imperfect capital markets. We test Proposition 3 with the following reduced-form equations:

$$\begin{aligned}\max_{i\in TP_{jst}} MP_{ijst} = \alpha &+ \alpha_0 FinDev_{jt} + \alpha_1 FinDev_{jt} \times ExtFin_s + \alpha_2 FinDev_{jt} \times Tang_s + \Lambda_X X_{jst} \\ &+ \varphi_j + \varphi_s + \varphi_t + \epsilon_{jst}\end{aligned} \tag{3.1}$$

$$\begin{aligned}\min_{i\in TP_{jst}} MP_{ijst} = \beta &+ \beta_0 FinDev_{jt} + \beta_1 FinDev_{jt} \times ExtFin_s + \beta_2 FinDev_{jt} \times Tang_s + B_X X_{jst} \\ &+ \phi_j + \phi_s + \phi_t + \nu_{jst}\end{aligned} \tag{3.2}$$

$$\begin{aligned}\min_{i\in TP_{jst}} MP_{ijst} = \gamma &+ \gamma_0 FinDev_{jt} + \gamma_1 FinDev_{jt} \times ExtFin_s + \gamma_2 FinDev_{jt} \times Tang_s + \gamma_3 \#TP_{jst} \\ &+ \Gamma_X X_{jst} + \psi_j + \psi_s + \psi_t + \eta_{jst}\end{aligned} \tag{3.3}$$

Here TP_{jst} represents the set of trade partners that country j exports to in sector s and year t. If the relative attractiveness of importer i is measured by its market potential MP_{ijst}, and if exporters observe a pecking order governed by MP_{ijst}, then much can be learned from examining the maximum and minimum values of MP_{ijst} among j's chosen destinations. The unit of observation in these regressions is thus the exporter-sector-year, and the outcomes we study are precisely the extreme values at this level.

The main explanatory variables of interest are exporter j's level of financial development $FinDev_{jt}$, sector s's external finance dependence $ExtFin_s$, and its availability of tangible assets $Tang_s$. These are the empirical counterparts to the parameters λ_j, d_s and t_s in the model. According to Proposition 3, all exporters should be able to enter the most profitable market in the world, and thus $\max_{i\in TP_{jst}} MP_{ijst}$ should not vary systematically across countries and sectors. In other words, we hypothesize that $\alpha_1 = \alpha_2 = 0$.[5] On the other hand, financially developed economies should be able to go further down the hierarchy of export destinations and penetrate less attractive markets as well, especially in financially vulnerable industries. This implication would be validated if $\beta_1 < 0$ and $\beta_2 > 0$. Finally, the model generates a direct mapping between the number of trade partners $\#TP_{jst}$ and the market potential of the least appealing one among them. If different exporters follow the same pecking order, $\#TP_{jst}$ should exactly pin down $\min_{i\in TP_{jst}} MP_{ijst}$. Once we control for $\#TP_{jst}$, we therefore expect that $\gamma_1 = \gamma_2 = 0$ and $\gamma_3 < 0$ in the third regression. To have a meaningful spread in market potential across export

[5] While Proposition 3 also makes predictions regarding the coefficients on $FinDev_{jt}$, i.e. α_0, β_0, and γ_0, we focus on the interaction terms since only they hold unambiguously in general equilibrium.

destinations, we focus on observations with more than 5 trade partners. Our results are, however, not sensitive to this restriction.

In our empirical analysis, we consider different dimensions of market potential as dictated by the model. Note that *ceteris paribus*, the comparative statics derived for overall market potential hold for its individual components too. To the extent that they are imperfectly correlated, no one factor alone will determine the overall pecking order of destinations. Our results could thus deviate from the strict predictions made when we focus on only one aspect of market potential, but corroborate them when we employ a more encompassing measure of market potential. Implicitly, these specifications test the base premise that a pecking order of exporting exists, as well as the hypothesis that it interacts meaningfully with financial conditions.

An advantage of using panel data on bilateral trade by sector is that we can rule out a wide range of alternative explanations with various fixed effects. Exporter fixed effects (φ_j, ϕ_j and ψ_j) control for intransient country characteristics that affect export outcomes in all sectors, such as local infrastructure or regulatory obstacles to production and trade. Similarly, sector fixed effects (φ_s, ϕ_s and ψ_s) capture industry features that shape trade activity in all countries, such as the composition of consumer demand, need for product customization, marketing costs, and the main effects of $ExtFin_s$ and $Tang_s$. Finally, year fixed effects (φ_t, ϕ_t and ψ_t) reflect cost or demand shocks common to all suppliers, such as changes in energy prices, shipping and logistics technologies, or global crises. We cluster errors by country, to allow for correlated trade patterns across sectors and over time within an exporter.

In all specifications, we further include a series of controls X_{jst} to account for traditional determinants of trade activity. Their corresponding coefficients form the vectors Λ_X, B_X and Γ_X. We condition on the exporter's size with its annual log GDP. This accommodates the possibility that bigger economies have more or different trade links, for example because they sustain a larger mass of firms. We also take into consideration Heckscher-Ohlin sources of comparative advantage. We allow exporters' log endowments of physical capital K/L_{jt}, human capital H/L_{jt} and natural resources per capita N/L_{jt} to enter the regression, as well as their interactions with sectors' respective factor intensities k_s, h_s and n_s. The main effects of these sector characteristics are subsumed by the sector dummies. Finally, we ensure that our estimates capture the role of financial development as opposed to overall economic development. We do so by controlling for exporters' log GDP per capita, as well as its interactions with both $ExtFin_s$ and $Tang_s$. Note that all country-level variables in X_{jst} are time-variant.

4 Data

Our empirical analysis requires five pieces of information. First, we obtain bilateral trade flows for 164 exporting and 175 importing countries over the 1985-1995 period from Feenstra's *World Trade Database*. These data are available at the 4-digit SITC Rev. 2 industry level, which we aggregate up to the 3-digit ISIC level to merge with various industry characteristics of interest. This aggregation relies on concordance tables provided by Haveman.

Second, we capture exporters' level of financial development with a standard measure in the literature: the amount of credit extended by deposit money banks and other financial institutions to the private sector, as a share of GDP. This outcome-based variable reflects the actual availability of financial resources in an economy, and is commonly believed to gauge the depth and breadth of the financial system. It is available for over 150 nations from Beck et al. (2000) and varies substantially both in the cross-section and over time. In our sample, it has an average of 0.414 and standard deviation of 0.364. In robustness

checks, we also consider indicators of the underlying institutional environment and its ability to sustain financial contracts. We discuss these alternative measures in Section 5.4.

Third, we employ two widely-used measures of sectors' financial vulnerability that correspond to the concepts of d_s and t_s in the model. External finance dependence is the share of capital expenditures not financed by internal cash flows from operations. It signals producers' need for outside funding so that they can meet up-front expenditures that have to be incurred before revenues are realized. Asset tangibility is computed as net property, plant and equipment, as a share of total book-value assets. It identifies producers' ability to raise external finance by pledging hard, collateralizable assets.

These two variables are meant to capture inherent characteristics of the manufacturing process that are largely exogenous from the perspective of individual firms. Consistent with this, they vary significantly more across industries than across companies within an industry. Following best practice in the literature, we adopt measures based on data for all publicly listed US companies in Compustat from Braun (2003). These are available for 27 3-digit ISIC manufacturing industries.[6] The mean (standard deviation) of external finance dependence and asset tangibility are 0.242 (0.330) and 0.298 (0.139), respectively. Both of their effects can be analyzed as they are only weakly correlated at 0.010. Manova (2007) and Manova et al. (2009) provide further justification for the use of these proxies.

Fourth, we examine a series of importer characteristics that determine countries' attractiveness to potential exporters. We measure market size using data on GDP from the *Penn World Tables 6.1* (PWT). Alternatively, we gauge aggregate consumer demand with the sum of net imports and domestic output by sector from UNIDO (in international dollars in 1996 constant prices).

Since trade costs are not readily observed directly, we examine a variety of proxies proposed in the prior literature.[7] We use bilateral distance from CEPII as a correlate of transportation costs. We also employ estimates of the regulation costs of exporting and importing from the World Bank *Doing Business Report* (DB). These include the number of days, number of documents, and nominal cost (per shipping container) required for a cross-border transaction. Separately, the World Bank collects survey data on trade facilitation and calculates a Logistics Performance Index (LPI), based on 6 different indicators.[8,9] Finally, the ESCAP-World Bank Trade Cost Database provides an index of comprehensive trade costs and decomposes it into its tariff and non-tariff components.[10] All of these trade cost measures are country characteristics that do not vary over time.

Lastly, we require a number of control variables. GDP per capita is accessible from PWT. Economies' endowments of physical and human capital per capita come from Caselli (2005). The World Bank's *Expanding the Measure of Wealth* gives estimates of natural resource endowments, which we translate into per-capita terms by dividing by population size from PWT. Sectors' physical capital, human capital, and natural resource intensities are from Braun (2003). These control variables are jointly available for 78 export countries, which constitute the core sample for our empirical analysis.

[6] The measures are calculated as the median values across all firms in a given industry, after first averaging these firm values over the 1986-1995 period.

[7] See Novy (2013) for a short summary.

[8] Specifically, these 6 components are: (1) the efficiency of customs and border management clearance; (2) the quality of trade and transport infrastructure; (3) the ease of arranging competitively priced shipments; (4) the competence and quality of logistics services; (5) the ability to track and trace consignments; and (6) the frequency with which shipments reach consignees within scheduled or expected delivery times.

[9] The year closest to our panel for which DB and LPI data are available is 2007. While these costs may change over time, they arguably reflect the underlying institutional environment which is slow-moving. The cross-sectional variation and ranking across nations is thus relatively stable. For example, the correlation between the values in 2007 and 2012 is in the range of 0.77 and 0.90 for the various DB measures and the LPI.

[10] See Arvis et al. (2013) for more details on these data.

Table 1: Top and Bottom Importers

Country	Total imports (in millions)	Average number of partners	GDP (in millions)	GDP per capita (in thousands)	DB trade cost index
1. USA	459	94.6	6,530	26.1	9.2
2. Germany	268	81.9	1,540	19.4	7.4
3. France	177	80.9	1,110	19.1	11.5
4. Great Britain	171	89.3	1,030	17.9	8.9
5. Japan	136	65.0	2,620	21.2	9.9
...					
103. Sierra Leone	0.156	15.7	4.57	1.14	23.3
104. Burundi	0.137	11.9	4.34	0.80	60.9
105. Central African Republic	0.122	10.8	3.91	1.34	74.1
106. Chad	0.114	7.8	5.73	0.99	79.7
107. Equatorial Guinea	0.063	6.6	0.50	1.43	28.3

Notes: Total imports, GDP, and GDP per capita are measured in international dollars in 1996 constant prices. Average number of partners refers to the mean number of partners across sectors where imports are positive. Mean values over the period 1985-1995 given for the first four columns, values in 2007 for the last.

4.1 A first glance at the data

As a prelude to the rigorous econometric analysis, we first present some suggestive descriptive patterns broadly in line with the theory's predictions. In particular, we tabulate summary statistics for the top and bottom exporters and importers in the sample. For each nation, we record its total exports and imports. We also count the number of destinations it exports to and the number of origin countries it imports from (averaged across sectors). Tables 1 and 2 show averages for the 1985-1995 period, but qualitatively similar patterns hold in any one year. Given our focus on the role of financial development, we concentrate on a common set of 107 economies with data both on GDP and private credit.[11]

The five biggest importers in the sample are the US, Germany, France, the United Kingdom, and Japan, in that order. The five destinations with the lowest import flows are Equatorial Guinea, Chad, the Central African Republic, Burundi, and Sierra Leone. The contrasts between these two sets of countries are striking: The largest importers receive shipments worth 4 orders of magnitude more than the smallest ones. While the top importers purchase goods from 65-95 countries, the bottom five source products from 6-16 suppliers only. Moreover, these outcomes appear strongly correlated with key determinants of the pecking order of destinations in our model (Appendix Table A.2). Leading importers are significantly larger and richer economies, as evidenced by their GDP and per capita income. They also tend to have markedly lower trade costs. For the purposes of this table, we proxy the latter with an overall index of the DB regulation cost variables. We construct it by first normalizing each of the three components to a number between 0 and 100, and then taking the unweighted average.

We next turn to the most and least active exporters in the data (Table 2). The top five importers are also the top five exporters in the world during this period, with a slightly reordered ranking. Their cross-border sales dramatically exceed those of the bottom five exporters (Burundi, Rwanda, Equatorial Guinea, the Central African Republic, and Guinea-Bissau) by 5 orders of magnitude. While the largest exporters service 121-146 economies, the smallest enter only 2-4 foreign markets. Consistent with our theory, exporters' level of financial development is highly correlated with their choice of trade partners (Appendix Table A.2). Private credit is about 10 times more accessible in the leading exporters, indicating deeper and more effective capital markets. Looking across exporters' destination countries, the biggest markets served are quite comparable and vary between 1.4 and 6.5 trillion USD in size. By contrast, the smallest markets penetrated differ tremendously: Their GDP is on average some 100 times

[11] We first count the number of trade partners in the full sample of 164 exporting and 175 importing countries in the raw trade data. We then report the top and bottom trading countries among the 107 nations in our sample.

Table 2: Top and Bottom Exporters

Country	Total exports (in millions)	Average number of partners	Private credit	Maximum destination GDP (in millions)	10th percentile destination GDP (in millions)
1. USA	351	130.0	0.91	2,690	4.93
2. Germany	349	141.3	0.93	6,534	4.68
3. Japan	302	121.0	1.63	6,534	7.50
4. France	178	139.5	0.86	6,534	4.22
5. Great Britain	160	146.1	0.95	6,534	4.23
...					
103. Guinea-Bissau	0.025	4.3	0.03	2,544	657
104. Central Africa Republic	0.020	3.4	0.07	2,044	477
105. Equatorial Guinea	0.015	2.4	0.18	1,362	682
106. Rwanda	0.008	3.3	0.09	3,027	719
107. Burundi	0.007	3.0	0.09	1,641	524

Notes: Total exports and GDP are measured in international dollars in 1996 constant prices. Average # of partners refers to the mean number of partners across sectors where exports are positive. Private credit is the ratio of the amount of private credit by deposit money banks and other financial institutions to GDP. Mean values over the period 1985-1995 given.

lower for the top exporters (roughly 4 vs 700 million USD).

Note also that the largest buyer Germany, France, the United Kingdom, and Japan trade with is the same country (the US), as implied by a strictly size-driven pecking order in our model. Although the bottom exporters do not exhibit this consistency, they generally still tap into some of the biggest economies in the world. In fact, they sell only to relatively large destinations, while top exporters are also able to access smaller markets. This can be gauged from the gap between the values in the last two columns.

When we look across an exporter's destination countries, we focus on the importer at the 10th percentile of the distribution instead of at the absolute minimum to guard against idiosyncrasies in the data. Our model examines firms as monopolistic competitors in a static environment. In reality, there could be temporary fluctuations in conditions that may influence suppliers' choice of locations to sell in. For instance, price and demand shocks could alter the relative attractiveness of different markets. In addition, firms might face uncertainty about their products' consumer appeal and first experiment in some markets with limited sales levels before deciding whether to scale up or pull out from that market. These factors are more likely to affect export entry into marginal destinations around the cut-off minimum market potential; they are by contrast less likely to influence export entry into large and established markets with known high potential. To address these concerns, we use the 10th percentile and the maximum values of market potential across an exporter's trade partners. Our results are however not sensitive to this choice.

Overall, these descriptive statistics provide preliminary evidence consistent with market size and trade costs shaping the relative attractiveness of different destinations. In addition, countries' level of financial development appears closely related to their total exports, number of export markets, and ability to go further down the pecking order of destinations.

5 Results

We next evaluate econometrically the impact of financial development on countries' choice of trade partners. We organize the analysis into three steps that correspond to different ways of ranking the desirability of export destinations. We first consider a pecking order of importers based exclusively on market size, and ignore cross-country differences in trade costs. We then study the opposite and

complementary case, in which only trade costs matter, while market size plays no role. Finally, we take an integrated approach and develop summary statistics of market potential that incorporate information on both size and costs.[12]

Implicit in our study is that credit conditions affect the level of countries' exports and their number of trade partners. For completeness, in Appendix Table A.3 we reproduce results from Manova (2007) confirming that this is indeed the case.[13] As argued, financially advanced economies indeed export relatively more in sectors more reliant on external capital and in sectors more intensive in intangible assets than in less financially vulnerable sectors. Countries with stronger financial systems also ship to more destinations in such industries. These patterns hold in a baseline regression with only the exporter's GDP as a control, as well as when we condition on the full set of control variables from the specifications below.

5.1 A pecking order of market sizes

We first evaluate how market size influences the pecking order of export destinations and if financial development affects how far down this pecking order exporting countries reach. We use real GDP as our main measure of market size, since it is the conceptual counterpart to aggregate spending Y_i in the model. For each exporter j, we rank its trade partners in sector s (TP_{jst}) by size, and record the log GDP of its largest importer, $\max_{i \in TP_{jst}} GDP_{it}$. We do this separately for each year in the panel to allow for changes in economic conditions that affect destinations' attractiveness. Similarly, we note the log GDP of the destination at the 10th percentile of the distribution, our proxy for $\min_{i \in TP_{jst}} GDP_{it}$ for reasons outlined above. Using these two variables, we estimate specifications (3.1), (3.2), and (3.3).

The results in Panel A of Table 3 lend strong support to our model's predictions. We find no systematic variation in the market size of exporters' largest trade partners across exporters at different levels of financial development and across sectors at different level of financial vulnerability (Column 1). By contrast, credit conditions are an important driver of the size of the smallest market that exporters choose to service (Column 2). Financially advanced economies are able to penetrate smaller destinations than financially less developed exporters, and this difference is bigger in financially more vulnerable industries. The coefficients on the two interaction terms of interest ($FinDev_{jt} \times ExtFin_s$ and $FinDev_{jt} \times Tang_s$) are highly statistically significant, both individually and jointly. The last row in the panel reports the p-value from an F-test of $\beta_1 = \beta_2 = 0$, and decisively rejects this null hypothesis at the 0.1% level of confidence.[14]

These effects are also of sizable economic magnitude. Consider a country that undergoes financial reforms and experiences a one-standard deviation increase in its ratio of private credit to GDP (0.364). As a result, this nation will be able to add new export destinations by going further down the pecking order. This effect will vary across industries with their reliance on the financial system. Our findings imply that, holding sectors' asset tangibility fixed, the size of the country's smallest destination will fall by approximately 16.5 percentage points more in a sector that requires a lot of external capital (90th percentile of the distribution) relative to a sector with limited need for outside finance (10th

[12] In our partial-equilibrium model, the aggregate price index in a destination country also affects its position along the pecking order. In general equilibrium, however, it too would be a function of market size and trade costs.

[13] Table 5, Panel B, Column 1 in Manova (2007) is identical to Table A.3, Panel A, Column 2 here. The other regression results we report are not exactly the same as those in Manova (2007) because of slight differences in the sample and the control variables included.

[14] In unreported results available on request, we have considered a decomposition of GDP into population and GDP per capita, and found consistent results for both components. While the maximum values of log population and log income do not vary systematically across exporters and sectors, the minimum values do much like aggregate GDP.

Table 3: Market Size

Dependent variable:	PANEL A (log) GDP			PANEL B Ranking of GDP		
	Maximum	10th percentile		Minimum	90th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.250*	-0.150	-0.206	-1.534*	0.235	1.474
	(1.81)	(-0.70)	(-1.16)	(-1.88)	(0.06)	(0.47)
$FinDev_{jt} \times ExtFin_s$	0.044	-0.498***	-0.047	-0.287	10.740***	0.802
	(0.56)	(-3.71)	(-0.37)	(-0.70)	(4.27)	(0.41)
$FinDev_{jt} \times Tang_s$	-0.210	0.809**	0.536*	1.602	-15.985**	-9.973*
	(-0.93)	(2.01)	(1.77)	(1.18)	(-2.13)	(-1.93)
$\#Partners_{jst}$			-0.015***			0.333***
			(-11.93)			(15.68)
R^2	0.28	0.52	0.56	0.12	0.54	0.61
F-test on interaction terms (p)	0.64	<0.01	0.21	0.50	<0.01	0.15
Dependent variable:	PANEL C (log) Aggregate consumption across all sectors			PANEL D (log) Consumption by sector		
	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.256*	-0.149	-0.214	0.349**	-0.056	-0.108
	(1.70)	(-0.47)	(-0.66)	(2.00)	(-0.22)	(-0.42)
$FinDev_{jt} \times ExtFin_s$	0.053	-0.465***	0.054	0.025	-0.338***	0.023
	(0.65)	(-3.35)	(0.44)	(0.34)	(-3.27)	(0.24)
$FinDev_{jt} \times Tang_s$	-0.238	0.930*	0.616	-0.426	0.481	0.263
	(-0.95)	(1.97)	(1.58)	(-1.52)	(1.22)	(0.77)
$\#Partners_{jst}$			-0.017***			-0.012***
			(-11.73)			(-8.15)
R^2	0.23	0.45	0.49	0.79	0.59	0.61
F-test on interaction terms (p)	0.64	<0.01	0.24	0.24	<0.01	0.74

Notes: The dependent variable refers to the value across the distribution of export partners. The measure of financial development is private credit. The unit of observation is at the exporter-sector-year level. The sample is restricted to observations with more than 5 trade partners. The number of observations (number of exporters) is 16,332 (78) in Panels A to C and 15,688 (78) in Panel D. All regressions include a constant and controls as listed in the text. Standard errors are clustered at the exporter level. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.

percentile). This number is 10.1 percentage points when we compare sectors with little (10th percentile) and substantial (90th percentile) endowments of tangible assets. If we take both sector characteristics into account, the spread between the industries that benefit the most and the least would be 32.0 percentage points.

Column 3 confirms that there is an intimate link between the number of countries' export destinations $\#TP_{jst}$ and the size of their smallest trade partner. When we include $\#TP_{jst}$ in the regression for $\min_{i \in TP_{jst}} GDP_{it}$, the point estimates are substantially reduced in size and significance. We can no longer reject the null hypothesis that the interaction term coefficients are jointly zero. (However, $FinDev_{jt} \times Tang_s$ still enters weakly significantly at 10%, albeit with a much smaller coefficient.) As expected, $\#TP_{jst}$ receives a negative and very significant coefficient.

There are two ways to view these results through the lens of the theory. Strictly interpreted, our model implies that each exporter observes the same pecking order in every sector with respect to destinations' aggregate expenditure. Our findings are broadly consistent with this implication. To the extent that sector-level consumer preferences vary across importing countries (for example because of non-homothetic preferences or home bias), the ranking of destinations might not be exactly the same across sectors. This could contribute to the residual effect of $FinDev_{jt} \times Tang_s$ even after controlling for trade partner intensity in Column 3. Separately, the pecking order is a function of both market size and trade costs in the model. Since we consider only the former here, potential differences in trade costs across country pairs and sectors remain unaccounted for.

To shed more light on the stability of the size-based pecking order across exporters and sectors, we next pursue a slightly different exercise. We now rank all countries in the world based on their GDP, year by year. Since there are 119 importing nations in our sample, the biggest one receives rank 1, and the smallest - rank 119. For each exporter, we note the GDP rank of its trade partners, by sector. If all countries follow the same pecking order, they will all be able to export to the single largest market in the world. The minimum destination rank observed for each exporter-sector pair, $\min_{i \in TP_{jst}} GDPrank_{it}$, will thus be 1. Moreover, an exporter selling to $\#TP_{jst}$ countries in sector s will record a maximum destination rank exactly equal to $\max_{i \in TP_{jst}} GDPrank_{it} = \#TP_{jst}$, and will export to all countries with rank lower than $\#TP_{jst}$. Conversely, when the pecking order is not stable across exporting countries and industries, there will be gaps in this rank sequence and $\max_{i \in TP_{jst}} GDPrank_{it} > \#TP_{jst}$ will mechanically hold.

In line with these predictions, in Panel B we find that $\min_{i \in TP_{jst}} GDPrank_{it}$ is independent of exporters' financial conditions and sectors' financial vulnerability. By contrast, $\max_{i \in TP_{jst}} GDPrank_{it}$ varies systematically in the data such that financially advanced economies go further down the global hierarchy of destinations in financially dependent industries.[15] (The signs of the coefficients are opposite to those in Panel A since large economies receive a lower rank.) Once again, controlling for the number of trade partners substantially reduces the point estimates on the interaction terms: They are no longer jointly significant and the coefficient on $FinDev_{jt} \times ExtFin_s$ cannot be distinguished from 0, but that on $FinDev_{jt} \times Tang_s$ remains marginally significant at 10%. As anticipated, the number of partners now enters positively, with a p-value below 0.1%. These results suggest that the size-based pecking order of export markets is relatively stable, if imperfect across exporters and sectors.

Recall that in the model, market size affects firms' cross-border sales via aggregate consumer demand Y_i. With balanced trade, a nation's GDP exactly equals total expenditure as an accounting identity. In practice, however, the two often differ since countries run trade deficits or surpluses. In the rest of Table 3 we confirm that our results hold, and in fact become sharper, when we proxy market size with a direct measure of consumption instead of GDP. We impute total consumption as the sum of domestic production (available from UNIDO) and net imports (from the trade data).

In Panel C, we repeat the analysis from Panel A using the log highest and lowest (10th percentile) levels of aggregate consumption observed across a countries' trade partners as outcome variables. As earlier, we find that the maximum value does not vary systematically across exporters and sectors. By contrast, the smallest consumer market that financially advanced exporters serve is significantly smaller in industries that require more external capital or feature fewer tangible assets. Moreover, this pattern is now completely driven by the number of destinations and both interaction terms lose significance when we control for the latter. Similar results obtain in Panel D when we instead consider consumption by destination and sector, constructed from sector-level production and trade data. This suggests that a consumption-based hierarchy of importers is broadly stable across exporters, and more so than a GDP ranking.

5.2 A pecking order of trade costs

The results in the previous subsection lend strong support to our prediction that financial development importantly affects countries' choice of trade partners in terms of market size. We next study the extent to which this is also true of export costs, the second determinant of the pecking order of destinations in

[15] Consistently with our use of the 10th percentile of market size instead of the minimum, we use the 90th percentile of the size rank instead of the maximum.

our model.

Since trade costs are not directly observable, we employ a few standard proxies in the literature. We first consider bilateral distance $Dist_{ji}$, which is arguably associated with the expense of shipping goods across borders. In this sense it provides an empirical counterpart to the iceberg costs in the model, τ_{ij}. To the extent that transportation entails both fixed and variable costs, distance may also partly capture the destination-specific fixed cost of exporting, f_{ij}. The same would apply if countries that are geographically closer are more likely to be similar along various economic dimensions that reduce the cost of setting up a trade partnership. Proximate nations might, for example, share common business practices, similar legal frameworks, and comparable consumer preferences. Such factors could facilitate the establishment of new commercial links, ease the maintenance of distribution networks, make researching market potential cheaper, and reduce the need for customizing products and advertising to local tastes.

We therefore do not take a stand as to whether distance picks up the role of τ_{ij} or f_{ij} in the model. Note also that while our measures of market size above varied by importer and year, distance is a time-invariant characteristic of each exporter-importer pair. It is therefore not associated with a uniform pecking order across exporters (Mexico is closer to US exporters than Germany, but the converse is true for French exporters).

In Panel A of Table 4, we study whether financial development allows countries to go further down the pecking order of export destinations in terms of bilateral distance. According to our model, exporters will access all markets closer than a maximum distance, but this cut-off will vary across exporters and sectors. To test this prediction, we record the shortest log distance at which countries export in each year and industry, $\min_{i \in TP_{jst}} Dist_{ji}$. As expected, we find that this value does not vary systematically with credit conditions. Instead, the longest distance at which countries ship their goods, $\max_{i \in TP_{jst}} Dist_{ji}$, rises with $FinDev_{jt} \times ExtFin_s$. This implies that stronger financial markets enable firms to fund higher trade costs, particularly in sectors that demand more external capital. As anticipated, this effect becomes insignificant when we control for $\#TP_{jst}$, and so it can be attributed to an expansion into more markets: The expected positive sign on $\#TP_{jst}$ indicates that having more export partners is associated with reaching farther destinations. The insignificant coefficient on $FinDev_{jt} \times Tang_s$ in Column 2, however, suggests that financial development does not affect the choice of trade partners differentially across sectors at different levels of asset tangibility.

We next examine a different proxy for trade costs: the regulatory barriers that companies face if they wish to export. In Panel A of Table 5, we consider the log nominal cost (per shipping container) required for a cross-border sale to country i, $Cost_i$. The lowest shipping cost observed across country j's destinations does not appear to vary systematically with j's credit conditions (Column 1). By contrast, the highest $Cost_i$ rises with j's private credit in sectors with high reliance on external capital and few collateralizable assets (Column 2). In other words, financially developed exporters are able to penetrate foreign markets that are more expensive to access. As expected, this pattern can be explained with the fact that j has more trade partners in such sectors (Column 3).

We find similar results when we instead consider the log number of days it takes for customs transactions to clear (Panel B in the same table). On the other hand, the log number of import documents needed does not appear to generate a pecking order of destinations (Panel C). This suggests that shipping and customs delays increase exporters' working capital needs because they force suppliers to stretch their cash flow cycle and maintain bigger inventories. By contrast, filling out forms does not have such implications for companies' balance sheets. Moreover, the cross-sectional dispersion in the time and monetary cost of exporting significantly exceeds that in paperwork (coefficients of variation of 0.67 and 0.61 vs. 0.35).

Table 4: Trade Costs

Dependent variable:	PANEL A (log) Bilateral distance			PANEL B DB trade cost index		
	Minimum	90th percentile		Minimum	90th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	-0.055	-0.089*	-0.079	0.004	0.014	0.019
	(-0.60)	(-1.84)	(-1.59)	(1.29)	(0.71)	(1.11)
$FinDev_{jt} \times ExtFin_s$	-0.011	0.082*	-0.003	0.001	0.035**	-0.006
	(-0.33)	(1.85)	(-0.07)	(0.47)	(2.54)	(-0.46)
$FinDev_{jt} \times Tang_s$	-0.119	0.059	0.111	-0.003	-0.011	0.014
	(-1.50)	(0.63)	(1.18)	(-0.50)	(-0.48)	(0.75)
$\#Partners_{jst}$			0.003***			0.001***
			(5.92)			(13.04)
R^2	0.79	0.48	0.50	0.46	0.52	0.56
F-test on interaction terms (p)	0.32	0.15	0.50	0.76	0.04	0.74
Dependent variable:	PANEL C Logistics Performance Index			PANEL D ESCAP-WB trade costs		
	Maximum	10th percentile		Minimum	90th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	-0.009	-0.044	-0.056	-1.784	-8.325	-3.640
	(-0.43)	(-0.85)	(-1.20)	(-0.55)	(-0.87)	(-0.43)
$FinDev_{jt} \times ExtFin_s$	0.001	-0.047	0.052	0.645	30.099**	-10.902
	(0.04)	(-1.23)	(1.44)	(1.08)	(2.44)	(-1.33)
$FinDev_{jt} \times Tang_s$	0.024	0.138*	0.079	-2.562	-24.775	0.410
	(0.55)	(1.71)	(1.12)	(-1.30)	(-1.22)	(0.03)
$\#Partners_{jst}$			-0.003***			1.382***
			(-8.34)			(18.13)
R^2	0.27	0.46	0.48	0.80	0.49	0.59
F-test on interaction terms (p)	0.86	0.15	0.15	0.26	0.03	0.40

Notes: The dependent variable refers to the value across the distribution of export partners. The measure of financial development is private credit. The unit of observation is at the exporter-sector-year level. The sample is restricted to observations with more than 5 trade partners. The number of observations (number of exporters) is 16,334 (78) in Panels A to C and 16,070 (75) in Panel D. All regressions include a constant and controls as listed in the text. Standard errors are clustered at the exporter level. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.

For completeness, in Panel B of Table 4 we also report results for the aggregate index that we construct as the average of the three regulatory barriers. This behaves in much the same way as the cost and duration of shipping.[16]

We next exploit another measure of trade facilitation: destination countries' Logistics Performance Index, LPI_i. Higher values for this index imply more reliable, efficient and expedient customs, shipment and overall logistics. This variable captures other dimensions of trade costs not present in the previous indicators. For example, its correlation with the trade cost index from Panel B is -0.64.

In Panel C, we examine the maximum and 10th percentile levels of LPI_i across a country's trade partners. Consistent with our hypothesis, we find that all exporters service attractive locations with high LPI_i. However, exporters with stronger financial systems also enter markets with more challenging logistics: The lowest LPI_i they tolerate falls with financial development faster in financially vulnerable industries. This time, however, only $FinDevt_{jt} \times Tang_s$ but not $FinDevt_{jt} \times ExtFin_s$ is precisely estimated. Once we control for the number of destinations, both interactions become predictably insignificant.

The various regulatory costs of trade we have employed reflect the environment in the importing country only. In robustness checks available on request, we have alternatively taken the average of regulatory barriers in both trade partners. Encouragingly, these specifications deliver very similar conclusions

[16]The World Bank *Doing Business* report also provides statistics on the monetary and non-monetary costs of setting up a business in each country. In robustness checks, we have obtained similar results with these measures, though they are arguably weaker and less direct indicators of the costs of international trade.

Table 5: World Bank *Doing Business* Costs to Import

Dependent variable:	PANEL A (log) Nominal cost (USD per container)			PANEL B (log) # of days		
	Minimum	90th percentile		Minimum	90th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.047*	0.057	0.072*	-0.018	0.082	0.101*
	(1.90)	(1.19)	(1.95)	(-0.59)	(1.19)	(1.69)
$FinDev_{jt} \times ExtFin_s$	0.019	0.111***	-0.010	0.006	0.117**	-0.034
	(0.74)	(2.96)	(-0.32)	(0.25)	(2.07)	(-0.69)
$FinDev_{jt} \times Tang_s$	-0.046	-0.112	-0.038	-7.9×10^{-5}	-0.127	-0.036
	(-1.23)	(-1.49)	(-0.76)	(-0.002)	(-1.48)	(-0.49)
$\#Partners_{jst}$			0.004***			0.005***
			(13.63)			(11.19)
R^2	0.60	0.51	0.57	0.43	0.48	0.52
F-test on interaction terms (p)	0.28	0.01	0.72	0.97	0.09	0.65

Dependent variable:	PANEL C (log) # of documents		
	Minimum	90th percentile	
	(1)	(2)	(3)
$FinDev_{jt}$	0.017	0.012	0.017
	(0.81)	(0.45)	(0.66)
$FinDev_{jt} \times ExtFin_s$	0.007	-0.001	-0.041**
	(0.36)	(-0.06)	(-2.42)
$FinDev_{jt} \times Tang_s$	0.006	-0.048	-0.024
	(0.14)	(-1.22)	(-0.61)
$\#Partners_{jst}$			0.001***
			(9.25)
R^2	0.44	0.37	0.39
F-test on interaction terms (p)	0.91	0.47	0.04

Notes: The dependent variable refers to the value across the distribution of export partners. The measure of financial development is private credit. The unit of observation is at the exporter-sector-year level. The sample is restricted to observations with more than 5 trade partners. The number of observations (number of exporters) is 16,334 (78) exporters in all panels. All regressions include a constant and controls as listed in the text. Standard errors are clustered at the exporter level. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.

and lend further support to our interpretation.

Lastly, we make use of the ESCAP-World Bank data on comprehensive trade costs in Panel D. It provides annual ad-valorem equivalent values for the cost of cross-border sales relative to domestic transactions.[17] The main advantage of these cost measures is that they are bilateral and broken down into tariff and non-tariff components. On the other hand, they may not be ideally suited to our analysis to the extent that domestic trade costs differ across countries. This caveat notwithstanding, results in Panel D once again indicate that exporting in sectors more reliant on external capital benefits more from deeper capital markets.

In summary, it appears that no single measure of trade barriers uniquely characterizes the pecking order of exporting. Taken collectively, however, the evidence points to financial frictions and trade costs jointly affecting the location of foreign sales as predicted by theory.

5.3 A pecking order of market potential

Through the lens of our model, the above results suggest that multiple factors govern firms' choice of export markets. We next propose that these determinants can be jointly captured with summary

[17]The data are available separately for manufacturing and agriculture, and so we use the former. Since data are missing for various years and countries, we compute an average for each country based on an interpolated series of trade costs. We obtain qualitatively similar results if we simply take country-specific averages without interpolation. Out of all bilateral country pairs in our sample, the mean annual coefficient of variation is 0.15. At the 90th percentile, the coefficient of variation is 0.28, and at the 99th, it is 0.46.

Table 6: Market Potential

Dependent variable:	PANEL A (log) GDP/Bilateral distance			PANEL B (log) # of exporters by sector		
	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.282*	-0.072	-0.150	0.032	0.008	-0.012
	(1.71)	(-0.36)	(-1.10)	(1.49)	(0.09)	(-0.15)
$FinDev_{jt} \times ExtFin_s$	0.013	-0.540***	0.091	0.008	-0.150**	0.003
	(0.33)	(-3.01)	(0.66)	(0.54)	(-2.46)	(0.06)
$FinDev_{jt} \times Tang_s$	-0.060	0.815*	0.433	-0.051	0.128	0.035
	(-0.49)	(1.89)	(1.47)	(-1.61)	(0.93)	(0.29)
$\#Partners_{jst}$			-0.021***			-0.005***
			(-16.14)			(-10.49)
R^2	0.83	0.60	0.68	0.87	0.71	0.73
F-test on interaction terms (p)	0.89	0.01	0.18	0.28	0.05	0.96
Dependent variable:	PANEL C (log) Average # of exporters across sectors			PANEL D Fixed effect coefficient from auxiliary probit regression		
	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.035	-0.026	-0.044	0.059	-0.038	-0.059
	(1.46)	(-0.39)	(-0.72)	(1.48)	(-0.49)	(-0.85)
$FinDev_{jt} \times ExtFin_s$	0.007	-0.191***	-0.045	0.011	-0.201***	-0.033
	(0.52)	(-4.07)	(-1.07)	(0.48)	(-3.84)	(-0.69)
$FinDev_{jt} \times Tang_s$	-0.028	0.218**	0.130*	-0.050	0.241**	0.140*
	(-0.77)	(2.41)	(1.94)	(-0.79)	(2.34)	(1.85)
$\#Partners_{jst}$			-0.005***			-0.006***
			(-12.33)			(-12.69)
R^2	0.17	0.54	0.59	0.88	0.82	0.84
F-test on interaction terms (p)	0.74	<0.01	0.12	0.73	<0.01	0.17

Notes: The dependent variable refers to the value across the distribution of export partners. Average # of exporters refers to the mean number of partners across sectors where imports are positive. The auxiliary regression of Panel D is discussed in the text. The measure of financial development is private credit. The unit of observation is at the exporter-sector-year level. The sample is restricted to observations with more than 5 trade partners. The number of observations (number of exporters) is 16,332 (78) in Panels A to C and 16,334 (78) in Panel D. All regressions include a constant and controls as listed in the text. Standard errors are clustered at the exporter level. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.

measures of market potential, which indicate the relative desirability of different destinations. In this section, we develop three such summary measures. We also show that financial development affects exporters' set of trade partners in line with the pecking order implied by these measures.

We first consider a proxy for market potential that combines the information about consumer demand and trade costs contained in GDP and bilateral distance: the log ratio of GDP to distance. This measure is meant to concisely reflect the basic idea that bigger and more proximate destinations are more attractive. Although it imposes a specific functional form, we have confirmed that similar results obtain when we adopt alternative formulations.[18] Note that market size is common across all sellers to a given economy, while distance is country-pair specific. The GDP-to-distance ratio thus allows the relative appeal of an importer to depend on the identity of the exporter. For example, Canada may be a profitable and proximate market for the US, but not for other exporters such as Korea, for whom Japan might be preferable.

Using this measure of market potential, we once again record its maximum and minimum (10th percentile) value across all destinations that exporter j services in sector s. In Panel A of Table 6, we re-estimate our baseline specifications with these values as outcome variables. We find strong support for the predictions of the model. As expected, all countries are able to access the markets with the greatest

[18]For example, the residuals from regressing (log) importers' GDP on (log) bilateral distance as the only regressor can be obtained and used to proxy market potential.

export potential, but financially advanced economies go further down their hierarchy of destinations in financially vulnerable industries. Moreover, both interaction terms are now highly statistically significant in Column 2, but become insignificant when we control for the number of trade partners in Column 3. Given the patterns in Panel A of Tables 3 and 4, this suggests that taking both market size and trade costs into account indeed provides a much tighter fit between theory and data. This is not surprising, since the correlation between GDP and bilateral distance is only 0.06 for the average exporter, and it is the combination of both country characteristics that determines the pecking order of exporting.

We next take an agnostic approach to what exact factors affect the relative attractiveness of different foreign markets. To do so, we rely on the principle of revealed preferences: The more popular a given destination is, the more profitable it must be. We thus count the number of countries exporting to importer i, $\#TP_{ist}$. We obtain this count separately for each sector s since trade conditions (such as demand and cost structure) could vary not only across destinations, but also across sectors. On the other hand, by construction $\#TP_{ist}$ imposes a hierarchy of markets that is shared by all exporters.

This indicator of market potential delivers more evidence strongly supportive of our model. In Panel B, we replace the outcome variable with the log maximum and minimum (10th percentile) values of $\#TP_{ist}$ across the countries to which j exports to in sector s. In Panel C, we instead use the log number of importer i's trade partners averaged across sectors s. In both cases we find patterns consistent with financial development allowing exporters to go further down the pecking order of destinations in financially vulnerable industries.

Recall from the model that whether bilateral trade occurs depends on both characteristics of the seller (productivity distribution, wages, trade costs, financial development) and of the buyer (aggregate demand, trade costs, price index). The number of countries j that sell to i thus reflects how the combination of exporter and importer factors affect the probability of a trade link between each j and i. To isolate the contribution of importer-specific determinants without specifying their precise nature, we finally estimate an auxiliary probit regression with importer-fixed effects and examine the relative magnitudes of their coefficients.

Formally, let T_{ijst} be a binary variable equal to 1 if j exports to i in sector s in year t, and zero otherwise. Assuming a normally distributed error term, the conditional probability of this trade link is:

$$\Pr(T_{ijst} = 1) = \Phi(\delta_{jt} + \delta_{it} + \delta_{st}) \tag{5.1}$$

where Φ is the c.d.f. of the standard normal distribution, and δ_{jt}, δ_{it} and δ_{st} indicate exporter-year, importer-year and sector-year fixed effects.[19] The coefficients δ_{it} give a summary measure of the ease and attractiveness of entering market i in year t. Larger positive coefficients on δ_{it} are associated with more popular destinations. We perform the estimation separately for each year since economic conditions may vary over time. Using our estimates of δ_{it} in Panel D, we record highly statistically and economically significant results in line with the model's predictions.

5.4 Robustness

We conclude by showing that our empirical findings survive a series of specification checks that reinforce our conclusions. We perform these robustness tests using the fixed effects from the auxiliary

[19]We estimate this regression on the full sample of 164 exporting and 175 importing nations in the trade dataset, since no control variables are required. This arguably provides the most complete picture of global trade patterns and their underlying determinants. Very similar results hold if we instead restrict our attention to the 78 export countries with sufficient data to enter our baseline regressions above.

Table 7: Alternative Measures of Financial Development

	PANEL A			PANEL B		
	Stock market turnover ratio			Stock market value traded-to-GDP		
Dependent variable:	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	-0.004	-0.041*	-0.018	-0.0003	-0.030	0.011
	(-0.32)	(-1.78)	(-0.76)	(-0.02)	(-0.59)	(0.28)
$FinDev_{jt} \times ExtFin_s$	-0.021**	-0.125***	-0.027	-0.010	-0.094*	0.017
	(-2.31)	(-5.36)	(-1.23)	(-0.92)	(-1.88)	(0.40)
$FinDev_{jt} \times Tang_s$	0.034	0.182**	0.054	-0.010	0.206*	0.010
	(0.81)	(2.65)	(0.78)	(-0.25)	(1.70)	(0.10)
$\#Partners_{jst}$			-0.005***			-0.005***
			(-13.08)			(-13.31)
R^2	0.92	0.85	0.87	0.92	0.85	0.87
F-test on interaction terms (p)	0.08	<0.01	0.34	0.50	0.12	0.86
	PANEL C			PANEL D		
	Risk of contract repudiation			Risk of expropriation		
Dependent variable:	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_j \times ExtFin_s$	-0.002	-0.065***	-0.010	-0.005	-0.052***	0.0109
	(-0.19)	(-3.91)	(-0.73)	(-0.58)	(-2.82)	(0.71)
$FinDev_j \times Tang_s$	-0.033	0.078*	0.016	-0.001	0.111**	0.055
	(-0.95)	(1.74)	(0.47)	(-0.03)	(2.03)	(1.23)
$\#Partners_{jst}$			-0.006***			-0.006***
			(-12.74)			(-12.78)
R^2	0.92	0.84	0.87	0.92	0.84	0.87
F-test on interaction terms (p)	0.37	<0.01	0.70	0.70	0.02	0.30
	PANEL E			PANEL F		
	Accounting standards			Private credit (with controls)		
Dependent variable:	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$				0.029	-0.069	-0.073
				(1.37)	(-0.84)	(-1.05)
$FinDev_{jt} \times ExtFin_s$	-0.106*	-0.393**	-0.039	0.019	-0.170**	-0.032
	(-1.73)	(-2.13)	(-0.25)	(0.66)	(-2.62)	(-0.61)
$FinDev_{jt} \times Tang_s$	0.026	0.517	0.150	-0.072	0.322**	0.180**
	(0.11)	(1.52)	(0.40)	(-1.11)	(2.52)	(2.16)
$\#Partners_{jst}$			-0.006***			-0.006***
			(-11.66)			(-12.71)
R^2	0.97	0.88	0.91	0.92	0.85	0.87
F-test on interaction terms (p)	0.22	0.09	0.90	0.50	0.01	0.10

Notes: The dependent variable is the importer fixed effect coefficient from the auxiliary probit regression, and refers to the value across the distribution of export partners. The unit of observation is at the exporter-sector-year level. The sample is restricted to observations with more than 5 trade partners. The number of observations (number of exporters) from Panels A to F are: 12687 (55), 13,224 (56), 12,091 (42), 12,091 (42), 9,962 (34), and 11,821 (42). All regressions include a constant and controls as listed in the text. Standard errors are clustered at the exporter level. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.

Table 8: Specification Checks

Dependent variable:	PANEL A Fixed effect coefficient from auxiliary probit regression			PANEL B Ranking of fixed effect coefficient from auxiliary probit regression		
	90th percentile	Minimum		Minimum	90th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.117**	0.143	0.102	-1.126	2.620	4.216
	(2.04)	(1.19)	(1.07)	(-1.58)	(0.48)	(0.85)
$FinDev_{jt} \times ExtFin_s$	-0.085*	-0.354***	-0.025	-0.283	14.958***	2.182
	(-1.67)	(-5.27)	(-0.36)	(-0.75)	(3.87)	(0.62)
$FinDev_{jt} \times Tang_s$	0.010	0.356**	0.157	0.770	-19.607**	-11.878*
	(0.09)	(2.41)	(1.45)	(0.63)	(-2.36)	(-1.95)
$\#Partners_{jst}$			-0.011***			0.428***
			(-15.93)			(12.44)
R^2	0.84	0.76	0.80	0.09	0.54	0.59
F-test on interaction terms (p)	0.19	<0.01	0.35	0.71	<0.01	0.15
Dependent variable:	PANEL C Fixed effect coefficient from auxiliary logit regression			PANEL D Fixed effect coefficient from auxiliary LPM regression		
	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.085	-0.054	-0.092	0.014	-0.012	-0.016
	(1.21)	(-0.40)	(-0.74)	(1.48)	(-0.71)	(-1.03)
$FinDev_{jt} \times ExtFin_s$	0.020	-0.369***	-0.066	0.002	-0.045***	-0.012
	(0.50)	(-3.81)	(-0.75)	(0.45)	(-4.25)	(-1.22)
$FinDev_{jt} \times Tang_s$	-0.081	0.466**	0.282**	-0.012	0.048**	0.028*
	(-0.69)	(2.43)	(2.02)	(-0.81)	(2.19)	(1.72)
$\#Partners_{jst}$			-0.010***			-0.001***
			(-2.41)			(-12.59)
R^2	0.84	0.79	0.81	0.92	0.88	0.89
F-test on interaction terms (p)	0.78	<0.01	0.12	0.72	<0.01	0.15
Dependent variable:	PANEL E Fixed effect coefficient from auxiliary probit regression (pooled)			PANEL F Fixed effect coefficient from auxiliary probit regression (by sector-year)		
	Maximum	10th percentile		Maximum	10th percentile	
	(1)	(2)	(3)	(1)	(2)	(3)
$FinDev_{jt}$	0.068*	-0.066	-0.086	0.039	-0.016	-0.042
	(1.79)	(-0.95)	(-1.32)	(0.95)	(-0.17)	(-0.49)
$FinDev_{jt} \times ExtFin_s$	0.009	-0.185***	-0.031	0.046	-0.280***	-0.075
	(0.40)	(-3.86)	(-0.70)	(1.41)	(-4.51)	(-1.45)
$FinDev_{jt} \times Tang_s$	-0.047	0.224**	0.131*	-0.086	0.265**	0.140
	(-0.74)	(2.32)	(1.80)	(-1.49)	(2.11)	(1.34)
$\#Partners_{jst}$			-0.005***			-0.007***
			(-11.79)			(-13.78)
R^2	0.15	0.52	0.57	0.90	0.76	0.79
F-test on interaction terms (p)	0.76	<0.01	0.18	0.25	<0.01	0.14

Notes: The dependent variable refers to the value across the distribution of export partners. The measure of financial development is private credit. The unit of observation is at the exporter-sector-year level. The sample is restricted to observations with more than 5 trade partners. The number of observations (number of exporters) is 16,334 (78) in all panels. All regressions include a constant and controls as listed in the text. Standard errors are clustered at the exporter level. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.

probit regression, since they constitute our most agnostic ranking of export destinations by relative market potential. Qualitatively similar patterns hold for the other measures we have employed as well.

Our analysis has relied on the amount of private credit in an economy as a signal of financial market development. In Table 7, we first confirm that other indicators of financial sector activity (also from Beck et al. 2000) deliver comparable findings. In Panel A, we consider the stock market turnover ratio, constructed as the value of total shares traded divided by average real market capitalization. While private credit reflects firms' use of debt financing, value traded captures the availability and liquidity of equity capital. In Column 2, we find that active stock markets help firms in reaching less attractive destinations, and this is especially true in financially vulnerable sectors. (Although there is a statistically significant effect present for the largest market as well in Column 1, it is much weaker in comparison.) Similar patterns emerge in Panel B, where we study stock market value traded as a share of GDP. This suggests that loan access and stock issuance are both relevant to trade activity, presumably because they provide alternative sources of funding.[20]

Private credit and stock market activity are outcome-based measures that reflect the actual availability and use of financial capital in a country. The health of the financial system in turn depends on the underlying institutions that can support financial contracts. For this reason, the prior literature has exploited different institutional measures to gauge the variation in financial development across nations. As Panels C, D, and E demonstrate, our results are qualitatively the same when we follow this strategy. Using the risk of contract repudiation, the risk of expropriation, or accounting standards instead of private credit delivers similar patterns for exporters' choice of trade partners.[21]

We further confirm that our measure of financial development does not simply pick up the strength of the broader institutional environment. To do so, we expand the set of control variables to include the interactions of rule of law and corruption with each of the two sector indicators of financial vulnerability.[22] Panel F shows that this does not affect the coefficients of interest.

Finally, in Table 8 we ensure that our findings are not driven by specific functional form assumptions. In Panel A, we set the outcome variables equal to the 90th percentile and the minimum value of market potential across a country's export destinations, instead of the maximum and the 10th percentile as we have done so far. In Panel B, we study importers' rank based on their fixed effects from the auxiliary probit regression, instead of the value of those fixed effects. In Panels C and D, we estimate the first-stage equation (5.1) either with logit or with a linear probability model, instead of with probit. In Panel E, we run the first-stage probit in the pooled panel for 1985-1995 with year dummies, instead of year-by-year. This imposes time-invariant importer fixed effects, such that the hierarchy of destinations is stable over this period. Conversely, in Panel F we allow the pecking order to vary flexibly both across time and across sectors, by estimating the first stage separately for each sector-year pair.

All of these perturbations leave our results unchanged or stronger. This bolsters our conclusion that countries' level of financial development is an important determinant of their export behavior, and the

[20] In unreported results available on request, we have found that the size of the stock market itself (measured by stock market capitalization divided by GDP) does not affect exporters' trade partners systematically. This is consistent with prior evidence in the literature that stock market activity is a more informative measure of financial sector development than stock market size (c.f. Manova 2008). We have also studied total liquid liabilities (the sum of currency in circulation, demand- and interest-bearing liabilities of all banks and non-bank financial intermediaries), divided by GDP. This ratio provides an alternative index of financial depth and of the overall size of the financial intermediary sector. The results are in line with our other findings, though the coefficients are less precisely estimated.

[21] The indices for the risk of contract repudiation or expropriation range from 0 to 10, while the rating of accounting standards varies in the unit interval. All three measures come from La Porta et al. (1998), and are available for a smaller sample of 34-42 export countries. Since they are time-invariant, the main effect of financial development in these regressions is subsumed by the exporter country fixed effects.

[22] These two measures also come from La Porta et al. (1998), do not vary over time, and are available for 42 of the export countries in the sample.

range of markets they choose to service in particular.

6 Conclusion

This paper establishes that exporters follow a pecking order of destinations, but financial frictions disrupt their decision to enter foreign markets. We develop a theoretical model to illustrate how firms add destinations in decreasing order of profitability, determined by market size and trade costs. Credit constraints limit firms' access to financial resources and prevent them from entering all markets they could serve in the first best. This distortion is alleviated in exporting countries with better-functioning capital markets. As a result, financially advanced economies export to more destinations by going further down the pecking order. This effect is especially pronounced in financially vulnerable sectors characterized by high external financial dependence and low asset tangibility.

We confirm these theoretical predictions empirically by estimating model-consistent relationships between characteristics of exporters' destination countries and credit conditions at home. Using aggregate bilateral trade data, we analyze how the maximum and minimum values of market potential amongst an exporter's trade partners vary with exporters' financial development and sectors' financial vulnerability. In the process, we develop a model-consistent hierarchy of destinations based on observed market size and trade costs, as well as on unobserved market potential inferred from actual trade links. Our findings are robust to a series of specification checks and variable measurement.

Our results imply that financial institutions importantly affect the number and identity of countries' trade partners. This adds to prior evidence in the literature that international trade linkages have a wide range of economic repercussions that crucially depend on countries' characteristics, such as overall level of development and role in global goods and capital markets. A promising direction for future work lies at the intersection of these two lines of research. By improving domestic financial conditions, countries can expand their set of export destinations and foster entry into new locations. A key question for policy makers in developing economies is how this would shape economic growth, volatility, cross-border productivity spillovers, and the transmission of shocks across nations.

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Appendix

Table A.1: Export Destinations, Growth, and Volatility

Dependent variable:	$\Delta Exports$	$\sigma(\Delta Exports)$	$\Delta GDPpc$	$\sigma(\Delta GDPpc)$
	(1)	(2)	(3)	(4)
(log) # of export destinations$_{1985}$	5.985**	-0.149**	1.231*	-0.019*
	(2.60)	(-2.34)	(1.74)	(-1.72)
(log) total exports$_{1985}$	-0.747	-0.010	0.027	-0.001
	(-1.15)	(-0.53)	(0.13)	(-0.33)
R^2	0.19	0.29	0.17	0.24

Notes: $\Delta Exports$ ($GDPpc$) and $\sigma(\Delta Exports)$ ($GDPpc$) refer to the mean and standard deviation of the growth rate of total exports (GDP per capita) between 1986-1995. $N = 90$ exporters in all regressions. All regressions include a constant term. Heteroskedastic robust standard errors used. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.

Table A.2: Correlations for Variables in Tables 1 and 2

PANEL A- Importers					
Variable	1	2	3	4	5
1. Total imports	—				
2. Average # of partners	0.79	—			
3. GDP	0.86	0.60	—		
4. GDP per capita	0.63	0.80	0.40	—	
5. Trade cost index	-0.34	-0.61	-0.22	-0.63	—
PANEL B- Exporters					
Variable	1	2	3	4	5
1. Total exports	—				
2. Average # of partners	0.77	—			
3. Private credit	0.63	0.78	—		
4. Max. of export partners' GDP	0.24	0.61	0.49	—	
5. 10th percentile of distr. of export partners' GDP	-0.29	-0.56	-0.47	-0.63	—

Notes: 104 countries in Panel A, 107 in Panel B.

Table A.3: Financial Development and Trade Activity

	PANEL A		PANEL B	
	At least 1 partner		More than 5 partners	
Dependent variable:	(log) Exports	$\# TP$	(log) Exports	$\# TP$
	(1)	(2)	(1)	(2)
$FinDev_{jt}$	0.150	-2.227	0.229	-3.732
	(0.57)	(-0.46)	(0.70)	(-0.58)
$FinDev_{jt} \times ExtFin_s$	1.564***	41.942***	1.356***	29.872***
	(8.31)	(13.44)	(4.38)	(5.08)
$FinDev_{jt} \times Tang_s$	-1.171*	-17.045**	-1.680**	-18.074
	(-1.89)	(-2.12)	(-2.06)	(-1.53)
Controls	$\log(GDP_{jt})$ and j, s, t fixed effects		$\log(GDP_{jt})$, $K/L, H/L, N/L$, $\log(GDPPC_{jt})$, interactions and j, s, t fixed effects	
R^2	0.82	0.90	0.80	0.88

Notes: $\# TP$ refers to the number of trade partners of the exporter in each sector. The measure of financial development is private credit. The unit of observation is at the exporter-sector-year level. The sample is restricted to observations with at least 1 trade partner in Panel A and more than 5 trade partners in B. The number of observations (number of exporters) is 26,900 (107) in Panel A and 16,334 (78) in Panel B. Panel B controls are the same as those listed in the text. Standard errors are clustered at the exporter level. T-statistics in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level.