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Financial constraint, trust, and export performances: firm-level evidence from Africa

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Abstract
Several existing studies have documented a negative relationship between firm financial constraint and export activities but do not attempt to examine factors that could attenuate this relationship in Africa. In this paper, we examine the effect of financial constraint on exports in Africa and explore how the level of trust in countries where firms are located shapes this relationship. We combine the World Bank Enterprise Surveys with different measures of country-level personal and interpersonal trust computed from the Afrobarometer surveys of 19 African countries. Our results show that financial constraints negatively affect export activities. However, this negative effect is attenuated for firms that are located in trust-intensive societies. These findings are robust to different specifications. Interestingly, we find that small and medium-sized enterprises in Africa are more likely to be affected by financial constraints but also more likely to benefit from a higher level of both personal and interpersonal trust, while for larger firms only interpersonal trust matters.

1. Introduction

Access to finance plays an essential role in international trade. Amiti and Weinstein (2011), for instance, argue that exporters tend to require relatively more financial support than domestic producers for two reasons: there is a longer time-lag between production and the receipt of sales revenue, and exporters do face inherently more credit default risks since it is more difficult to enforce payment across country boundaries. Consistent with this view, an enormous body of literature examining the relationship between financial constraints and international trade exists.[1] While this literature suggests that financial constraints are trade-reducing, there is much less evidence about the factors that could attenuate this effect. Social capital such as trust can be one of the missing puzzles as it has been shown that higher trust levels facilitate access to external financing channels (Bottazzi *et al.*, 2016; Chen *et al.*, 2016; Cruz-García and Peiró-Palomino, 2019; Duarte *et al.*, 2012; Guiso *et al.*, 2004; Hasan and Habib, 2019; Levine *et al.*, 2018; Meng and Yin, 2019; Moro & Fink, 2016; Wu *et al.*, 2014).

In this paper, we contribute to the literature on the relationship between financial constraints and international trade by examining the role of trust. In particular, we examine the effect of financial constraint on firm-level exports and evaluate how the level of trust in countries where firms are located

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[1]For an extensive literature review, see Wagner (2019).

moderates this effect. As defined by Gambetta (1988), trust is a particular level of subjective probability with which an agent or group of agents assesses that another agent or group of agents will perform a particular action. The prevailing view in economics is that trust engenders virtually every economic exchange (Arrow, 1972; Knack and Keefer, 1997), including access to credit. Guiso *et al.* (2004), for instance, argue that credit contracts are trust-intensive contracts since credit is an exchange of money today for a promise to return more money in the future; and such an exchange depends both on the legal enforceability of contracts and the extent to which the credit lender trusts the borrower.

As we explore further in the subsequent section, two potential factors that often make constraints in the credit market to be binding are moral hazard and adverse selection. We argue that firms located in a trust-intensive society would face limited financial constraints because higher trust levels lower moral hazard and adverse selection. Trust reflects the average trustworthiness of people and thus the likelihood that they abide by both formal rules and informal social contracts (Bjørnsko and Méon, 2015). As such, credit lenders would be more willing to lend to borrowers from trust-intensive societies due to a reduced concern over opportunistic behavior and information asymmetry. In this case, firms located in trust-intensive societies can overcome their financial burden, including those associated with exporting. This is particularly more important in developing countries where formal financial institutions and contracting institutions are underdeveloped. Here, trust acts as an informal institution that enables economic agents to cope with high transaction costs, uncertainty, scarce information, and monitoring and enforcement that are associated with credit contracts. However, high levels of trust can also expand a firm's access to informal finance channels such as families, friends, and social networks.

To address our research objective, we utilize firm-level data across 19 African countries. We combine the World Bank Enterprise Surveys (WBES) with different country-specific measures of trust level, which we compute from the Afrobarometer surveys round 3 [2008–2009] and round 5 [2011–2013]. As an empirical measure of financial constraint, we rely on the WBES question that asks firms how much of an obstacle access to finance is. We compute four different country-specific measures of trust: the proportion of people who trust their relatives, the proportion of people who trust the people they know, and the proportion of people who trust other people or citizens in general and an aggregate measure that averages these three measures. Hence, our study considers the role of 'personal trust' (as measured by trust in relatives and other known people) and 'interpersonal trust' (as measured by trust in other people or citizens in general). In which case, our aggregate trust measure can be interpreted as a measure of local trustworthiness. Our key explanatory variable is then the interaction between either of these country-specific measures of trust and firm-specific indicators of financial constraint. Our empirical strategy, therefore, examines the heterogeneous export response of financially constrained firms across countries with different trust levels.

The empirical analysis confirms that financial constraint negatively affects a firm's propensity to export. However, consistent with our expectation, we find that this negative effect attenuates for firms that are located in countries with a higher level of trust. We conduct several robustness checks including using an alternative measure of financial constraint, estimating an instrumental variable (IV) model using ethnic fractionalization and legal origin as instruments for trust and financial constraint, respectively, and estimating a multilevel model. In all cases, we find that our baseline results remain qualitatively unchanged. In addition to credit market frictions, small and medium enterprises (SMEs) face the liability of smallness, which can lead to a disproportionally negative effect on the overall performances of SMEs relative to larger firms. Consequently, we also examine the role of firm size in our analysis. We find that SMEs in Africa are more likely to be affected by financial constraints but also more likely to benefit from higher levels of trust, including interpersonal and personal trust. For larger firms, however, only interpersonal trust tends to matter in attenuating the negative effect of financial constraints on export.

While our study focuses on international trade, it relates to the broader literature on financial development, financing-gap, and firm performance, especially in Africa (e.g. Allen *et al.*, 2011; Beck *et al.*, 2009; Dinh *et al.*, 2012; Fowowe, 2017; Gelb et al., 2008; Mlachila *et al.*, 2016). In particular, existing empirical and anecdotal evidence suggest that the financial sector in Africa is underdeveloped, making

firms in the region unable to finance its activities. For instance, in a study comprising 26 African countries, Gelb *et al.* (2008) showed that on average, the proportion of firms citing access to finance as a major or severe constraint was higher than for any other constraint such as electricity, corruption, among others. A similar conclusion was also reached by Dinh *et al.* (2012) in a study comprising over 39,000 firms across 98 countries. Different factors have been underscored in the literature to drive the poor financial system of the region. Among others, a weak formal institutional quality that makes financial contracts difficult to enforce, higher interest rates, fiscal dominance, and humongous collateral requirements have been indicted in this regard. We contribute to this literature by examining an aspect of the broader macroeconomic environment – trust – that conditions the effect of financial constraints on firm performance. Along this line, our study relates to the literature examining the nexus between social capital and access to finance in Africa (Aryeetey and Udry, 1997; Heikklilä *et al.*, 2016; Malual and Mazur, 2017; Mwangi and Ouma, 2012; Pierce and Snyder, 2013) since trust is an important component of social capital.

Our study also relates to the literature on the impact of the business environment, particularly those on business contracting institutions, but that has mostly focused on formal institutions while ignoring informal contracting institutions (Aterido *et al.*, 2011; Beck *et al.*, 2005; LiPuma *et al.*, 2013; Roxas *et al.*, 2013). Finally, this paper is also related to a nascent research strand in international trade examining the relationship between trust and international trade (Ndubuisi, 2020a, 2020b; Roy *et al.*, 2014; Yu *et al.*, 2015). To date, this literature has largely focused on country level analysis. We contribute to this literature by directly linking a country's trust level with firm-level export activities. In doing so, we explore how a firm-specific characteristic interacts with the country's trust level in identifying the trade effect of trust. Therefore, the current paper provides a more nuanced perspective on the effect of trust on international trade.

The remainder of this paper proceeds as follows: section 2 presents the theoretical background. Data sources, computation of variables, and estimation strategy are described in section 3. Section 4 presents the results, while section 5 concludes.

2. Theoretical background

2.1. Trust

Although trust, together with social norms, and networks form part of social capital, numerous studies have underscored trust as a core component of social capital. For example, Arrow (1972) argued that trust underlies virtually all economic exchanges, while Fukuyama (1995) argued that trust improves the performance of all institutions in a society, including business development and transactions. Among others, the relative importance of trust relates to the existence of cooperation and the reduction of transaction costs that are associated with it.

Descriptively, trust has been defined in different ways. In this paper, we adopt the famous definition of trust by Gambetta (1988), as a particular level of subjective probability with which an agent assesses that another agent or group of agents will perform a particular action. Two types of trust emerge from this definition: interpersonal trust and personal trust. Interpersonal trust refers to the preconception an agent or a group of agents have on 'unknown' others, while personal trust refers to the preconception an agent or group of agents have on a 'known' other. According to Bottazzi *et al.* (2016), the difference between the two can be thought of as the difference between general prior beliefs versus specific posterior beliefs. In particular, interpersonal trust is a general belief in the average trustworthiness of strangers, while personalized trust is a specific belief in agents one has shared a long-term relationship with such as family members, relatives, friends, social networks, or a trading partner one has had repeated interactions.

From the foregoing, it follows that interpersonal trust is overarching, while personal trust is specific. That is, while a high interpersonal trusting society may have a high personal trusting level, the same logic does not hold for a high personal trusting society. As we discuss in the section that follows, both types of trust play intrinsic roles in external financing, albeit the relative importance of each type may depend on the external financing channel. Hence, in our analysis, we construct and utilize a measure

of local trustworthiness derived from the averages of interpersonal trust and personalized trust, but we also explore independently the influence of each type of trust.

2.2. Trust and access to finance

The relationship between trust and finance has been explored extensively in the literature. Guiso *et al.* (2004) was the pioneer study in this literature. Using household data on Italy, they found that in regions with high levels of interpersonal trust, households hold less cash, have higher stock investments, use more checks, have more access to credit, and have less use of informal markets. In a follow-up study, Calderón *et al.* (2002) used a cross-country level data and showed that countries with higher interpersonal trust level are more financially developed and efficient, as measured by each country's share of liquid liabilities to GDP, the share of private credit by deposit money banks to GDP, and net interest margin, among others. Following these studies, empirical analysis on the relationship between trust and different aspects of financial activities has proliferated. Our paper is most related to the literature examining the nexus between trust and external financing wherein trust plays two roles including expanding access to formal and informal finance channels.

Formal finance channels consist of loans from institutionalized sources such as banks and other formal financial intermediaries. Formal finance can either be in the form of equity or debt financing and is based on hard information and arm-length principles (Elston *et al.*, 2016; Nguyen and Canh, 2020). Informal finance, on the other hand, are loans occurring outside the regulation of a central monetary or financial market authority. They include loans sourced from private moneylenders, relatives, friends, informal groups, and other enterprises wherein exchange is based on soft (private) information and relationship-based principles (Elston *et al.*, 2016; Nguyen and Canh, 2020; Zhang, 2008). Evidence on the use of formal and informal finances by formal firms in funding various business operations is well documented in the literature (e.g. see Allen *et al.*, 2019; Ayyagari *et al.*, 2010; Beck *et al.*, 2015; Cull *et al.*, 2009; Degryse *et al.*, 2016; Elston *et al.*, 2016; Hanedar et al., 2014; Kent Baker *et al.*, 2020; Kislat, 2015; Saeed, 2009; Wu *et al.*, 2016; Zhang, 2008).

The nexus between trust and access to formal finance relates to the existence of information asymmetry between credit lenders and borrowers. In the literature, two types of information asymmetries – adverse selection and moral hazard – are usually identified to impact negatively on a borrower's access to credit. Adverse selection arises from the inability of a credit lender to differentiate between a high-quality business borrower and a low-quality business borrower due to the information advantage of the borrower. Moral hazard, on the other hand, refers to a credit lender's inability to control fully how the borrower uses funds provided. The cost of these information asymmetries is the frequent use of collateral in credit markets, which excludes borrowers [even for some with good lending prospects] that are unable to provide one. Akin to this is that the amount of perceived information asymmetry increases a credit lender's valuation of the counterparty risk and default rate of the borrower. Hence, the credit lender may set the price (e.g. the interest rate) and non-price (e.g. collateral) terms of the loan too high that it becomes too burdensome for the borrower to bear, leading to demand and supply credit rationing. A high trust level, especially interpersonal trust, can help solve this market failure by alleviating a credit lender's concern over the credit borrower's adverse selection and moral hazard problems at least in four possible ways.[2]

First, in highly interpersonal trusting societies, being opportunistic even when the opportunity arises and the financial benefits are enormous, goes contrary to society's ingrained moral values, which usually attract social sanctions and stigmas. Akin to this is the fact that a high interpersonal trust level can mitigate moral hazards through peer monitoring and social pressure, which are seen as more effective ways of achieving compliance (Arnott and Stiglitz, 1991; Cason *et al.*, 2012;

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[2]Personalized trust derived through repeated business interaction between the bank and the business owner also plays a role in formal external financing (e.g. see Moro and Fink, 2013). We, however, discuss interpersonal trust and personal trust related to family, friends, and network since that is the focus of our empirical analysis.

Duarte *et al.*, 2012). This reduces evaluation, monitoring, and enforcement costs (i.e. transaction costs) in line with those suggested by extant studies (e.g. Knack and Keefer, 1997; Zak and Knack, 2001). Hence, borrowers in such a society have a lower likelihood of default as they are bounded by high moral standards, while credit lenders are more willing to lend to borrowers from such a society because of a reduced concern over default risks (Ndubuisi, 2020b: 3).[3] Second, a high interpersonal trust level lowers the probability of a firm committing financial fraud (Pevzner *et al.*, 2015). Hence, investors and credit lenders perceive financial reports of firms in trust-intensive regions to be more credible. This lowers adverse selection and increases the willingness of credit lenders to extend credits to firms in such regions.[4] Third, the preponderance of high interpersonal trust level often leads to the establishment of a widespread network of social relations. This can also help credit lenders overcome adverse selection problems since, in a highly interconnected community, information is more easily shared within and, as long as credit lenders are part of the network, they may collect soft information more easily (Galardo *et al.*, 2017). Fourth, high trust levels lower agency problems (Dudley and Zhang, 2016; Meng and Yin, 2019) and also incentivize credit borrowers to divulge soft information concerning their business activities they would not naturally want to divulge for fear of expropriation.

The foregoing argument is not necessarily to suggest that interpersonal trust is a substitute for collateral in formal finance transactions, but that it reduces a borrower's predilection of acting opportunistically. By implication, it also reduces *ex-ante* screening and evaluation costs, *ex-post* monitoring and enforcement costs, and the credit lender's perceived information asymmetry which concomitantly tend to increase the price and non-price terms of the loan. As opposed to a low interpersonal trusting society, therefore, we expect a borrower in a high interpersonal trusting society to be less financially constrained due to a more favorable price and non-price terms of loan conditions. This conjecture is supported by a plethora of studies showing a significant relationship between interpersonal trust and loan spreads (Hasan *et al.*, 2017), debt financing contract design (Brockman *et al.*, 2020), cost of debt financing (Meng and Yin, 2019), bank risk-taking behavior (Kanagaretnam *et al.*, 2019), corporate cash holdings (Dudley and Zhang, 2016), and corporate default risks (Ho *et al.*, 2020). Other studies such as Chen *et al.* (2016) have also shown a more direct relationship between trust and access to external formal finance.

Informal finance channels, like formal finance, are pervasive and the amount accessible from such channels largely depends on the source (i.e. relative, friends and family, informal enterprises or associations) and the extent of personal trust shared between parties. Some studies suggest that informal finance channels are safe havens for young and/or small firms that often find it difficult to access formal credit channels or for those firms that are unable to access the requisite amount of credit in the formal credit markets (Nguyen and Canh, 2020; Wu *et al.*, 2016). Other studies argue that some firms purposely self-select informal finance channels (Fraser, 2009). In contrast to formal finance channels, however, trust shared within the network or with friends and family acts as a substitute to collateral, and access to loans can be obtained promptly due to the substitution of hard information with soft information.

2.3. Export, access to finance, and the role of trust

The ability of a country to boost its competitiveness and growth is linked to its firms' ability to export (Buono and Formai, 2018). However, the decision to export is primarily determined by the extent of a firm's access to requisite credit (Chaney, 2005; Manova, 2013). Exporting requires extra fixed and variable costs that have to be paid upfront that is largely sunk costs. While firms need sufficient liquidity to meet-up these costs, constraints in the credit market may be binding (Wagner, 2019). Chaney (2005)

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[3]Karlan (2005), for instance, shows that people who view their communities as more trustworthy are more likely to lend money and pay back loans even when there are no formal enforcement mechanisms in place.

[4]Jha (2019), for instance, empirically found that firms headquartered in high trusting regions in the US have a lower probability of committing fraud by misrepresenting financial information, while privately controlled firms in trust-intensive regions in China are more likely to obtain loans.

theoretically shows that if firms must pay entry costs to sell in a foreign market and if they face liquidity constraints in financing these costs, only firms with sufficient liquidity will be able to export. Besides meeting up the additional costs associated with exporting, Amiti and Weinstein (2011) argued more generally on the relative importance of external finance to exporters. According to them, exporters tend to require relatively more financial support than producers that sell only in the domestic market for two reasons. First, there is a longer time-lag between production and the receipt of sales revenue. Second, exporters face inherently more credit default risks since it is more difficult to enforce payment across country boundaries. In light of this evidence, several studies have examined the impact of credit access on export (for an extensive literature review, see Wagner, 2014; Wagner, 2019). However, this literature has predominantly focused on formal financing channels such as bank credits while ignoring informal credit channels and broader macroeconomic conditions that can engender a firm's access to finance. Trust, as an informal contracting institution and informal credit channel, serves as one of those missing links.

More specifically, we argue that a higher level of local trustworthiness can affect a firm's operation such as exporting by expanding access to external finance, although different types of trust may play a more prominent role depending on the finance channel. For instance, one would expect personal trust as discussed in the previous sections to matter most for informal finance channels, while interpersonal trust would matter most for formal finance channels. While the objective of our study is not to formally test these channels due to limited data, extant studies suggest that SMEs tend to use more informal external financing channels than larger firms. In line with this, we would expect that personal trust matters most for SMEs, while we do not expect it to matter for larger firms. Regarding interpersonal trust, we would expect it to matter for both larger firms and SMEs, but its role should be more pronounced for SMEs.

In line with the foregoing discussions, we conjecture that financial constraints would negatively affect a firm's export activities. However, this negative effect would be attenuated for firms located in a trust-intensive society as measured by the average of personal and interpersonal trust. More importantly, when we consider the different components of trust, personal trust (as discussed above) should matter only for SMEs. Interpersonal trust, on the other hand, should matter for both types of firms.

3. Data and model specification

3.1. Data description

To study the effects of financial constraints on exports, and the moderating role of trust, we merge information from two sources. One is the Afrobarometer data that is a collection of nationally representative surveys conducted in several African countries. These surveys measure public opinion of economic, social, and political affairs at different levels. The other data is the WBES that provide a wide range of information about firms' performance and their characteristics, including their export status and performance, their perceptions about – and experience in – accessing bank credits and services.[5] The data are collected across more than 140 developing countries, including African countries.

3.1.1. Measuring trust

To measure trust, we employ rounds 4 and 5 of the Afrobarometer because these are the rounds that include questions about trust in relatives, people in the network of the respondent, and other people and citizens in the country that could be merged with the WBES. Round 4 includes surveys for 20 countries for the period 2008–2009, while round 5 includes surveys for 36 African countries for the period 2011–2013. Following the information available in the surveys, we provide three measures of trust: Trust_relatives, Trust_networkpeople, and Trust_otherpeople. For each of these categories, we create a dummy variable equals 0 for respondents who do not (or just a little bit) trust and 1 otherwise.

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[5]Afrobarometer data https://afrobarometer.org; World Bank data https://www.enterprisesurveys.org.

Table 1. Correlations between personal and interpersonal trust variables

	Trust relatives	Trust people in your network	Trust other people
Relative	1		
Network people	0.7012***	1	
Other people	0.3839	0.6235**	1

*Notes:*This table reports Pearson's correlations between the trust variables.
***p < 0.01, **p < 0.05, *p < 0.1.

Our three measures of trust at the country level are then the proportion of the respondents who trust their relatives (Trust_relatives), the proportion of the respondents who trust people they know (Trust_network people), and finally the proportion of the respondents who trust the other people (Trust_otherpeople) in their countries. The first two measures of trust are by definition personal trust, while the third one is a measure of interpersonal trust. We also create an aggregate measure of trust (Trust_Average) that takes the average of these three measures.

It is worth noting that for most of the countries, the years of the Afrobarometer surveys do not coincide exactly with the years of the WBES. Therefore, for these countries, we replace the missing data on trust with the trust data that are available one or two years before the WBES years. We assume that the level of trust in a country does not change significantly over time. Hence, using a one-year lag or two years can be a good proxy for the actual level of trust. This assumption is consistent with extant studies that using a panel time-series data on the trust variable only found little within-country time variation in the trust level (Bjørnskov, 2007; Ndubuisi, 2020b). However, as indicated by the reported standard values in Table A1 in the online appendix,[6] the level of trust varies significantly across countries, which allows us to run a cross-country analysis. After combining the trust data with the WBES, we managed to merge data for 19 African countries.

Table 1 shows Pearson's correlations between the disaggregated trust variables. While the two measures of personal trust (trust in relatives and trust in people in your network) are highly and statistically correlated, their correlations with the interpersonal trust variable (trust in other people in the country) are different. The correlation coefficient between trust in relatives and trust in other people is around 0.39 and is statistically insignificant, while the correlation coefficient between trust in people we know and trust in other people tops up to 0.6 and is statistically significant.

3.1.2. Measuring firm-level export and financial constraint
Our main outcome variable is a dummy variable which equals 1 for firms that have part of their sales coming from direct export and 0 for those who did not export. Table A2 in the online supplement materials[7] shows for each of the countries in our sample the percentage of firms that export. Overall, only 14% of the firms have responded that they have direct exports, which is consistent with the broader trade literature suggesting that only a few firms in a country engage in exporting (e.g. Bernard and Jensen, 1995; Eaton *et al.*, 2004).

We measure firm financial constraints using the question of the WBES that asks firms how much of an obstacle access to finance is. The possible responses range from 'not an obstacle' to 'a very severe obstacle'. We create a variable, finance, that takes three different values. 0 is allocated when the response is 'not an obstacle', 1 for the response 'minor obstacle' or 'moderate obstacle', and finally, 2 is coded when the response is 'major obstacle' or 'very severe obstacle'.

Table 2 reports for both exporters and non-exporters the distribution of the firms into the three categories of financial constraints. Among firms that export, the majority find access to finance as

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[6]https://drive.google.com/file/d/1ftclSS0qWBC4iOF6KAhsz14hgmOYoH38/view.
[7]https://drive.google.com/file/d/1ftclSS0qWBC4iOF6KAhsz14hgmOYoH38/view.

Table 2. Differences in financial constraints between exports and non-exporters

	Exporters	Non-exporters	(Exporters – non-exporters)
Not obstacle	25.05	18.64	6.41(2.265)***
Minor/moderate	46.81	42.04	4.77(0.02)***
Major/severe	28.14	39.31	−11.17(0.019)***

Notes: Standard errors in parenthesis.
***p < 0.01. We use the following formula to compute the standard errors: SE = sqrt{p×(1 − p)×[(1/n1) + (1/n2)]}, where p = (p1×n1 + p2×n2)/(n1 + n2).p1 is for a given category of financial constraint the proportion of exporters in this category and p2 the equivalent for non-exporters. n1 and n2 are the correspondent number of observations.

a minor/moderate constraint, and 28% of them find access to finance as a major or severe constraint, and around a quarter of them find that access to finance is not an obstacle. There are significant differences between exporters and non-exporters. Unlike exporters, only 18% of the non-exporters respond that access to finance is not an obstacle and 39% of them find that it is a major or severe obstacle. The last column of Table 2 shows for each category of financial constraint the difference between exporters and non-exporters, and the numbers in parenthesis are the standard errors of the differences. Regardless of the category of financial constraint considered, the difference between exporters and non-exporters is statistically significant. It is also worth noting that the gap is higher for the category major/severe obstacle.

3.2. Model specification

Let us define, y_{islrc} as the export status of firm i operating in sector s and located in city l of region r from country c. y_{islrc} equals 0 for firms that do not export and 1 for firms that export. Our empirical model to assess the effect of financial constraint on the outcome variable and the moderating role of trust takes the following form:

$$y_{islrc} = \beta_0 + \beta_1 \text{Finance}_{islrc} + \beta_2(\text{Finance}_{islrc} \times \text{Trust}_c) + \beta_3 \text{Trust}_c + \beta_4 X_{islrc} + d_{i,s,l,r,c} + \varepsilon_{islrc} \quad (1)$$

where Finance_{islrc} is the measure of financial constraint as defined above. In addition to the interaction term between financial constraint and country-level of trust (Trust_c), we also control for the country level of trust to ensure that this interaction does not simply capture the direct effect of trust on export. X_{islrc} is a vector containing firm characteristics, including the size of the firms, the gender of the manager and her/his number of years of experience in logs, the age of the firms in logs, the total sales and cost of a unit of labor both standardized and taken in logs, a dummy for foreign firms, two dummies indicating, respectively, if the firm has innovated by introducing either a new product or a new process in the last fiscal year. $d_{i,s,l,r}$ is a vector of a combination of the sector, locality, region fixed-effects,[8] or interaction between industry and country fixed-effects. We cluster the standard errors at the regional level to take into account the fact that firms that are located from the same region may have similar behavior because they share similar regional contexts. It is worth noting that our results are robust when we cluster the stnadard errors at the sector, or city, or country level.

The parameter β_1 measures the direct effect of financial constraint on the outcome variable, while β_2 is the effect of the country level of trust on the relationship between financial and the outcome variable. Thus, the total effect of financial constraint on the dependent variable varies with the level of trust and is given by $\beta_1 + \beta_2 \text{Trust}$ and the variance of the total effect is given by $\text{Var}(\beta1) + \text{Trust}^2 \times \text{Var}(\beta2) + 2\ \text{Trust} \times \text{Cov}(\beta1, \beta2)$.

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[8]Firms located from different regions operate under different regional settings and some regions may be richer than others, have easier access to finance than others, may have better infrastructure that may facilitate exports to neighboring countries for instance. Cities within the same region may also present different characteristics that may affect both exports and access to formal finance.

It is worth noting that some omitted country characteristics may affect both the level of trust and our dependent variable. However, because the trust variables are all aggregated at the country level and the data are cross-sectional with firms repeated within countries, adding other country-level variables or country-fixed-effect dummy will cause the omission of either the trust variable or the additional country levels. To deal with this issue, we propose to add an interaction term between the industry and country fixed effects (Ind × Country). In section 4.2.2 and 4.2.3, we will also estimate an IV model using ethnic fractionalization as an instrument for trust and legal origin as an instrument for financial constraint, and also estimate a two-level multilevel model with a random intercept that enables us to control for additional country-level variables.

4. Empirical results

This section proceeds in three steps. The first subsection presents the baseline results, while the second subsection presents the robustness checks results. The third section presents an extended analysis focusing on SMEs and large firms.

4.1. Baseline results

Table 3 below shows the estimation results of the linear probit model. In column (1), we estimate the effect of financial constraint (Finance_constraint) on export without adding the trust variable and fixed-effects. The estimated coefficient on Finance_constraint is negative and statistically significant at the 1% significance level. This indicates that an increase in financial constraint by one additional unit decreases the likelihood to export by roughly 2.3%. In column (2), we run the same equation but adding two additional control variables: the cost of labor and sales both standardized and taken in logs. The coefficient on Finance_constraint remains negative and statistically significant, confirming the previous findings, although the magnitude of the coefficient has slightly increased up to 3%. Overall, these baseline results are consistent with the existing literature suggesting that limited access to credit adversely affects export market entry (e.g. Amiti and Weinstein, 2011; Manova, 2013). Nonetheless, because of large missing values for labor cost and total sales, which markedly decreases the number of observations (see columns 2), we decide to remove these variables in the rest of the paper to keep as many observations as possible.

Turning to the other firm characteristics, we obtain results that are consistent with those in the extant literature. In particular, the results show that SMEs and firms with a higher unit-labor cost are less likely to export which are consistent with the findings of Wagner (1995) and Mbaye and Golub (2002), while the results that older firms and foreign-owned firms are more likely to export are consistent with Wagner (2015) and Manova *et al.* (2015). Likewise, the result that firms that introduced a new product are more likely to export is consistent with Lachenmaier and Wößmann (2006).

Turning to our main empirical investigation, in columns 3–7, we introduce interaction terms between the measure of financial constraint (Finance_constraint) and the aggregate measure of trust (Trust(average)) to the estimations. We also add a different combination of the sector, region, city fixed-effects as well as the interaction between industry and country fixed-effects across the different columns to minimize any potential bias that may arise from omitted variables. From an econometrics point of view, when the interaction term is included in the estimation, the estimate on Finance_constraint is interpreted as the effect of financial constraint on export for firms that are located in countries where the level of trust is equal to 0 even though in our data we do not have countries that fall into this category.

The results show that the estimated coefficient on Finance_constraint is negative and statistically significant across the different columns. Interestingly, the estimated coefficient on the interaction between Finance_constraint and trust is positive and statistically significant across all the columns. This corroborates our hypothesis that firms located in trust-intensive societies are less likely to have their exports be affected negatively by financial constraints. As noted in section 2, this occurs because

Table 3. Export, financial constraint, and trust (dependent variable: dummy export), LPM estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Financial_Constraint	−0.0231***	−0.0303***	−0.0935**	−0.0795***	−0.0796***	−0.0792***	−0.0992*	−0.0559***	−0.0309**
	(0.0080)	(0.0097)	(0.0402)	(0.0280)	(0.0282)	(0.0281)	(0.0513)	(0.0207)	(0.0124)
Financial_Constraint×Trust(average)			0.1586**	0.1493***	0.1492***	0.1486***			
			(0.0744)	(0.0510)	(0.0513)	(0.0514)			
Financial_Constraint×Trust_Relatives							0.1173*		
							(0.0627)		
Financial_Constraint×Trust_NetworkPeople								0.1130***	
								(0.0407)	
Financia_Constraint×Trust_OtherPeople									0.1046***
									(0.0342)
Trust(average)			−0.5003***	0.0758	0.0259	−0.21			
			(0.1746)	(0.1100)	(0.3814)	(0.3859)			
Trust_Relatives							−0.0939		
							(0.6476)		
Trust_NetworkPeople								−0.1652	
								(0.3767)	
Trust_OtherPeople									−0.1397
									(0.2780)
size_sme	−0.1858***	−0.1061***	−0.1974***	−0.1916***	−0.1923***	−0.1832***	−0.1830***	−0.1833***	−0.1831***
	(0.0328)	(0.0260)	(0.0320)	(0.0221)	(0.0221)	(0.0206)	(0.0206)	(0.0206)	(0.0205)
firm_age(logs)	0.0159*	0.0078	0.0161*	0.0172**	0.0171**	0.0170**	0.0171**	0.0170**	0.0167**
	(0.0091)	(0.0096)	(0.0086)	(0.0079)	(0.0078)	(0.0073)	(0.0072)	(0.0072)	(0.0072)
female_manager	−0.0066	−0.0002	−0.0036	0.0076	0.0075	0.0077	0.0074	0.0078	0.007
	(0.0103)	(0.0116)	(0.0098)	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0083)	(0.0082)

(Continued)

Table 3. (*Continued.*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
firm_foreign	0.1968***	0.1910***	0.2003***	0.1852***	0.1851***	0.1846***	0.1843***	0.1845***	0.1842***
	(0.0326)	(0.0390)	(0.0325)	(0.0276)	(0.0276)	(0.0279)	(0.0280)	(0.0279)	(0.0279)
product_innovation	0.0170*	0.0231*	0.0152	0.0204**	0.0210**	0.0226**	0.0222**	0.0225**	0.0226**
	(0.0096)	(0.0124)	(0.0092)	(0.0088)	(0.0087)	(0.0087)	(0.0087)	(0.0087)	(0.0087)
process_innovation	0.0449***	0.0380*	0.0279**	0.0211*	0.0219*	0.0221*	0.0225**	0.0221*	0.0224*
	(0.0161)	(0.0192)	(0.0136)	(0.0116)	(0.0116)	(0.0113)	(0.0113)	(0.0113)	(0.0114)
manager_experience(logs)	−0.0114	−0.0078	−0.0055	−0.009	−0.0091	−0.0089	−0.009	−0.009	−0.0091
	(0.0094)	(0.0106)	(0.0079)	(0.0069)	(0.0069)	(0.0070)	(0.0070)	(0.0070)	(0.0071)
cost_labor(logs)		−0.1030***							
		(0.0268)							
sales(logs)		0.1027***							
		(0.0306)							
Constant	0.2551***	0.2130***	0.4949***	0.1329*	0.1495	0.2825**	0.2767	0.2504***	0.2194***
	(0.0358)	(0.0393)	(0.1076)	(0.0684)	(0.1333)	(0.1401)	(0.4009)	(0.0948)	(0.0743)
# Observations	10,312	8,247	10,312	10,312	10,312	10,312	10,312	10,312	10,312
# Countries	19	19	19	19	19	19	19	19	19
R^2	0.1063	0.1163	0.1197	0.2098	0.2115	0.2204	0.2198	0.2204	0.2199
Industry FE	NO	NO	NO	YES	YES	YES	YES	YES	YES
Region FE	NO	NO	NO	YES	YES	YES	YES	YES	YES
City FE	NO	NO	NO	NO	YES	YES	YES	YES	YES
Industry*Country FE	NO	NO	NO	NO	NO	YES	YES	YES	YES

Notes: This table reports the Linear Probit Model (LPM) estimations. The dependent variable is a dummy export equals 1 for firms that export and 0 for firms who do not export. Robust standard errors clustered at the region level in parentheses.
***p < 0.01, **p < 0.05, *p < 0.1.

higher levels of trust afford firms access to external finance. Table A4 in the online supplement materials reports the total effect of financial constraint on export for each of the countries in our sample using the estimations reported in column 5. As we can see the total effect of financial constraint on exports is negative for the lowest value of trust in our sample which equals 0.32, and it corresponds to the level of trust in Nigeria. This effect turns positive when the level of trust is equal to 0.56 (when around 56% of the people have personal and interpersonal trust). This value corresponds to the level of trust in Madagascar.

To assess whether the sub-components of the aggregate measure of trust have different moderating effects on the relationship between financial constraints and a firm's likelihood to export, we run the estimations for the different sub-components of trust. These include trust in relatives, trust in people in our network, and trust in other people in the country. The results are reported in columns 8–10. The coefficients on financial constraint are negative and statistically significant, and the interaction with the trust variables is positive and significant regardless of the sub-component of trust considered. It is worth noting that while both personal and interpersonal trust variables play positive moderating roles in the relationship between financial constraint and exports, trust in relative is statistically less significant than the other measures of trust.

4.2. Robustness checks

In this section, we subject our baseline results to different robustness checks to ensure the reliability of our inference. As a first step, we utilize an objective measure of financial constraint as opposed to the subjective measure which we employed earlier. In the second and third steps, we implement 2SLS IV and two-level multilevel model estimation methods in a bid to minimize endogeneity that may arise from omitted variable bias and reverse causality. Finally, in the online supplement material, we adopt a selection model that enables us to examine the volume of firm-level export, thereby differentiating between the extensive and intensive export margins.

4.2.1. Objective measure of financial constraint

In this section, we replace our main measure of financial constraint with a dummy variable that indicates whether a firm has a part or all of its capital borrowed from a formal bank. To this end, we explore the question in the WBES that informs us whether a firm has either all or part of its capital borrowed from formal banks. We create a dummy Bank_Capital that equals 0 for firms that have part or all of their capital borrowed from formal banks and 1 for firms who have capital from formal banks. Although this measure is objective and informative, it is worth noting that it does not capture other important inefficiencies associated with the formal financial system such as high-interest rates, transaction, and administrative costs or the time required to receive the loans, that are perhaps better captured with our main measure of financial constraint based on self-assessment. The results using access to capital from banks as a proxy for financial constraint are reported in Table 4. Across the different columns, the coefficients of Bank_Capital are negative and statistically significant at the 1% significance level, suggesting that lack of capital from formal banks reduces significantly the likelihood to export. However, the coefficients on the interaction terms between Bank_Capital and the different measures of trust are positive and significant, highlighting again the role of trust in reducing the negative effect of financial constraint on export.

4.2.2. Instrumental variable estimation

Although we included the interaction between industry and country (Ind × Country) to control for omitted variables bias that could affect both the trust variable and export in the baseline specification, we also propose to run IV estimations. First, we use an index of country-level of ethnic fractionalization from La Porta et al. (1999) as an instrument for the country level of trust. The role of ethnic diversification on trust has been extensively discussed in the literature. However, there is no consensus on whether ethnic diversification has a positive or a negative impact on trust (Dinesen and Sønderskov,

Table 4. Export, lack of access to bank capital, and trust (dependent variable: dummy export), LPM estimations

	(1)	(2)	(3)	(4)	(5)
Bank_Capital	−0.0842***	−0.2817***	−0.4129***	−0.2216***	−0.1385***
	(0.0159)	(0.0720)	(0.1276)	(0.0553)	(0.0296)
Bank_Capital×Trust(average)		0.3942***			
		(0.1256)			
Bank_Capital×Trust_Relatives			0.4121***		
			(0.1515)		
Bank_Capital×Trust_NetworkPeople				0.3008***	
				(0.1006)	
Bank_Capital×Trust_OtherPeople					0.2184***
					(0.0742)
Trust(average)		−0.1403			
		(0.3626)			
Trust_Relatives			−0.0291		
			(0.6256)		
Trust_NetworkPeople				−0.0825	
				(0.3629)	
Trust_OtherPeople					−0.0504
					(0.2522)
Constant	0.2558***	0.3593***	0.3477	0.3379***	0.2739***
	(0.0482)	(0.1277)	(0.3846)	(0.0856)	(0.0629)
# Observations	10,591	10,591	10,591	10,591	10,591
# Countries	19	19	19	19	19
R^2	0.26	0.26	0.26	0.26	0.26

Notes: The dependent variable is a dummy export equals 1 for firms that export and 0 for firms who do not export. Robust standard errors clustered at the regional level in parentheses. All the estimations include industry, region, city and ind×country fixed-effects, as well as the firm level control variables.
***p < 0.01, **p < 0.05, *p < 0.1.

2015, 2018; Fladmoe and Steen-Johnsen, 2018). We argue that while ethnic fractionalization may affect trust, it does not directly affect firm-level exports, making it a good candidate for the instrument. Also, as shown in equation (1), our specification includes an interaction term between the endogenous variable, trust, and financial constraint, which can also be endogenous (Aghion *et al.*, 2005). We follow Aghion *et al.* (2005) that uses the interaction between the instrument and the second term of the interaction as an instrument for the interaction term. Second, because the financial constraint measure may suffer from measurement error bias, in particular, the subjective measure of financial constraint, we attempt to treat this variable as endogenous. As an instrument for financial constraint, we use a country's legal origin as suggested by Aghion *et al.* (2005), who argue that legal origin is a key determinant of financial development.

The IV results are reported in Table 5. We run different specifications with different endogenous variables and instruments. Consistent with our baseline results, we find that financial constraint affects export negatively, but this effect is attenuated in countries with a high level of trust. In columns 2–5, we also endogenize the financial constraint variable. The results also support our previous findings.

Table 5. Export, financial constraint, and trust (dependent variable: dummy export), IV estimations

	(1)	(2)	(3)	(4)	(5)
Exogenous variables					
Financial_Constraint	−0.1056**				
	(0.0452)				
Endogenous variables					
Financial_Constraint		−1.4533***	−4.5300*	−1.3766**	−0.4537***
		(0.5408)	(2.5126)	(0.6334)	(0.1426)
Financial_Constraint×Trust(average)	0.1845**	2.9756***			
	(0.0909)	(1.1222)			
Financial_Constraint×Trust_Relatives			5.7567*		
			(3.2069)		
Financial_Constraint×TrustNetworkPeople				3.1429**	
				(1.4659)	
Financial_Constraint×Trust_OtherPeople					1.8910***
					(0.6210)
Trust(average)	−0.4943***	−4.0220***			
	(0.1566)	(1.4835)			
Trust_Relatives			−7.3882*		
			(4.0488)		
Trust_NetworkPeople				−4.5754**	
				(2.0821)	
Trust_OtherPeople					−2.5072***
					(0.8064)
Constant	0.3914***	2.0880***	5.8850*	2.0574**	0.7792***
	(0.0788)	(0.7081)	(3.1302)	(0.8604)	(0.1989)

(*Continued*)

Table 5. (*Continued.*)

	(1)	(2)	(3)	(4)	(5)
Durbin test-p-value	0.4417	0.006	0.012	0.007	0.003
Wu-Hausman test p-value	0.4429	0.006	0.012	0.007	0.003
# Observations	10,312	10,312	10,312	10,312	10,312
# Countries	19	19	19	19	19
Instruments	Ethnic Fraction Ethnic×trust	Ethnic Fraction Ethnic×trust Legal origin	Ethnic Fraction Ethnic×trustrelatives Legal origin	Ethnic Fraction Ethnic×peopleknown Legal origin	Ethnic Fraction Ethnic×trustothers Legal origin

Notes: The dependent variable is a dummy export equals 1 for firms that export and 0 for firms who do not export. Robust standard errors clustered at the regional level in parentheses. All the estimations include industry fixed-effects and the firm-level characteristics.

However, the magnitudes of the estimated coefficients have increased when we endogenize the financial constraint variable. The p-values of the Durbin and Wu-Hausman tests show that the null hypothesis of the exogeneity of the variables is rejected except in column 1, where the measure of financial constraint is treated as exogenous. Results of the first stage estimations are reported in Table A5 in the online supplement materials. Overall, the first-stage estimations reveal a negative correlation between ethnic diversity and trust.

4.2.3. Two-level multilevel model estimation

Some country's characteristics may affect both the level of trust and our dependent variables. However, because the trust variables are all aggregated at the country level and the data are cross-sectional, adding other country-level variables will cause the omission of either the trust variable or the additional country levels. To deal with this issue, we further propose to estimate a two-level multilevel model with a random intercept that includes a country fixed-effect that is a function of all the variables measured at the country level. Our multilevel model has the following form:

$$y_{islrc} = \beta_{0c} + \beta_1 \text{Finance}_{islrc} + \beta_2 (\text{Finance}_{islrc} \times \text{Trust}_c) + \beta_4 X_{islrc} + d_{i,s,l,r} + \varepsilon_{islrc} \qquad (2)$$

where the intercept varies among countries and takes the following form:

$$\beta_{0c} = \beta_0 + \beta_3 \text{Trust}_c + \beta_3 X_c + u_c \qquad (3)$$

By incorporating equation (2) into (1) we obtain the following model:

$$\begin{aligned} y_{islrc} = {} & \beta_0 + \beta_1 \text{Finance}_{islrc} + \beta_2 (\text{Finance}_{islrc} \times \text{Trust}_c) + \beta_3 \text{Trust}_c + \beta_4 X_c + \beta_5 X_{islrc} \\ & + d_{i,s,l,r} + \varepsilon_{islrc} + u_c \end{aligned}$$

where Trust_c is the level of trust at the country level and X_c includes all the additional country-level characteristics. Among these variables are the country growth rate of GDP per capita, trade openness (all taken from the World Development Indicators), different measures of financial development (extracted from the IMF Financial Development Data), including financial depth, financial institutions access, financial efficiency, ethnic fractionalization (La Porta *et al.*, 1999), and a measure of control for corruption taken from the Worldwide governance data. The term ε_{islrc} is the individual-level error term and u_c the country-specific effect.

The results of the multilevel model using the aggregate measure of trust are reported in Table 6 below. The estimation results support our previous findings whereby a high trust level attenuates the negative export effects of financial constraints. Hence, we conclude that our results remain qualitatively unchanged when we control for additional country-level variables that may be considered as omitted variables. However, it is worth noting that it has been shown in the literature that results from multilevel models should be interpreted with caution when the number of observations at the higher level (i.e. country in our case) is lower than 30 (Browne and Draper, 2000; Maas and Hox, 2005) or 20 (Mark and Kwok, 2015) because the standard errors of the estimations on the variables at the highest level are likely to be biased. In our data, the maximum number of countries is 19.

4.3. Extended analysis: SMEs versus large firms

It has been argued in the literature that SMEs are more credit constrained than larger firms due to information asymmetry and the dearth of collateralizable assets. As noted by Hottenrott *et al.* (2016), SMEs do not usually issue traded securities that are continuously priced in public markets and often do not have audited financial statements available to outside finance providers. Hence, it is relatively more expensive for lenders to collect information on SMEs. In the context of African countries, it has been reported that this condition is more binding (Kuntchev *et al.*, 2013). In this

Table 6. The moderating role of trust on the effect of financial constraint on export extensive. Multilevel model, random intercept

	(1)	(2)	(3)
Financial_Constraint	−0.0813***	−0.0813***	−0.0813***
	(0.0191)	(0.0191)	(0.0191)
Financial_Constraint×Trust(average)	0.156***	0.156***	0.156***
	(0.0381)	(0.0381)	(0.0381)
Trust(average)	−0.0179	0.197	0.194
	(0.204)	(0.260)	(0.259)
Additional country-level variables			
GDP/capita growth	0.0350	0.0646	−0.0263
	(0.0942)	(0.0894)	(0.108)
Trade Openness	0.214	0.385***	0.288**
	(0.134)	(0.121)	(0.124)
Ethinic_frac	−0.224	−0.249	0.258
	(0.206)	(0.209)	(0.224)
Control of corruption	−0.317***	−0.430***	−0.195**
	(0.109)	(0.137)	(0.0933)
Financial development	0.472**		
	(0.186)		
Financial access		1.009**	
		(0.398)	
Financial efficiency			0.668**
			(0.263)
Constant	−0.832	−1.749**	−1.703**
	(0.699)	(0.680)	(0.677)
# Observations	9,606	9,606	9,606
# Countries	17	17	17

Notes: The dependent variable is a dummy export equals 1 for firms that exports and 0 for firms who do not export. All the firm-level characteristics are included in the estimations. Robust standard errors clustered at the region level in parentheses.
***p < 0.01, **p < 0.05, *p < 0.1. The number of observations has decreased because of missing values on some of the country-level variables.

case, SMEs are more likely to rely on funding from relatives and close networks, which is trust-enhancing. On the other hand, it is also possible that a higher interpersonal-trust level expands their access to formal credit since it reduces a lender's concern over adverse selection. Therefore, we may expect that financial constraints have a more hindering effect for SMEs than large firms on the one hand and that the moderating effect of trust on the negative effect of financial constraint is stronger for SME than for large firms, on the other hand.

To test these hypotheses, we divide our sample into SMEs and large firms and run the estimations separately. The results for SME and large firms are reported, respectively, in Tables 7 and 8. Consistent with our expectation, the results in Table 7 show that for SMEs, financial constraint negatively affects export, but this effect is mitigated with a higher level of trust. These results are robust to the different measures of trust. As shown in Table 8, however, there is no statistically significant evidence that financial constraint adversely affects larger firms' exports. There is also no evidence that aggregate

Table 7. Export, financial constraint and trust (Sample: SMEs)

	(1)	(2)	(3)	(4)
Financial_Constraint	−0.0776**	−0.1181**	−0.0585***	−0.0243*
	(0.0296)	(0.0515)	(0.0212)	(0.0137)
Financial_Constraint×Trust(average)	0.1421***			
	(0.0540)			
Financial_Constraint×Trust_Relatives		0.1387**		
		(0.0626)		
Financial_Constraint×Trust_NetworkPeople			0.1154***	
			(0.0409)	
Financial_Constraint×Trust_OtherPeople				0.0694*
				(0.0410)
Trust(average)	0.0331			
	(0.4631)			
Trust_Relatives		0.2833		
		(0.7777)		
Trust_NetworkPeople			0.0603	
			(0.4502)	
Trust_OtherPeople				0.0886
				(0.3378)
Constant	0.0428	−0.1083	0.0466	0.0221
	(0.1650)	(0.4819)	(0.1065)	(0.0796)
# Observations	9,132	9,132	9,132	9,132
R^2	0.19	0.19	0.19	0.19

Notes: Robust standard errors clustered at the region level.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All the estimations include firm-level characteristics and industry, city, region, and country×ind fixed-effects.

trust measure as reported in column 1, or trust in relatives and networks as reported in columns 2 and 3, respectively, play any significant role in the nexus between access to finance and export. However, in column 4, we find evidence of a mitigating effect that is in line with our hypothesis (see section 2.3) when we use a measure of interpersonal trust which is indicative of its precedence over other types of trust when it comes to larger firms' credit dealings as conjectured in section 2.3.

In summary, the results collectively suggest that while trust level matters decisively for SMEs in accessing the requisite credit to overcome the fixed and variable cost associated with exporting, it plays a lesser role for larger firms. Larger firms have diversified investment portfolios, do not suffer from poor collateralizable assets, and have verifiable audit reports. Hence, they face limited information asymmetry and less concern over adverse selection as they have the requisite collateral. Therefore, trust may play little or no role in their credit-contracts.

5. Conclusion

While several studies have analyzed the relationship between financial constraints and export activities, there is little evidence about the factors that influence this relationship, particularly in African countries. Hence, this paper examined the export effects of financial constraints and explored the role of

Table 8. Export, financial constraints and trust (Sample: Large enterprises)

	(1)	(2)	(3)	(4)
Financial_Constraint	−0.1251	0.0061	−0.0769	−0.0638
	(0.0868)	(0.1799)	(0.0790)	(0.0427)
Financial_Constraint×Trust(average)	0.2510			
	(0.1545)			
Financial_Constraint×Trust_Relatives		0.0007		
		(0.2213)		
Financial_Constraint×TrustNetworkPeople			0.1718	
			(0.1475)	
Financial_Constraint×Trust_OtherPeople				0.2668**
				(0.1062)
Trust(average)	0.8041			
	(1.1036)			
Trust_Relatives		2.0825		
		(2.1054)		
Trust_NetworkPeople			1.1092	
			(1.3970)	
Trust_OtherPeople				0.3793
				(0.6843)
Constant	−0.5985	−1.6266	−0.5504	−0.4490
	(0.4510)	(1.3126)	(0.3801)	(0.2768)
# Observations	1,180	1,180	1,180	1,180
R^2	0.32	0.32	0.32	0.32

Notes: Robust standard errors clustered at the region level.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All the estimations include firm-level characteristics and industry, city, region, and country×ind fixed-effects.

trust in this relationship. We combined the WBES with different country-level measures of trust computed from the Afrobarometer surveys of 19 African countries. While our analysis confirmed a negative export effect of financial constraints, we found that higher levels of trust do attenuate firms' financial constraints. We argued that two channels inderscore the export gains of a high trust level in relation to financial constraint. First, trust acts as an informal contracting institution that affords firms greater access to formal credit channels. This is particularly more important in developing countries where formal financial institutions and contracting institutions are underdeveloped. Here, trust acts as an informal institution that enables economic agents to cope with issues of high transaction cost, uncertainty, scare information, and monitoring and enforcement that are associated with credit contracts. Secondly, high levels of trust can also expand a firm's access to informal credit channels.

Furthermore, in an extended analysis, we found that SMEs are more likely to be affected by financial constraints but also more likely to benefit from higher levels of trust, with the results indicating that interpersonal and personal trusts attenuated the negative effect of financial constraint on SMEs exporters while only interpersonal trust attenuated negative effect of financial constraint on larger-firm exporters. This latter result is suggestive of the different external financing channels (i.e. formal versus informal) SMEs explore as a means to overcome their liability of smallness that tends to expose them to credit rationing in the credit market. Here, while interpersonal trust reduces the financing cost

in the debt market, personal trust such as those shared within informal networks or with friends and family acts as a substitute to collateral, and credit can be obtained promptly due to the substitution of hard information with soft information. This differs for large-firms which often use formal credit channels to fund their operations as they have developed internal mechanisms to overcome some of the challenges they face. Such internal mechanisms owned by large-firms that are largely lacking for SMEs include diversified investment portfolios, collateralizable assets, and verified audit reports. In this case, interpersonal trust plays the dominant role by reducing *ex-ante* screening and evaluation costs, *ex-post* monitoring and enforcement costs, and the credit lender's perceived information asymmetry which concomitantly tend to increase the price and non-price terms of the loan.

African countries are severely disadvantaged in financial development, making the firm-financing gap a bigger problem in the continent, which has important implications on the export performances of its firms. Our study underscores the importance of trust as a possible panacea in the continent's firm-financing gap problem. Notably, our results suggest that in financially under-developed economies, where firms face constraints in accessing credit, higher trust levels can incentivize informal finance mechanisms that may mitigate the negative effects limited access to formal finance has on trade. It can also reduce limited access to formal credit arising from perceived higher moral hazard and adverse selection by credit lenders. While personal trust as discussed in this paper can be deemed given, several studies have analyzed the sources of interpersonal trust, highlighting factors such as income and education inequality, quality of governance, civil liberties, and press freedom as potential sources of interpersonal trust (Alesina and La Ferrara, 2000; Bjørnskov, 2007; Delhey and Newton, 2003; Knack and Keefer, 1997; Knack and Zak, 2003; Murtin *et al.*, 2018). As these factors are within the purview of policymakers and given the export gains of interpersonal trust accruing to both SMEs and large-firms, the onus befalls on policymakers to initiate policies aimed at raising the level of interpersonal trust. In particular, reducing income and education inequality, improving quality of governance, and expanding civil liberties and press freedom can serve as entry points to such broad policy initiatives.

We conclude with a few suggestions for further research. This paper focused on measures of trust at the country-level. Future research could explore within-country variations in trust level by utilizing indicators of trust level at the subnational or regional level. Future research could also examine other firm-level outcome variables such as innovation, employment, and productivity. Access to external credit helps firms expand operations, innovate, and invest in production facilities and new staff (OECD, 2006). Therefore, its absence suggests the inability of firms to obtain funds for profitable investment projects and growth. Consistent with this view, one would also expect social trust to play similar roles here, as in the one examined in this paper. Finally, future studies can also explore the role of other firm's characteristics, such as contract intensity.

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