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Formal Versus Informal Finance: Evidence from Selected African Firms

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ABSTRACT: One important factor in firm growth and performance is the availability of financing. Firm financing sources can be either formal or informal. Formal financing sources comprise those institutions regulated both by the government and the central bank, while the informal markets operate beyond the regulatory framework on the financial system. Using the World Bank Enterprise Survey dataset for 13 African countries, this study employs the Relative Distribution methods by Handcock and Morris (1998) and Recentered Influence Function techniques by Firpo et al. (2009), to evaluate whether there exists a growth differential among firms that source their working capital through formal finance relative to those using informal financing sources, and investigate which financing source is more growth enhancing. The study finds formal financing sources to be more growth enhancing than informal financing. The growth differential is however different at different levels of labor productivity and sales growth outcome distributions. It is therefore advisable for the stakeholders to target financing to the right segment of firms, to ensure growth is sustained.

1.0 INTRODUCTION

One important factor when it comes to firm growth and performance is the availability of financing. Access to finance by firms affects growth because it eases liquidity constraints thereby enabling firms to exploit their full potential on innovation and investment opportunities (Beck, Demirgüç-kunt, & Maksimovic, 2006). It also promotes many start-up businesses which are a source of employment and innovation. The provision of employment results in more revenue through tax contribution thus helping the economy to grow. However, despite the important role that these enterprises play in the economy, entrepreneurs especially those with small firms are considered to be un-creditworthy by most formal credit institutions (Atieno, 2001). Although informal credit institutions meet the needs of these small enterprises, their limited resources cannon adequately satisfy the overwhelming credit demand by entrepreneurs (Atieno, 2001).

In a frictionless and perfect market, funds will always be available to all firms regardless of size or age. But in practice, most firms are not able to borrow enough capital at affordable rates (Petersen & Rajan, 1993). This can be explained by economic theories of agency costs and information asymmetry. Informational asymmetries in the loans market may result into credit rationing (Stiglitz & Weiss, 1981), which means they do not get as much credit as they require even if they are willing to pay prevailing interest rates, and lending conditions set by financial institutions (Rien, 2003).

Enterprises are active borrowers in both the formal and informal sectors. However, there exists an informational difference between the informal and formal lenders. Informal lenders have more information about borrowers than formal lenders. Formal lenders screen out borrowers by partially financing projects, forcing borrowers to turn to informal financing for the remainder of the project financing (Jain, 1999). The two sectors face a tradeoff between informational advantage and ability to mobilize funds through deposits. Formal lenders have more funds while informal lenders have information about borrowers.

In view of this, the theoretical literature portray informal lenders as recipients of the spillover demand from the formal sector (Boucher & Guirkinger, 2007). This explains the informal sector as a lender of last resort for firms that are quantity-rationed in the formal sector (Stiglitz & Weiss, 1981). The quantity rationing can be as a result of limited information by formal sectors which make them demand collateral to overcome moral hazard. Those firms that do not have collateral will be involuntarily excluded from formal credit and eventually turn to informal lenders, who will finance them on grounds of informational advantage which in this case substitutes for collateral (Stiglitz, 1990).

In developing countries, the formal and informal sectors coexist despite the spirited efforts of financial liberalization. These two sectors complement each other, implying that firms can simultaneously benefit from both sources. In most circumstances, formal

sectors provide capital for fixed investment, since they are well suited for long term credit, while informal sector complements this by providing the firm with working capital (Ghate, 1992). Furthermore, sometimes they complement each other by financing the same purpose. The banks may ration credit to minimize risk of adverse selection and meeting the credit control regulations, but borrowers will resort to informal credit for the unmet demand. The banks also act as a source of funds to the moneylenders who on lend the money informally (Ghate, 1992).

Previous research on firm financing patterns reveal that firms source more than half of their working capital from external financial sources (Safavian & Wimpey, 2007). Of this half, 54% of the external finance is sourced formally while 46% is from informal sources, and on average, an approximate of 14% of these enterprises exclusively prefer informal finance (Safavian & Wimpey, 2007). In Africa for instance, only 20 percent of households have access to formal financial services (Aterido, Beck, & Iacovone, 2013). This reflects directly to firms' access since individual households are the entrepreneurs. Differences in lending terms and conditions influence the choice between formal and informal credit among firms. The unique characteristics of services offered by formal and informal markets bring about the segmentation and co-existence of both (Atieno, 2001). Informal finance has an informational advantage while formal finance is scalable depending on demand (Degryse, Lu, & Ongena, 2016).

Informal finance is also highly personalized with face-to-face interactions between lenders and borrowers, very flexible on loan rescheduling and even the interest rates charged (Ghate, 1992). It is mostly preferred by small firms, since it is easily accessible at the doorstep with minimal regulation and collateral requirements, and for the fact that it can be given in smaller amounts with flexible repayment period. In this case reliance on informal finance avoids regulatory scrutiny and harassment in the formal sector which is highly regulated (Safavian & Wimpey, 2007). Informal finance is however limited in the sense that informal loans tend to be short term with high interest rates (Degryse et al., 2016). They also tend to cater for the social networks and relationships which result in other entrepreneurs being excluded due to lack of social networks and relations with the money lenders (Christensen, 1993).

The formal finance on the other hand offers long term loans and low interest rates since they are allowed to take deposits. They can as well scale up credit to keep up with demand (Degryse et al., 2016). They mostly cater for the large firms since they can only service the needs of the enterprise owners who can provide collateral or documented references. In this case, small and poor entrepreneurs will seek alternative financing since they may not have collateral needed, or they may need small loans which may render high administration costs for the banks (Tang, 1995). In addition, the formal sector loans are highly standardized with regulations relating to auditing and monitoring, liquidity requirements and regulated interest rates, which at the end increases transaction costs. The higher transaction costs are reflected in the lending terms and conditions, which may make it unattractive.

Literature in this area has mostly been limited to small and medium enterprises (Abor & Biekpe, 2007; Ayyagari, Beck, & Demirguc-Kunt, 2007; Beck, Demirguc-Kunt, & Maksimovic, 2008; Beck & Demirguc-kunt, 2006; Carpenter & Petersen, 2002; Daskalakis, Jarvis, & Schizas, 2013; Gebru, 2009; Krishnan, Nandy, & Puri, 2014; Wang, Robson, & Freel, 2015; Wu, Song, & Zeng, 2008) . This is due to the fact that small and medium firms are regarded as the ones who mostly use informal finance, and are regarded to be financially constrained. Most of these studies have also concentrated in the developed and Asian countries (Allen, Qian, & Qian, 2005; Allen, Chakrabarti, De, & Qian, 2012; Ayyagari, Demirguc-Kunt, & Maksimovic, 2008; Ayyagari, Demirgüç-Kunt, & Maksimovic, 2010; Degryse et al., 2016; Wu et al., 2008).

Within this literature there is no consensus on whether the formal-informal finance divide exists, and if it does which form of financing is most highly associated with high firm growth and performance. For instance Ayyagari et al. (2010), found that firms that have access to more formal external financing tend to perform well and thus grow faster than those using informal finance. However, other researchers have found alternative financing other than formal bank finance to be the major drivers of firm growth especially in China (Allen, Qian, & Qian, 2005; Linton, 2006). This makes the debate inconclusive.

This study seeks to contribute to this unresolved debate, using the World Bank Enterprise Survey data to examine firms of all sizes across 13 African countries. The study uses the relative distribution and Recentered Influence Function (RIF) methodologies to examine the extent to which firms choose between informal and formal financing sources, analyze the factors that influence their choices, and whether there are factors unique to those using informal/formal finance. The study also investigates whether there is a growth differential between these group of firms, and establish the form of financing that is more growth enhancing.

We control for firm characteristics such as firm size, industry, listing status, manager's experience, exporting status and source of financing as the main variable of interest. We use three different indicators of financing source: The first indicator variable, *Formal1*, takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%. The second indicator, *Formal2*, is the Ayyagari et al. (2010) variable which takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft. The third indicator variable is the Allen et al. (2005) measure, which takes the value of 1 if

financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions

The Relative Distribution results presented in PDF overlays portray an evidence of a growth differential, between the group of firms using informal finance and those using formal finance both in their working capital and new investment. Based on the three categories of formal versus informal finance, the Unconditional Quantile Regression results across 13 African countries portray a positive association between formal finance and the proxies of firm performance and growth (sales and labor productivity). Regardless of the categorization measure used, Formal finance is found to be improving firm performance and growth, as compared to informal finance.

This study is organized as follows. The next section describes the methods and the model used, while section 3 discusses the data and presents the descriptive statistics. Section 4 presents the results and findings of the study, and section 5 concludes and gives policy recommendations based on the findings.

2. METHODOLOGY

We seek to estimate the effect of formal versus informal finance on firm growth. More often the traditional methods that have been previously used leave much of the distributional information untapped. Relative distribution methods go beyond means and variance difference, by analyzing changes in upper and lower tails of the sales growth and labor productivity distributions. This makes the framework more general and flexible especially in identifying where much of the growth differential emanates from.

The relative distribution methods make use of the probability density functions (PDF) and the cumulative distribution functions (CDF). We use this to evaluate firm growth differential across firms, by analyzing sales distribution and labor productivity between firms using informal financing sources relative to those using formal financing sources. The relative distribution methods are advantageous since the graphical output is easy to understand, they are robust to outliers, and need fewer assumptions. They are also scale invariant to all monotonic transformations, making it less restrictive in terms of the assumptions that need to be made (Handcock & Morris, 1998).

The relative distribution methods are fully nonparametric in which the statistical framework uses graphical tools and decomposition to analyze data from a distributional perspective (Handcock & Morris, 1998). Using these methods, we let the CDF for sales growth and labor productivity of the reference group (firms which rely on informal finance form our reference group) be denoted by $F_{inf}(y)$. We also denote the corresponding CDF for the comparison group as $F_f(y)$. Let Y_{inf} and Y_f be random samples from F_{inf} and F_f respectively. We make the assumption that F_{inf} and F_f are continuous with a common support. In this case we can express the grade transformation of Y_f to Y_{inf} as: $R=F_{inf}(Y_f)$ (1)

Where *R* is a random variable obtained from Y_f after being transformed by the function F_{inf}. *R* is continuous and lies within the [0,1] outcome space (Handcock & Morris, 1998).

Taking the relative data *r* to mean the realization of *R*, we can express the CDF for *R* as:

$G(r)=F_f(F_{inf}^{-1}(r))$ $r\epsilon[0,1]$ (2)

And the corresponding probability density function (PDF) can be expressed as:

$$g(r)=\frac{f_f\left(F_{\inf}^{-1}(r)\right)}{f_{\inf}\left(F_{\inf}^{-1}(r)\right)} \qquad r\in[0,1] \qquad (3)$$

Where r is the percentile rank of sales and labor productivity distribution that firms using formal finance could have if placed in the informal finance group. The g(r) is just a density ratio of the fraction of firms in the informal finance group to the fraction in the formal finance group at a given level of sales growth or labor productivity outcome.

If we denote the r^{th} quantile of *R* as y_r, the relative PDF becomes:

$$g(r)=\frac{f_f(y_r)}{f_{\inf}(y_r)} \qquad y_r\geq 0 \qquad (4)$$

If the sales growth and labor productivity distribution for the firms using formal financing is identical to that of firms using informal financing source, then the CDF of their relative distribution will be expected to be a 45^0 line, while the corresponding PDF will be a uniform distribution. Therefore, for each quantile of the outcome variable (Sales growth and labor productivity) we expect three possible results: If g(r) is equal to one, we have a distributional equivalence across quantiles such that firm performance is the same across all quantiles regardless of the financing source. If g(r) is greater or less than one, then the two PDFs are different, implying that there is a growth difference between firms using informal financing and those using formal financing. This approach has been used in the literature. See for example Moshoeshoe (2016), Chi and Li (2007), Essama-Nssah and Lambert (2011).

The relative distribution method however poses heaping challenges and requires huge amounts of data. In addition, there is the problem of accounting for the contribution of covariates. The relative distribution requires that we account for each covariate independently which is cumbersome and may not yield the results as when the covariates are accounted for, together as an interaction.

So in addition to the relative distribution approach, we also use the Recentered Influence Function (RIF) to account for the contribution of various covariates towards sales growth and performance in terms of labor productivity. We compute the RIF by modelling unconditional quantiles of the dependent variable as a function of covariates. This helps in analyzing how the distribution of the outcome variable (in this case sales growth and labor productivity) responds to changes in the regressors. In this case we carry out a regression of a transformation of sales growth or labor productivity on all other covariates to evaluate the influence of a single observation on the overall firm performance.

Our interest in this case is to estimate the Unconditional Quantile Partial Effect (UQPE) on the unconditional quantiles of Y, given a small change in X covariates. Assume that we observe Y (firm performance), in the presence of X covariates (firm characteristics). Also assume that X and Y are jointly distributed, and Y is a function of observables X and unobservables ε, as in the equation below:

$$Y = h(X, \varepsilon) \qquad (5)$$

Since our interest is in the effect of a small increase t in the explanatory variables on the unconditional quantile of Y, we define the model as:

$$\alpha(n) = \lim_{t \downarrow 0} \frac{Q_n[h(X + t, \varepsilon)] - Q_n[Y]}{t} \qquad (6)$$

Where $Q_n[Y]$ is the n^{th} quantile of the unconditional distribution of the performance variables, and $\alpha(n)$ is the unconditional quantile partial effect (UQPE). This approach uses the concept of influence function (IF). We let the influence function be equal to:

$$IF(Y, q_n, f_Y) = \frac{(n - [\![\{Y \leq q_n\})}{f_Y(q_n)} \qquad (7)$$

Where $[\![\{.\}$ is an indicator function, q_n is the population nth quantile of the unconditional distribution of the outcome measure Y, and $f_Y(.)$ is the density of the marginal distribution of the outcome variable Y, which in our case is the firm performance measures. If we add the influence function into the population nth quantile of the unconditional distribution of Y, it yields the Recentered Influence Function (RIF) as:

$$q_n + IF(Y, q_n, f_Y) \qquad (8)$$

If we model this as a function of the explanatory variables and take a conditional expectation, then we get our RIF regression model as:

$$E[RIF(Y, \alpha)|X] = m_\alpha(X) \qquad (9).$$

In our case of quantiles, the Unconditional Quantile Regression (UQR) model becomes:

$$E[RIF(Y, q_n)|X] = m_n(X) \qquad (10)$$

3. DATA AND DESCRIPTIVE STATISTICS

This paper uses the World Bank micro enterprise survey dataset, which comprises of economic data on 130,000 enterprises in 135 countries. The survey covers firms of all sizes from small, medium to large firms. It also covers the manufacturing, services, transport and construction sectors. The data is comparable across countries and time due to the global standard methodology used in the data collection. It covers major regions in each country which are largest centers of business enterprises. The data is advantageous for our study since it has information on firms' characteristics and the financing sources that firms use to finance their working capital.

We focus on African firms from Kenya, Cameroon, Zimbabwe, Ethiopia, Ghana, Malawi, Namibia, Nigeria, South Sudan, Burundi, Morocco, Senegal and the Democratic Republic of Congo. The choice of the countries was based on those with most current survey data, and also a regional representation was considered. Regions and respective countries are as follows: Northern Africa(Morocco); East and horn of Africa(Kenya, South Sudan, Ethiopia); Central Africa(Burundi, Cameroon, DRC Congo); Southern Africa(Malawi, Namibia, Zimbabwe); West Africa(Nigeria, Ghana, Senegal). The available cross sectional data on these countries is between 2013 and 2016.

3.1Definition of variables

Dependent variables

For this study, we use firm performance as the dependent variable. Given data constraints, we chose sales growth and labor productivity as measures of firm performance since we are able to measure them from the available data. Growth in sales is

measured as the change in sales for a three year period. Firms report both the current levels of sales and the level of sales they had three years ago. Labor productivity is the ratio of sales to the total number of employees in the firm.

Explanatory Variables

Financing source

We define and measure formal finance in three different ways. The first definition (*Formal1)* measures the dominance of formal financing when funding working capital and investment. Formal1 is a dummy variable taking a value of 1 if the financing of working capital and investment done through bank, non-bank financial institutions and retained earnings was equal to or greater than 50%. That is, if formal finance dominates alternative sources (informal). It takes a value of zero if informal sources of finance dominate the formal sources. The informal sources include: trade credit, informal finance from informal lenders, friend and relatives. For the second indicator, we adopt the Ayyagari et al. (2010) variable which takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft. We call this measure *Formal2*. For the third indicator variable, we adopt the Allen et al. (2005) measure, which takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions. Other key variables include: Age, size, ownership, listing status, industry, manager's experience and exporting status (see Table A1).

Tables 3.1 and 3.2 provide a descriptive summary of the financing patterns of firms' working capital and investment respectively, across 13 African Countries. The sample has a total of 8,932 firms, with Nigeria having the highest number of firms and Cameroon the lowest. Most firms reported to be using retained earnings and internal finance in their working capital, as well as new investment making it the most dominant source of financing (see Tables 3.1 and 3.2). Approximately 74% of firms reported to be relying on internal finance/retained earnings, 18% rely on money lenders, friends and relatives, 8% use trade credit, and only 9% relying on bank financing to finance their working capital (see Table 3.2). The data also confirms what has been explained in the literature that many small firms finance their working capital through informal sources (Berger & Udell, 1998). For instance in our sample, other than internal financing, most micro and medium sized firms rely on informal money lenders, family and friends to finance their working capital (see Table 3.1).

Across the countries in the sample, Nigeria has the highest percentage of firms relying on informal money lenders and friends to finance their working capital. On the other hand, Namibia and Kenya report a higher percentage of firms relying on bank finance, in financing their working capital (Table 3.1). In Table 3.2, we present the percentage of firms financing their new investment using each source. One country (Cameroon) has information on quasi equity, and we combine this with owner issued equity for consistency purposes. The sample size in this investment variables reduced considerably due to nonresponse in the survey questions. In our regressions we combine the investment and working capital variables to mitigate against this missing data problem.

Table 3.1: Financing patterns across African Countries (% of firms using each financing source on Working Capital)

Country	Total Number of Firms	Retained Earnings & Equity	Banks	Non-Bank Financial Institutions	Trade Credit	Other Money Lenders, Relatives and Friends
Nigeria	2,396	64.67	4.80	4.24	8.99	17.30
Namibia	481	64.36	28.79	.19	3.26	3.40
Sudan	725	89.95	2.03	.86	3.37	3.80
Ghana	708	74.25	10.01	1.73	11.98	2.00
Ethiopia	848	81.33	13.50	1.03	2.83	1.30
Cameroon	155	65.70	22.81	1.06	8.57	1.79
Burundi	344	71.53	10.82	4.20	7.16	6.97
DRC	522	89.68	2.07	1.33	4.23	2.69
Malawi	422	68.86	11.78	2.44	11.42	5.19
Morocco	405	64.63	15.61	.27	11.28	1.69
Senegal	585	82.70	4.64	1.33	8.27	2.89
Kenya	741	62.67	17.74	2.16	14.75	2.59
Zimbabwe	600	75.05	6.28	1.34	6.27	10.64
Total	**8,932**	**74.30**	**9.47**	**2.21**	**7.97**	**17.75**

By firm size						
Micro	329	67.18	3.09	2.81	10.91	16.01
Small	4719	86.90	7.90	2.33	7.58	8.72
Medium	2284	80.76	10.77	2.40	7.66	10.36
Large	1600	77.74	13.58	1.45	8.94	4.24

Firm size was measured in terms of the number of employees in the firm. Micro firms are those with less than 5 employees, small firms are those with 5-19 workers, medium have 20-99 workers and large are those with more than 100 employees.

Just like in the working capital financing case, most firms rely on internal sources and retained earnings to fund new investment opportunities. From Table 3.2, 56% of firms in the sample financed their new investment through internal sources and retained earnings, followed by money lenders and bank financing with 11% of firms, then 7% of the firms used equity/owner issued finance, 4% of the firms used trade credit, and only 2% of the firms used non-bank financial institutions to finance their new investment. In addition, small, medium and micro sized firms rely heavily on retained earnings and informal sources such as money lenders to finance their investment (see Table 3.2). Across the countries in our sample, Nigeria has the highest percentage of firms relying on informal money lenders and friends to finance investment. On the other hand, Namibia and Kenya report a higher percentage of firms relying on bank finance in their investment financing (see Table 3.2). In Burundi the data shows a heavy reliance on non-bank financial institutions in funding investment.

Table 3.2: Financing patterns across African Countries (% of firms using each financing source on new investment)

Country	**Total Number of Firms**	**Internal/ Retained Earnings**	**Owner Issued/ Equity**	**Banks**	**Non-Bank Financial Institutions**	**Trade Credit**	**Other Money Lenders, Relatives & Friends**
Nigeria	1,539	30.90	7.78	2.03	1.72	3.79	16.80
Namibia	243	45.35	1.67	49.79	.82	.29	2.10
Sudan	256	87.42	2.75	2.25	.44	2.50	4.45
Ghana	356	75.46	4.54	12.31	1.61	3.89	2.13
Ethiopia	336	81.68	2.86	12.84	1.13	.15	1.34
Cameroon	62	68.05	4.60	16.79	3.41	4.29	2.70
Burundi	129	70.47	6.51	7.97	54.47	4.47	5.39
DRC	221	91.51	2.35	1.27	.72	2.37	1.78
Malawi	188	65.37	8.62	16.03	1.34	5.70	2.74
Morocco	172	56.31	3.81	22.66	3.02	5.20	1.42
Senegal	124	73.91	3.25	9.07	4.23	6.90	2.32
Kenya	339	59.01	6.45	26.97	1.14	5.23	1.31
Zimbabwe	151	70.44	8.65	10.15	2.28	5.14	2.64
Total	**4,116**	**56.02**	**7.41**	**11.13**	**1.80**	**3.58**	**11.34**
By Firm size							
Micro	219	21.58	4.77	1.99	.96	2.53	19.89
Small	1995	57.44	7.40	9.46	2.05	3.44	10.52
Medium	1109	55.71	6.17	12.20	1.72	3.99	15.52
Large	814	62.27	9.20	16.25	1.56	3.64	7.71

Firm size was measured in terms of the number of employees in the firm. Micro firms are those with less than 5 employees, small firms are those with 5-19 workers, medium have 20-99 workers and large are those with more than 100 employees.

Table 3.3 shows how financing patterns vary across various countries and firm sizes, using the three financing indicators. We classified firms as using either formal or informal sources both for working capital and investment. The first categorization (*Formal1*), takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working

capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%. In this categorization, 68% of firms rely on informal finance and only 32% rely on formal financing sources for both investment and working capital. Across all countries, firms financing their working capital and investment through informal finance exceed those using formal finance (see Table 3.3).

The second categorization (*Formal2*) is the Ayyagari et al. (2010) measure which takes the value 1 if a firm has a loan or overdraft, and 0 if a firm does not have either loan or overdraft. In this categorization, 57% of firms use informal finance, while 43% use formal financing for their working capital and investment. In this categorization, more firms from Kenya, Burundi, Morocco, Cameroon and Namibia use formal finance than informal finance. This means that firms in these countries have more access to bank credit thus lessening the spillovers that go to informal money lenders. In the other 6 countries however, those firms using informal finance exceed those using formal finance. Firms in countries like South Sudan, Nigeria, the Democratic Republic of Congo, Zimbabwe and Ghana heavily rely on informal finance to fund their investment and working capital. This could be as a result of the level of financial development in these countries (Beck et al., 2008).

Table 3.3: Percentage of firms using formal/informal finance on both working capital and investment (using our categorization variables)

		Fomal 1		***Formal2*: Ayyagari et al. (2010) Categorization**		***Bank dummy:* Allen et al.(2005) Categorization**	
Country	**Number of firms**	**Informal %**	**Formal %**	**Informal %**	**Formal %**	**Self - financing**	**Bank Financing**
Nigeria	2,676	75.30	24.70	76.15	23.85	99.78	0.22
Namibia	580	59.66	40.34	18.01	81.99	82.76	17.24
Sudan	738	68.02	31.98	82.99	17.01	100.00	0.00
Ghana	720	55.69	44.31	67.61	32.39	98.06	1.94
Ethiopia	848	61.67	38.33	50.59	49.41	97.76	2.24
Burundi	157	61.78	38.22	11.54	88.46	94.90	5.10
Cameroon	361	67.04	32.96	49.05	50.95	98.61	1.39
DRC	529	58.79	41.21	72.64	27.36	100.00	0.00
Malawi	523	67.88	32.12	50.90	49.10	98.09	1.91
Morocco	407	62.22	37.78	20.80	79.20	95.82	4.18
Senegal	601	82.20	17.80	52.29	47.71	99.50	0.50
Kenya	781	60.31	39.69	44.79	55.21	96.54	3.46
Zimbabwe	600	78.50	21.50	68.99	31.01	98.83	1.17
Total	**9,521**	**68.07**	**31.93**	57.30	42.70	**97.86**	**2.14**
By firm size							
Micro	377	84.08	15.92	82.22	17.78	99.73	0.27
Small	4,994	70.72	29.28	66.54	33.46	97.90	2.10
Medium	2,430	65.64	34.36	49.02	50.98	97.82	2.18
Large	1,718	60.30	39.70	40.35	59.65	97.38	2.62

Note: *Formal1* takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%. *Formal2* takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft. The *Bank dummy* takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions. Firm size was measured in terms of the number of employees in the firm. Micro firms are those with less than 5 employees, small firms are those with 5-19 workers, medium have 20-99 workers and large are those with more than 100 employees.

The third categorization (*Bank dummy*) is the Allen et al. (2005) measure, which takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions. In this categorization, 98% of the firms across all countries use self-financing sources unlike formal bank sources. Only 2% reported to be relying on bank formal sources. In countries like South Sudan and the Democratic Republic of Congo, all firms rely on self- financing sources.

Across all the categorization, micro and small firms almost entirely rely on informal finance and self-financing. As the firms grow, they tend to shift to formal financing sources. This is consistent with the previous literature that found small and medium firms to be relying on informal finance, while large firms rely on formal sources both for working capital and investment[1]. This could be because large firms can easily get bank financing due to transaction cost, collateral and reputational advantages (Allen et al., 2005).

Table 3.4: Correlation between performance measures and financing variables

	Formal1	Formal2	Bank dummy	Sales	Labor productivity
Formal1	1.0000				
Formal2	0.2070*	1.0000			
Bank dummy	0.2161*	0.1857*	1.0000		
Sales	0.1318*	0.2912*	0.0375	1.0000	
Labor productivity	0.0505*	0.2339*	-0.0180	0.8735*	1.0000

***** p<0.01, ** p<0.05, * p<0.1;** Bank dummy takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions. *Formal1* takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%. *Formal2* takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft. Sales growth is the log of the difference between sales 3 years ago and current sales, while labor productivity is the log of the ratio of sales to the number of employees.

Table 3.4 shows the correlation matrix for financing variables and firm growth and performance measures. From the table it can be seen that all financing variables are positively correlated with sales growth and labor productivity outcomes, significant at 10% significance level. The bank dummy's correlation is however indeterminate and not significant at any level.

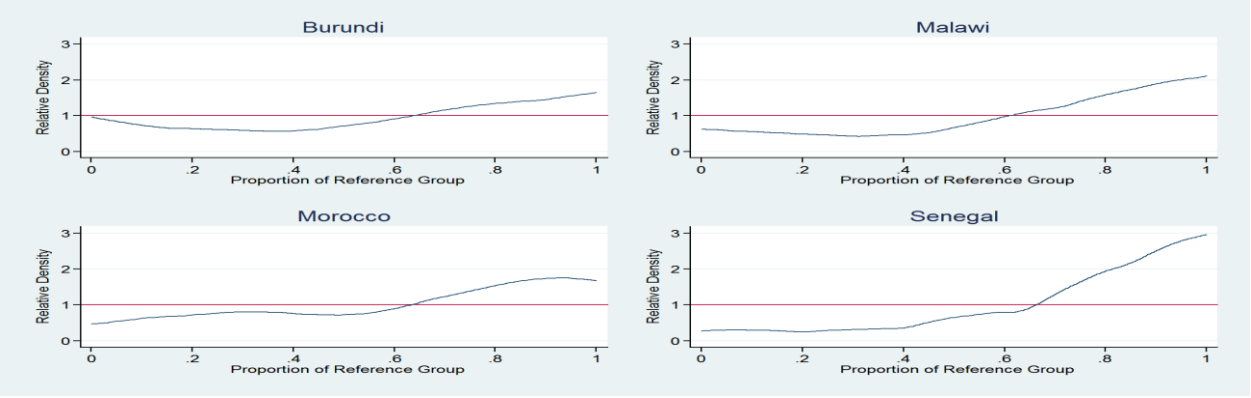
4. REGRESSION RESULTS

In this section, we discuss regression results obtained from two methods. The relative distribution method results are shown in graphical PDF overlays, while the Unconditional Quantile Regression results are both graphical and parametric estimates.

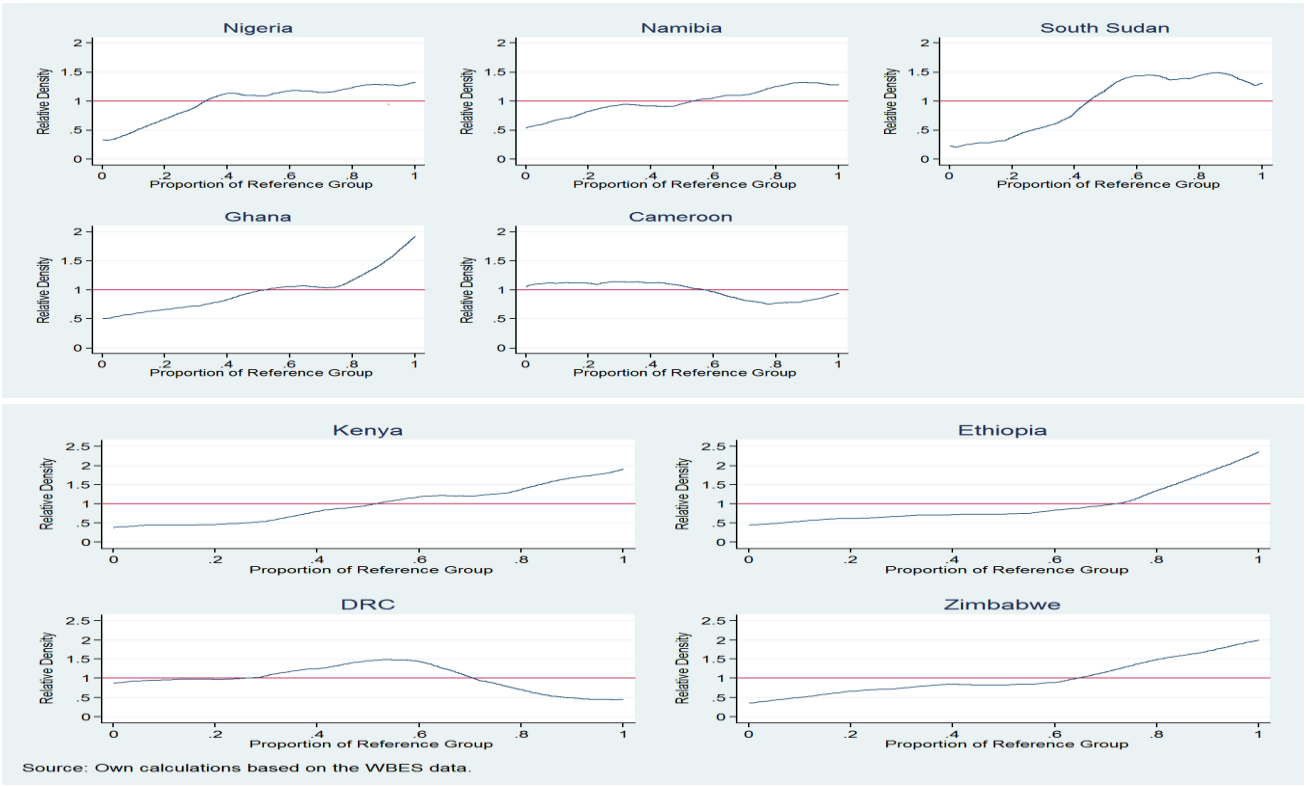
4.1 Relative distribution results

In this approach we compare firms using informal financing versus those using formal financing sources to fund their working capital and investment opportunities. The results are presented in PDF overlays, in which firms using informal finance form the reference group, while those using formal finance form the comparison group. If the two distributions are identical, the relative density would equal to 1 since in this circumstance we expect the PDFs to be uniform. Any deviations from uniform distribution indicate a distributional difference between the two groups of firms, which in our case demonstrates a growth differential between firms using informal finance and those using formal finance.

Figure 4.1: Relative density function, with sales growth outcome and formal1 categorization of firms



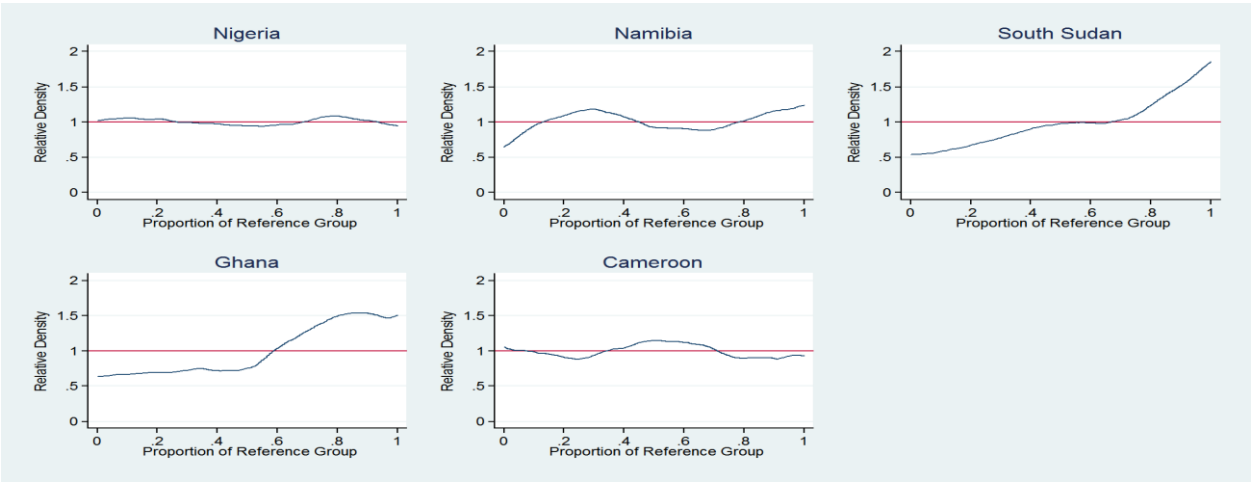
[1] See for example Berger and Udell (1998); Gregory et al. (2005) and Tang (1995).



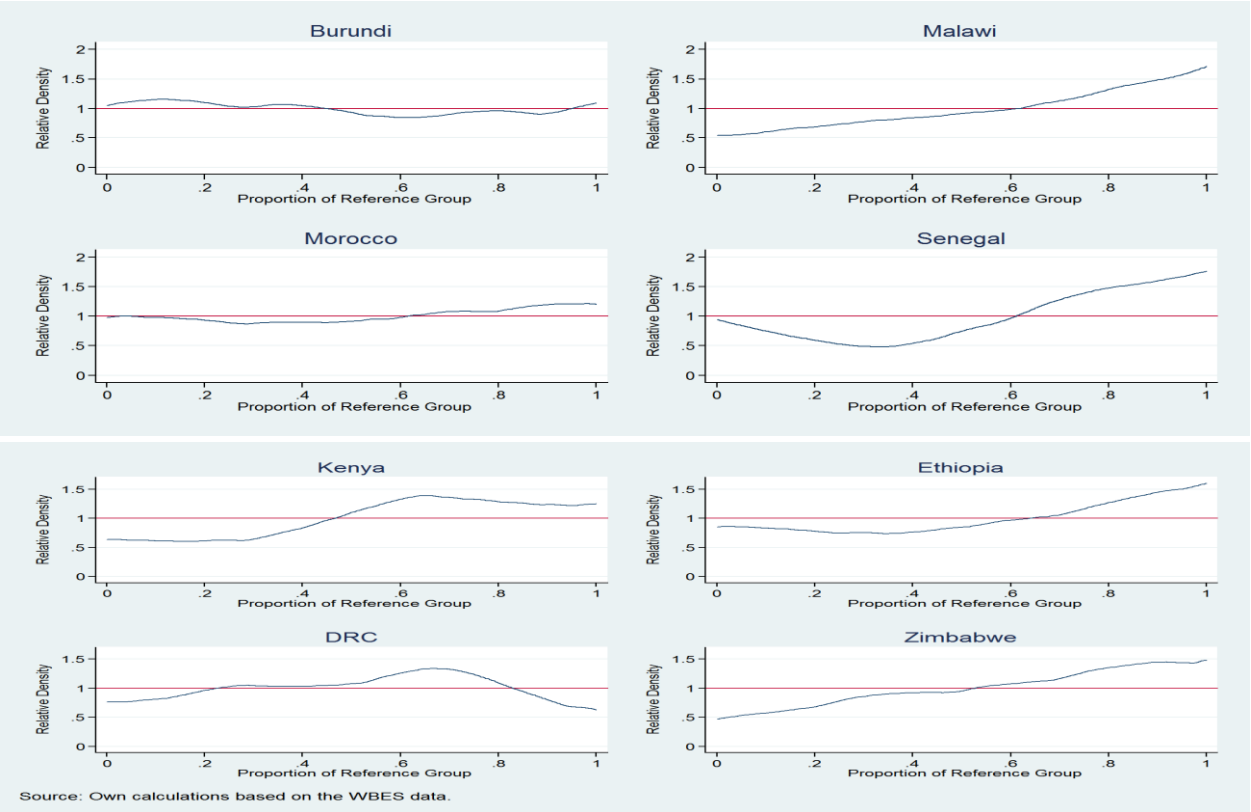
Note: *Formal1* takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%.

We present results for 13 African countries (Kenya, Senegal, Namibia, South Sudan, Nigeria, Burundi, Malawi, Morocco, Cameroon, Ghana, Zimbabwe, Ethiopia and the Democratic Republic of Congo), using the World Bank Enterprise Survey data between 2013 and 2016. Figure 4.1 shows the relative distribution results with sales growth as the dependent variable and *Formal1*[2] categorization variable for the two groups under comparison. As shown in Figure 4.1, there is evidence of a growth differential between the two groups of firms across all the countries. Figure 4.2 also demonstrates the same using labor productivity outcome variable. However, in Nigeria, Burundi and Morocco the PDFs are almost uniform showing that the difference in growth may not be very significant.

Figure 1.2: Relative density function, with labor productivity outcome and F*ormal1* categorization of firms



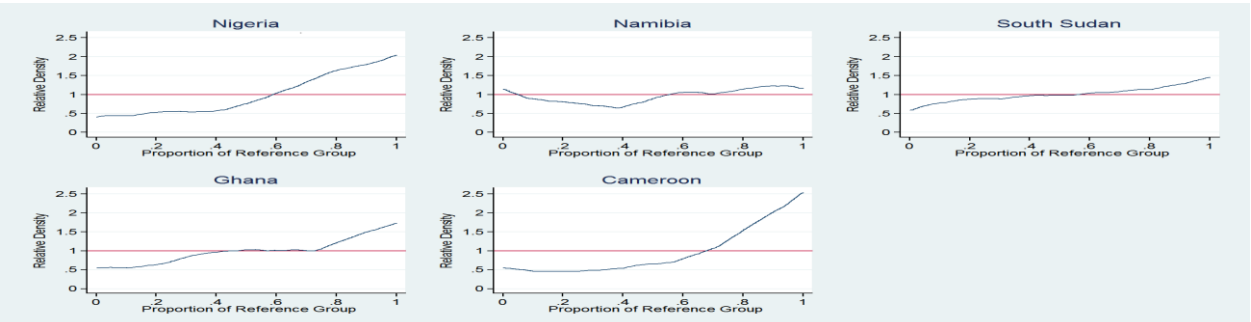
[2] *Formal1* takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%.



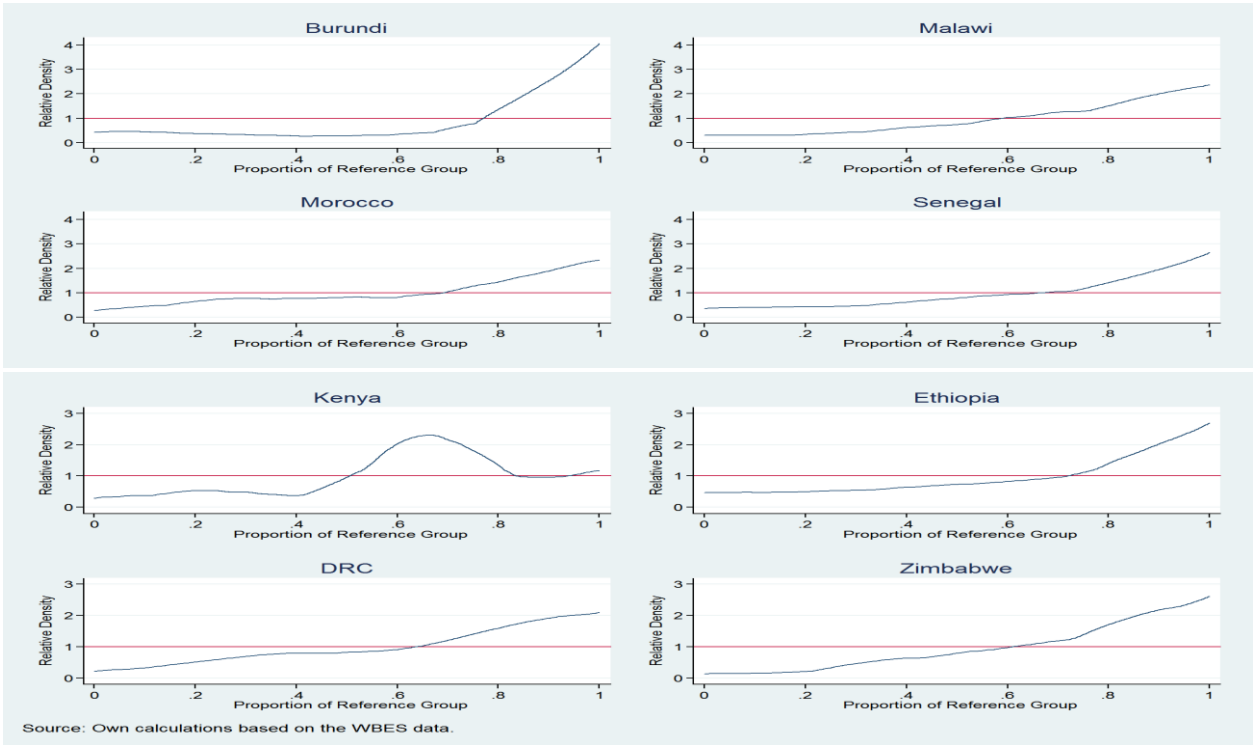
Note: *Formal1* takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%.

Figure 4.3 shows the relative distribution results with sales growth as the dependent variable and *Formal2*[3] categorization variable for the two groups under comparison. Across all the 13 countries, there is a significant evidence of a growth differential between the firms using informal finance and those using formal finance. Since firms using informal finance form the reference group, the PDFs demonstrate a positive differential in growth, which increases as we move towards the upper quantiles of the distribution. In all the 13 countries, the g(r) line is less than one in lower quantiles, and greater than one in upper quantiles. This implies that formal financing improves firm growth and performance differently across the quantiles. Specifically, those firms using formal finance are more likely to experience more growth if their sales and labor productivity is at the upper quantiles. For those whose sales and labor productivity is at the lower quantiles, they may not experience as much growth as those at the upper quantiles. The effect is however positive, implying that formal finance if used to finance new investment and working capital, improves performance more as compared to informal finance (see Figur4.4). In all the 13 countries, formal financing improves growth at the upper quantiles of the distribution, as compared to informal finance (Figures 4.3 and 4.4).

Figure 4.3: Relative density function, with sales growth outcome and formal2 categorization of firms

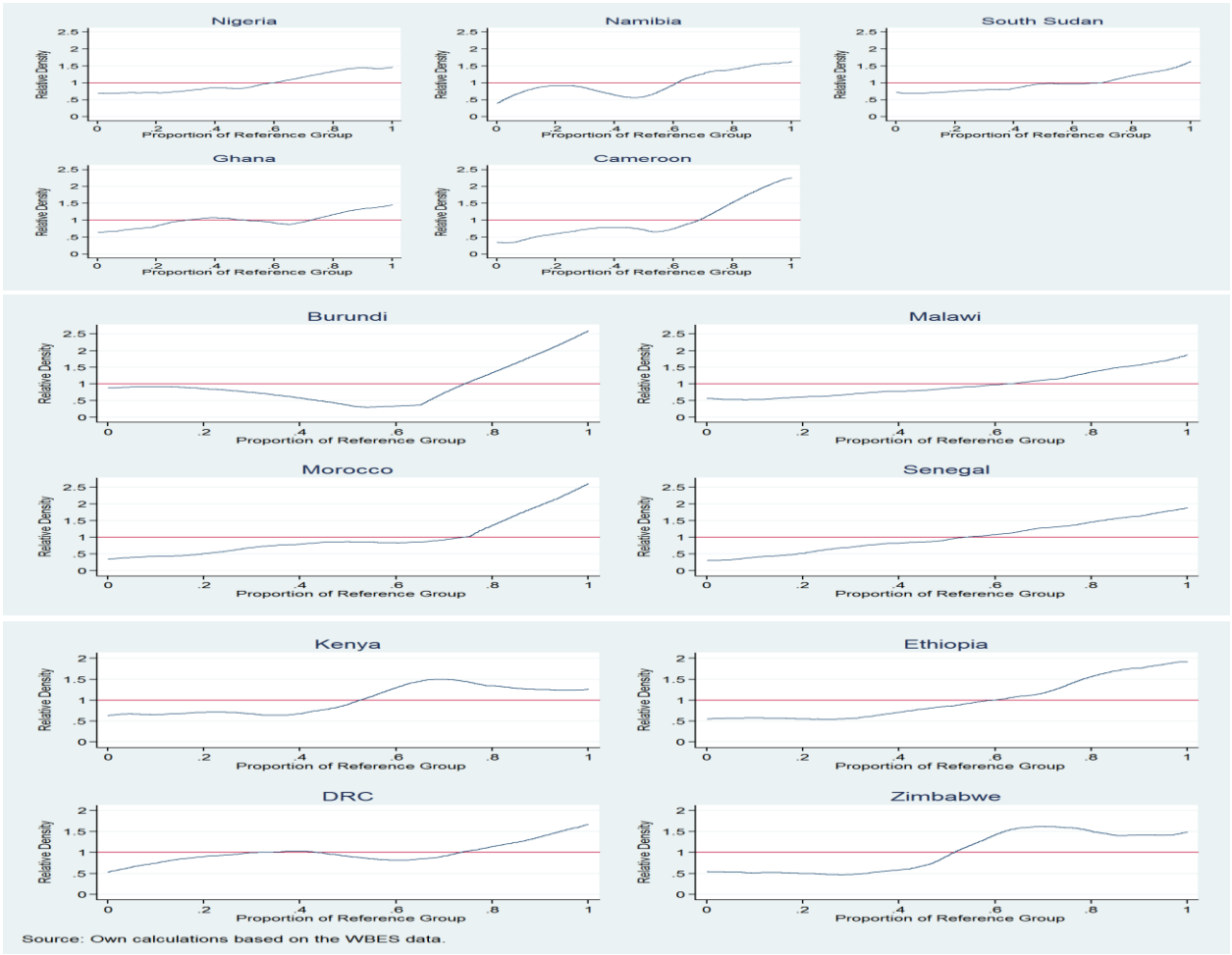


[3] *Formal2* is the Ayyagari et al. (2010) categorization variable, which takes the value 1 if a firm has a loan or overdraft, and 0 if a firm does not have either loan or overdraft.



Note: *Formal2* takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft

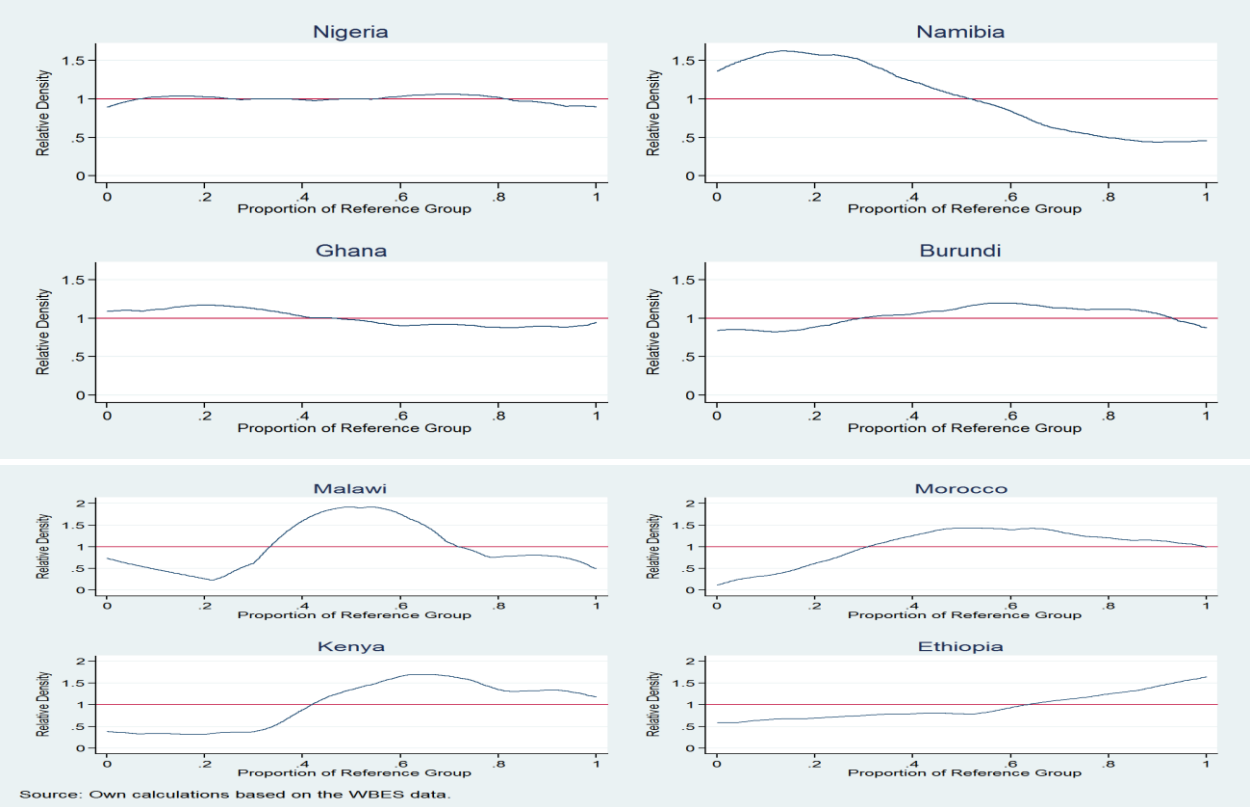
Figure 4.4: Relative density function, with labor productivity outcome and f*ormal2* categorization of firms



Note: *Formal2* takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft

Figure 4.5 shows the relative density results with the Allen et al. (2005) *self-financing* categorization variable[4]. We however note that results from this categorization variable may be biased due to lack of enough firms in the comparison group. Almost all firms use self-financing unlike bank and non-bank financial institutions (see Table 4.5). The variable yields mixed results across different countries. For instance in Namibia, Ghana, Morocco and Malawi, the results show that Bank financing decreases firm growth as compared to self-financing sources. This is consistent to the Allen et al. (2005) finding that alternative financing is superior to bank financing. However the results are not the same across the distribution. For instance in Morocco, formal finance increases firm performance in the lower tail of the distribution and starts to decline at the upper tails of the distribution. This also applies to Burundi, Nigeria and Malawi (see Figure 4.5).

Figure 4.5: Relative density function with the Allen et al. (2005) *selffinancing/bank dummy* categorization variable.



Note: The *bank dummy* measure takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions.

4.2 Recentered Influence Function (RIF) Results

In order to incorporate the effect of other covariates, we employ the Recentered Influence Function. In this case, we investigate the effect of formal finance (relative to informal finance) on the sales and labor productivity distribution. This is helpful especially if formal/informal finance affect firms differently depending on their level of productivity and sales distribution. In the RIF regressions we capture the changes in the unconditional quantiles of Y (Firm performance measures), as a result of small changes in X covariates (firm characteristics). We believe that the estimates are non-parametrically identified, assuming that the distribution of the outcome variable does not change in response to the changes in the covariates.

Our main interest here is to obtain the effect of formal/informal financing at different quantiles of the unconditional distribution of the performance and growth measures. We report our results based on the three categorizations of formal versus informal finance. In each case, we control for firm characteristics, whose results we report in Table 4.2.1, A3.1 and Table A3.2. The results portray a positive association between formal finance and the proxies of firm performance and growth. Regardless of the categorization measure used, formal finance has been portrayed to be improving firm performance and growth.

[4] The Allen et al. (2005) measure takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions.

Table 4.2.1 shows the Unconditional Quantile Regression results across 13 African countries, using the first categorization variable *Formal1* which takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft, and a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%. Using this categorization variable, the results portray a positive association between formal finance and the proxies of firm performance and growth.

For instance in Senegal, firms using formal finance experience growth in sales and labor productivity by 2.7 and 0.9 units more respectively, as compared to same firms with same characteristics but using informal finance (Table 4.2.1). It can also be noted that the effect is not the same across the distribution. For instance in Senegal only firms at the median of the sales growth and labor productivity distribution experience significant improvement in performance while other quantiles are not significant. In Zimbabwe, only firms at the lower and upper tails of the distribution experience growth as a result of using formal finance, as compared to those using informal finance. However, in Cameroon and Burundi, there is no significant association between firm performance, and the use of informal versus formal finance (see Table 4.2.1). However, in Ethiopia, the effect of formal finance on growth is portrayed throughout all the quantiles. It however increases in units towards the upper tails of the distribution. This is in tandem with the results that were portrayed by the relative distribution method.

The effect is even more significant and pronounced when we use the *formal2* categorization variable (Ayyagari et al. (2010) measure of formal finance), which takes the value 1 if a firm has a loan or overdraft and 0 if a firm does not have either loan or overdraft . In Table 4.2.2, the effect is highly positive and significant. For instance in Senegal, Ethiopia and Cameroon, the effect is significant across the quantiles except the 10^{th} quantile, and it increases towards the upper tails of the distribution (Table 4.2.2). In Malawi it is significant across all the quantiles. Burundi where the effect was not significant when using the first categorization, now has a positive effect of formal finance on firm performance. It portrays that firms using formal finance and are at the middle quantile in their sales distribution, have higher performance of almost 2 units as compared to firms of similar characteristics using informal finance.

In figure 4.2.3, we use the third categorization variable *bank dummy/self-financing* measure. This measure takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions. We recognize the fact that in this categorization, almost all firms use self-financing unlike bank and non-bank financial institutions (see Table 3.2). But the trend remains the same unlike this fact. The results portray positive effect which increases as you move towards the upper tails of both distributions. So regardless of the categorization measure used, formal finance is superior to informal finance in terms of sales growth and labor productivity. Only that the effect is different across different levels of outcome distribution.

Table 4.2.1: RIF regression estimates (*Formal1* measure of formal versus informal finance)

	Sales Growth			**Labor Productivity**		
VARIABLES	**Q10**	**Q50**	**Q90**	**Q10**	**Q50**	**Q90**
	Senegal					
Formal1	0.334	2.695***	1.152	-0.152	0.972***	0.488
	(0.334)	(0.654)	(0.768)	(0.326)	(0.293)	(0.465)
	Zimbabwe					
	0.697**	0.428	1.348	0.492***	0.197	0.670**
	(0.269)	(0.583)	(0.932)	(0.146)	(0.189)	(0.294)
	Cameroon					
	-0.216	-0.404	0.401	-0.256	-0.0505	-0.136
	(0.372)	(0.331)	(1.000)	(0.269)	(0.221)	(0.364)
	Namibia					
	0.916*	1.401*	0.782	0.562	-0.0793	0.344
	(0.551)	(0.758)	(0.812)	(0.363)	(0.259)	(0.274)
	Ethiopia					
	0.667***	1.322***	1.604***	0.174	0.410***	0.740***
	(0.252)	(0.336)	(0.384)	(0.191)	(0.142)	(0.248)
	Kenya					
	0.290	0.809	0.901	0.353	0.409**	0.318

(0.499)	(0.521)	(0.720)	(0.245)	(0.174)	(0.274)
DRC					
0.258	-0.0538	-0.833	0.398	0.452*	-0.590
(0.445)	(0.481)	(0.827)	(0.306)	(0.252)	(0.621)
Malawi					
0.206	1.470***	1.945***	0.489	0.652***	0.760*
(0.436)	(0.501)	(0.617)	(0.342)	(0.237)	(0.427)
Burundi					
-0.524	0.311	0.850	-0.0318	0.0756	0.120
(0.755)	(0.543)	(0.899)	(0.261)	(0.315)	(0.498)
South Sudan					
0.829	1.597	1.545	0.660***	0.318**	0.587**
(1.174)	(1.263)	(1.714)	(0.238)	(0.138)	(0.288)
Ghana					
1.083***	0.875**	1.191**	0.435	0.757***	0.407*
(0.375)	(0.388)	(0.479)	(0.270)	(0.226)	(0.240)
Morocco					
0.776	0.691*	0.654	0.0366	0.310	0.0928
(0.492)	(0.400)	(0.678)	(0.243)	(0.215)	(0.349)
Nigeria					
0.601***	0.542*	0.109	0.00248	-0.0948	-0.455
(0.172)	(0.308)	(1.083)	(0.181)	(0.136)	(0.321)

*Bootstrapped standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1)*

Formal1 takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%.

Table 4.2.2: RIF regression estimates (*Formal2* measure of formal versus informal finance)

	Sales Growth			**Labor Productivity**		
VARIABLES	**Q10**	**Q50**	**Q90**	**Q10**	**Q50**	**Q90**
	Senegal					
Formal2	0.352	1.679***	1.525***	0.654***	0.803***	0.637**
	(0.440)	(0.583)	(0.519)	(0.219)	(0.261)	(0.311)
	Zimbabwe					
	0.649**	0.387	0.505	0.0396	0.490***	0.338
	(0.251)	(0.561)	(0.851)	(0.178)	(0.158)	(0.278)
	Cameroon					
	0.0587	0.883*	2.649**	0.615***	0.540**	0.834*
	(0.301)	(0.454)	(1.145)	(0.233)	(0.241)	(0.426)
	Namibia					
	0.283	0.612	1.238	1.353	0.825	0.388
	(1.225)	(1.270)	(1.442)	(0.983)	(0.578)	(0.559)
	Ethiopia					
	0.399	1.404***	1.242***	0.117	0.568***	0.561**
	(0.337)	(0.332)	(0.311)	(0.224)	(0.145)	(0.255)
	Kenya					
	0.753	1.383***	-0.263	0.720**	0.728***	0.449
	(0.502)	(0.513)	(0.795)	(0.339)	(0.169)	(0.286)
	DRC					
	0.619	0.916**	0.902	0.535	0.249	1.270*
	(0.384)	(0.451)	(1.197)	(0.345)	(0.303)	(0.768)

	Malawi					
	1.201**	1.944***	2.403***	0.790**	0.862***	1.463***
	(0.470)	(0.511)	(0.609)	(0.322)	(0.238)	(0.404)
	Burundi					
	1.350	2.387***	1.885*	-0.0359	1.449***	0.356
	(1.237)	(0.786)	(1.095)	(0.526)	(0.546)	(0.574)
	South Sudan					
	0.234	-0.0364	-0.324	0.397	0.370**	0.835**
	(0.656)	(1.377)	(2.595)	(0.314)	(0.156)	(0.421)
	Ghana					
	0.931**	0.196	0.869	0.404	0.0897	0.157
	(0.365)	(0.359)	(0.659)	(0.258)	(0.229)	(0.285)
	Morocco					
	1.680*	0.923**	0.470	0.474	0.755***	0.640*
	(0.869)	(0.454)	(0.822)	(0.387)	(0.259)	(0.331)
	Nigeria					
	0.413	0.952*	0.852	0.465*	0.385	-0.109
	(0.353)	(0.501)	(1.499)	(0.282)	(0.258)	(0.451)

Bootstrapped standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Formal2 is the Ayyagari et al. (2010) measure of formal finance, which takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft

Table4.2.3: RIF regression estimates (*bank dummy/self-financing* measure of formal versus informal finance)

	Sales Growth			**Labor Productivity**		
VARIABLES	**Q10**	**Q50**	**Q90**	**Q10**	**Q50**	**Q90**
	Senegal					
Bank dummy				1.153**	-1.728**	-0.225
				(0.581)	(0.828)	(0.174)
	Zimbabwe					
	0.331	0.0737	2.117	0.658***	0.980*	0.640
	(0.331)	(1.596)	(3.464)	(0.144)	(0.547)	(1.381)
	Cameroon					
				0.618*	-0.178	-1.405
				(0.330)	(0.938)	(1.000)
	Namibia					
	0.488	-0.494	0.909	0.191	-0.613*	-0.286
	(0.521)	(0.746)	(1.000)	(0.423)	(0.313)	(0.318)
	Ethiopia					
	0.981***	1.345	1.280	0.0984	0.324	2.628**
	(0.276)	(0.883)	(1.616)	(0.596)	(0.523)	(1.239)
	Kenya					
	-0.591	0.494	-0.785	0.748*	1.202***	-0.116
	(0.918)	(1.282)	(2.655)	(0.442)	(0.361)	(0.654)
	Malawi					
						-
	0.812**	2.779***	0.0329	-0.113	-0.0173	1.221***
	(0.364)	(0.626)	(2.883)	(1.536)	(0.867)	(0.417)
	Burundi					
	0.821	1.734**	-0.279	-0.262	0.222	-0.991
	(0.512)	(0.754)	(2.068)	(0.786)	(0.648)	(0.901)
	Ghana					

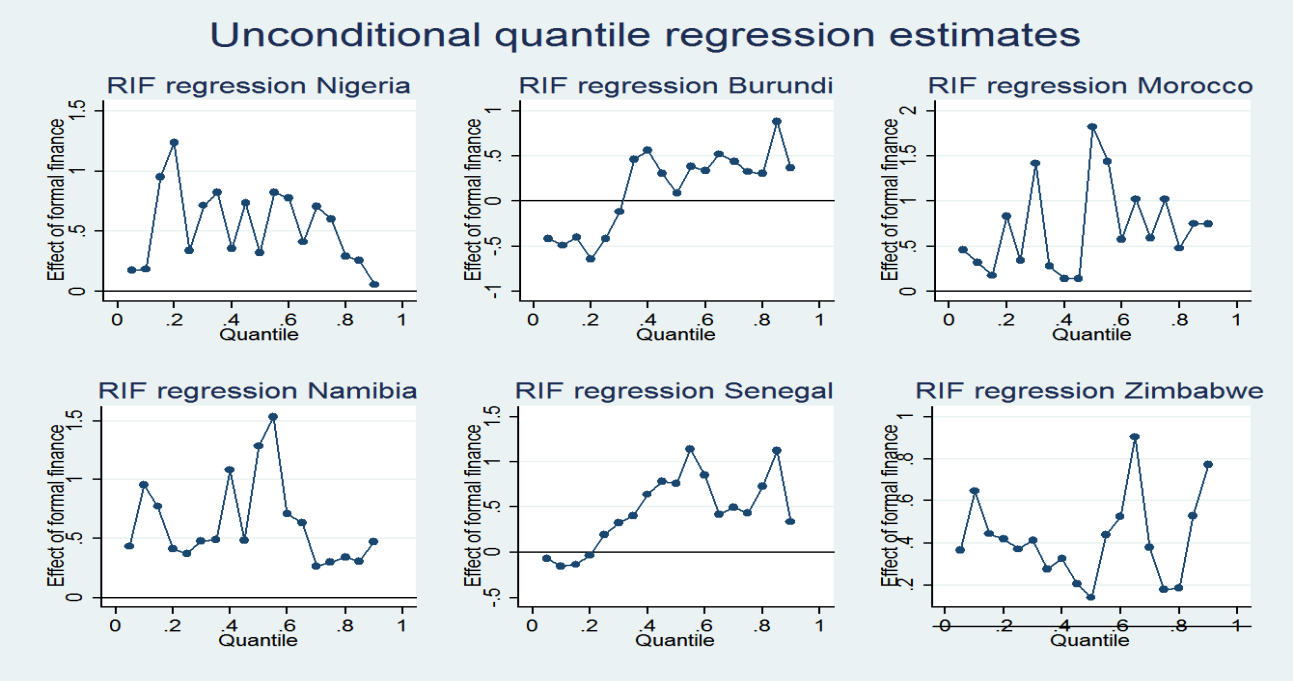
1.041***	0.258	1.291	0.998***	0.0682	0.0915
(0.355)	(1.227)	(2.310)	(0.207)	(0.808)	(1.068)
Morocco					
0.937**	1.120*	-0.292	0.637***	0.432	-0.355
(0.362)	(0.593)	(1.547)	(0.195)	(0.440)	(1.073)
Nigeria					
0.746**	-0.330	4.998	1.075***	-1.138	2.529
(0.344)	(1.160)	(7.232)	(0.280)	(1.220)	(4.080)

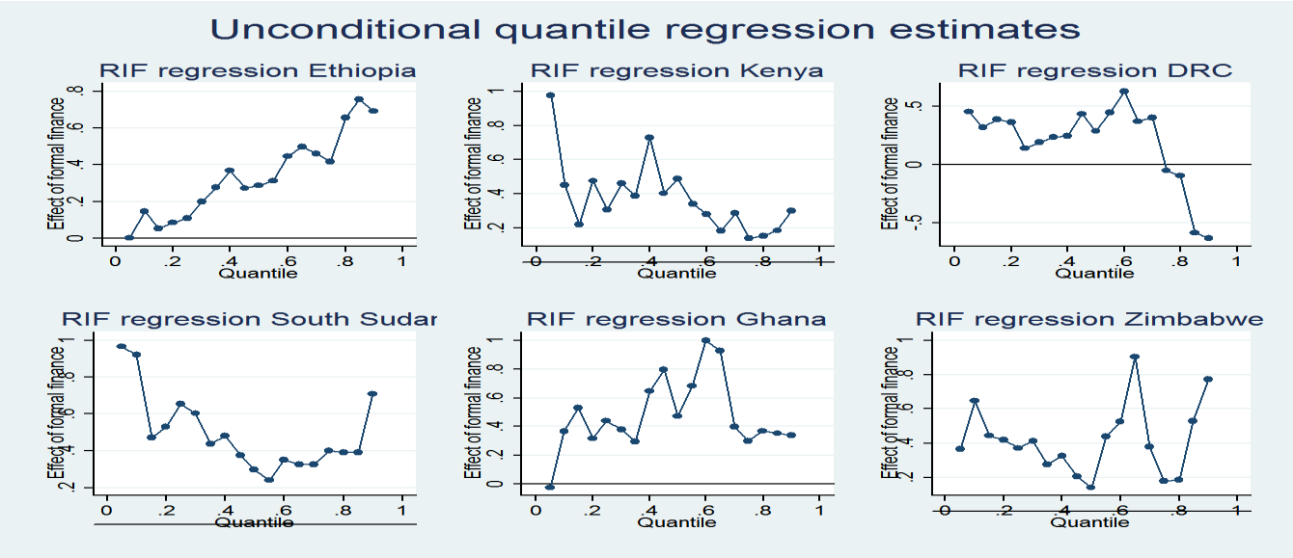
Bootstrapped standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The *bank dummy* measure takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions.

The effect can be seen more clearly by demonstrating this on graphical displays. Figure 4.2.1 demonstrates how Formal finance impacts on firm growth across many quantiles. Even though the growth is seen to be fluctuating across the quantiles, the growth oscillates along the positive quadrant. It is only in the Democratic Republic of Congo, where the growth declines till negative at the upper tails of the distribution (Figure 4.2.1). For instance, in Ghana, Senegal and Burundi, the growth increases from negative at the lower quantile, then gets to a high positive at the upper quantile. This could imply that formal finance benefits more those firms at the lower level of the distribution than those at higher levels of the distribution. In Ethiopia, the estimates display a monotonically increasing effect across the quantiles. The figures, clearly confirm the point that the use of formal/informal finance affects firm growth differently, at different points of the distribution. So policy makers should recommend different policies for different firms depending on their level of sales/labor productivity distribution.

Figure 4.2.1: Graphical display of the Unconditional Quantile partial effects





The model also incorporated other covariates other than the financing variable. Table 4.2.4 shows the association of firm characteristics with performance and growth. Size is positively associated with firm growth. The bigger the firm size, the more likely that the firm will perform better as compared to smaller firms, holding all other factors constant. And this effect increases monotonically across the quantiles. Age is also positively associated with firm performance and growth. The older the firm is, the more it is likely to perform better. This supports the evidence in the literature that large and older firms perform better than young and small firms[5]. Though we cannot rule out the fact that the bigger firms could be benefiting from economies of scale, as a result of their increased size. And since in our model firms using formal financing perform better than those using informal financing, then we can also infer that old and larger firms perform better because they can easily access formal finance due to their reputational advantage, as compared to young and smaller firms, holding all other factors constant.

Those firms that directly or indirectly export their products perform better than those that do not export. This is however not the case with Namibia, Morocco, South Sudan and Kenya whose coefficient is negative. The effect throughout is higher at the fiftieth and ninetieth quantiles than at the tenth quantile (Table 4.2.4).

The number of years that the manager has been in a firm does not seem to impact on firm performance in most countries. In Nigeria where the variable is highly significant at 1% significance level, the growth of the firm declines as the manager's experience increases. It could be that the manager gets used into routine as he/she keeps the position in a firm to an extent firm performance stagnates. The coefficient is however positive in Ethiopia and Kenya.

Firms listed in the stock exchange perform better than those not listed. Its only in Ethiopia where the coefficients are significantly negative. This could be due to the fact that the Ethiopian stock exchange market was young and not well established at the time of the survey. In addition, foreign owned firms perform better than domestically owned firms (see Tables 4.2.4, A3.1 and A3.2). This could be in line with the existing literature which argues that foreign owned firms have access to many sources of formal finance, since they can easily access funds even from foreign banks as well as their mother companies abroad[6].

[5] See for example Berger and Udell (1998); Gregory et al. (2005) and Tang (1995).

[6] See for example Beck and Demirguc-kunt (2006); Blalock, Gertler and Levine (2008).

Table 4.2.4: Estimates of the effect of other firm characteristics on firm performance (using *formal1* measure of formal/informal financing source)

	Sales Growth			Labor Productivity			Sales Growth			Labor Productivity		
VARIABLES	Q10	Q50	Q90	Q10	Q50	Q90	Q10	Q50	Q90	Q10	Q50	Q90
	Senegal						**Zimbabwe**					
size	0.235	1.036***	0.364	0.190**	0.309***	0.444**	0.381	1.574***	0.439	-0.0394	0.267**	-0.112
	(0.152)	(0.282)	(0.241)	(0.0870)	(0.111)	(0.175)	(0.261)	(0.370)	(0.461)	(0.117)	(0.110)	(0.159)
exporting	0.683**	3.472***	0.874	0.594***	0.690	1.357	0.264	-0.794	-0.345	0.531***	-0.130	0.145
	(0.321)	(0.885)	(1.811)	(0.214)	(0.590)	(1.314)	(0.752)	(2.679)	(1.731)	(0.148)	(0.484)	(0.964)
industry	0.0201	0.00271	-0.00406	0.0121*	0.00896	0.00832	-0.204	-0.0967	-0.128	0.0293	0.0119	-0.0266
	(0.0138)	(0.0126)	(0.0172)	(0.00682)	(0.00565)	(0.00802)	(0.169)	(0.152)	(0.263)	(0.0540)	(0.0465)	(0.0672)
age	-0.0125	0.0152	0.0839*	0.00286	0.0222***	0.0270	0.0104	0.0154	0.0249*	0.00544	0.00572*	0.00189
	(0.0144)	(0.0266)	(0.0428)	(0.00718)	(0.00725)	(0.0166)	(0.00732)	(0.0110)	(0.0140)	(0.00338)	(0.00335)	(0.00440)
ownership	0.645*	1.045	3.794**	0.504***	0.253	1.224	0.554	1.477*	-1.419	0.0314	0.506**	0.989**
	(0.353)	(1.026)	(1.930)	(0.121)	(0.398)	(0.861)	(0.371)	(0.865)	(1.433)	(0.237)	(0.242)	(0.540)
Legal status	0.408	2.733***	5.643**	0.430***	1.215***	1.196	-0.122	1.157*	3.111*	0.358*	0.995***	1.527***
	(0.287)	(0.742)	(2.445)	(0.177)	(0.420)	(0.972)	(0.423)	(0.596)	(1.802)	(0.190)	(0.201)	(0.576)
Manager_exp	0.0133	0.0549*	-0.0140	0.0131	0.0104	-0.000449	0.0300	0.00251	0.0136	-0.00160	-0.00363	-0.00377
	(0.0172)	(0.0312)	(0.0329)	(0.0111)	(0.0120)	(0.0210)	(0.0189)	(0.0242)	(0.0302)	(0.00870)	(0.00745)	(0.0106)
	Cameroon						**Namibia**					
size	0.251*	0.560**	1.477*	0.0971	0.131	0.0445	-0.0516	1.319**	1.342	0.00121	0.334	0.785**
	(0.151)	(0.223)	(0.789)	(0.185)	(0.136)	(0.203)	(0.300)	(0.567)	(1.548)	(0.273)	(0.234)	(0.319)
exporting	0.555*	0.119	-3.830	-0.735	-0.318	-0.972	0.797	-2.332	-2.061	1.078	-0.172	-1.410*
	(0.328)	(0.804)	(3.134)	(0.844)	(0.470)	(1.153)	(0.586)	(2.883)	(2.888)	(1.086)	(1.654)	(0.820)
industry	-0.231	0.216	0.122	-0.117	-0.0314	-0.142	0.0381	-0.330	-0.0834	0.313	0.212	-0.197

	(0.152)	(0.178)	(0.693)	(0.147)	(0.126)	(0.203)	(0.314)	(0.454)	(0.608)	(0.260)	(0.184)	(0.227)
age	-0.00231	0.0251*	0.0673	0.0267**	0.0125	0.0373	0.0208	0.0228	0.0649	-0.00563	0.0453***	0.0529**
	(0.0113)	(0.0137)	(0.0759)	(0.0129)	(0.00849)	(0.0262)	(0.0192)	(0.0342)	(0.0669)	(0.0178)	(0.0142)	(0.0250)
ownership	0.279	0.113	5.351	0.392	0.571	2.058	1.045**	2.059	1.838	0.435	0.180	-0.0812
	(0.226)	(0.565)	(3.805)	(0.422)	(0.441)	(1.550)	(0.422)	(1.561)	(3.284)	(0.451)	(0.528)	(0.717)
Legal status	-0.119	0.260	0.941	-0.0108	0.325	1.575**	-1.677*	-1.557	-6.190	0.218	-0.668	0.264
	(0.429)	(0.378)	(1.670)	(0.400)	(0.285)	(0.758)	(0.975)	(1.731)	(3.942)	(0.616)	(1.240)	(2.530)
Manager_exp	0.0201	0.0157	-0.0194	-0.0160	-0.00886	-0.0311	0.0266	0.0436	-0.00941	0.0586***	0.0502***	0.0281
	(0.0151)	(0.0178)	(0.0602)	(0.0175)	(0.0106)	(0.0221)	(0.0255)	(0.0479)	(0.0818)	(0.0165)	(0.0167)	(0.0209)
	Ethiopia						**Kenya**					
size	0.263	0.621***	0.506***	0.483***	0.162**	0.000204	0.737***	1.244***	1.667***	0.0257	0.216**	0.247
	(0.180)	(0.176)	(0.158)	(0.0927)	(0.0755)	(0.113)	(0.216)	(0.337)	(0.617)	(0.170)	(0.0985)	(0.157)
exporting	0.237	1.343**	3.205**	0.550***	0.485	0.955	-0.336	0.642	1.078	-1.101*	-0.252	-0.166
	(0.396)	(0.600)	(1.271)	(0.196)	(0.300)	(0.727)	(0.504)	(0.576)	(1.344)	(0.605)	(0.226)	(0.299)
industry	0.00262	-0.00444	-0.00397	0.00618	0.0119***	0.0319***	-0.0106	-0.0137	-0.0159	-0.00385	0.00641	0.00596
	(0.00829)	(0.0100)	(0.0106)	(0.00557)	(0.00440)	(0.00766)	(0.0109)	(0.0142)	(0.0258)	(0.00899)	(0.00537)	(0.00782)
age	0.0111	0.0373***	0.0607***	0.0131**	0.0136**	0.00757	0.0140**	0.00560	-0.00293	0.00280	0.00335	0.00183
	(0.00904)	(0.0131)	(0.0195)	(0.00593)	(0.00585)	(0.0103)	(0.00660)	(0.0141)	(0.0299)	(0.00932)	(0.00470)	(0.00838)
ownership	0.632**	2.053***	1.080	0.386**	0.307	0.857	-0.194	1.552**	4.402*	0.276	0.403	1.252*
	(0.281)	(0.436)	(0.877)	(0.184)	(0.276)	(0.601)	(0.474)	(0.734)	(2.405)	(0.524)	(0.294)	(0.698)
Legal status	0.483	0.628	-3.637**	0.521***	-0.433	-1.154***	0.0926	2.107	-0.630	-0.286	1.010*	0.634
	(0.357)	(1.370)	(1.626)	(0.193)	(0.653)	(0.438)	(0.618)	(1.284)	(5.400)	(1.160)	(0.556)	(1.450)

Manager_exp	0.00879	0.0238	-0.0111	0.0328***	0.0108*	-0.00896	0.0387**	0.0359	-0.0275	0.0298*	0.0112	-0.0122
	(0.0121)	(0.0164)	(0.0196)	(0.00778)	(0.00651)	(0.0141)	(0.0191)	(0.0220)	(0.0377)	(0.0165)	(0.00711)	(0.0108)
	DRC						**Malawi**					
size	0.420	1.467***	5.536***	-0.0599	0.433*	2.846***	-0.467**	-0.124	0.422*	-0.0867	0.211*	0.0315
	(0.341)	(0.369)	(1.318)	(0.223)	(0.241)	(0.756)	(0.232)	(0.216)	(0.219)	(0.187)	(0.109)	(0.160)
exporting	0.960*	2.262**	8.347	0.432	1.155	7.120*	0.595	0.885	3.453	-3.076	-0.462	-0.0464
	(0.516)	(0.969)	(5.334)	(0.910)	(0.756)	(4.136)	(0.507)	(0.860)	(5.364)	(1.902)	(0.677)	(1.215)
industry	0.0275**	0.00978	-0.0244	0.0162*	0.0167**	0.0147						
	(0.0125)	(0.0132)	(0.0286)	(0.00847)	(0.00817)	(0.0181)						
age	0.000939	0.0262	0.0451	0.0206**	0.0144	-0.0269	0.00881	0.0319*	0.0494	0.0147	0.0160	0.00979
	(0.0143)	(0.0212)	(0.0772)	(0.0103)	(0.0129)	(0.0474)	(0.0156)	(0.0176)	(0.0336)	(0.0135)	(0.0101)	(0.0154)
ownership	1.190***	1.848***	2.374	0.898***	1.588***	1.254	0.0528	1.530***	2.148**	0.161	0.474	0.189
	(0.230)	(0.540)	(1.521)	(0.273)	(0.372)	(0.973)	(0.488)	(0.574)	(1.081)	(0.467)	(0.299)	(0.532)
Legal status							-1.553	0.335	6.339	-2.574	-1.607***	-1.205**
							(2.729)	(1.775)	(3.906)	(2.811)	(0.489)	(0.468)
Manager_exp	0.0225	-0.00108	0.0207	0.0310**	0.0142	0.0934*	0.0269	0.00962	-0.0344	0.00756	-0.0125	-0.00837
	(0.0164)	(0.0230)	(0.0735)	(0.0122)	(0.0159)	(0.0490)	(0.0164)	(0.0258)	(0.0368)	(0.0178)	(0.0118)	(0.0230)
	Burundi						**Sudan**					
size	0.302	0.460*	0.534	0.255*	0.571***	0.299	0.0229	-0.0905	1.496	-0.124	0.251	1.451***
	(0.434)	(0.275)	(0.492)	(0.149)	(0.159)	(0.245)	(0.442)	(1.049)	(2.500)	(0.271)	(0.171)	(0.540)
exporting	1.155	-0.331	1.764	-0.944	-0.675	-0.945	0.113	0.784	-3.391	-0.671	0.461	-1.255***
	(0.734)	(1.324)	(3.734)	(1.032)	(0.751)	(0.829)	(0.470)	(2.050)	(2.623)	(1.196)	(0.586)	(0.382)
industry	-0.00892	-0.0308*	0.00316	-0.0128	-0.0252***	-0.0174	0.0169	-0.00786	-1.80e-05	0.00710	0.00815	0.0181

	(0.0249)	(0.0184)	(0.0288)	(0.00941)	(0.00919)	(0.0154)	(0.0433)	(0.0504)	(0.0622)	(0.0109)	(0.00541)	(0.0134)
age	0.0330	0.00537	0.0903	-0.00707	0.00839	0.0253	0.208	0.143	-0.0228	-0.0387	-0.0121	0.0224
	(0.0276)	(0.0324)	(0.0676)	(0.00896)	(0.0118)	(0.0278)	(0.135)	(0.172)	(0.214)	(0.0322)	(0.0162)	(0.0459)
ownership	-0.820	-0.139	1.636	-0.0712	0.705*	-0.285	1.235	2.224	2.600	0.360	0.148	0.468*
	(0.957)	(0.824)	(1.691)	(0.406)	(0.401)	(0.856)	(0.795)	(1.509)	(1.877)	(0.230)	(0.128)	(0.269)
Legal status	0.648	-0.115	1.054	0.163	-0.436	-0.0805	-0.392	-0.518	4.775	-1.384	-0.779**	-0.325
	(0.457)	(0.803)	(1.480)	(0.281)	(0.363)	(0.698)	(1.087)	(2.370)	(6.596)	(1.040)	(0.376)	(0.747)
Manager_exp	0.0358	0.0371	-0.0381	0.0119	-0.00950	-0.0239	0.0293	-0.0171	-0.0543	0.0109	0.0102	0.0201
	(0.0379)	(0.0312)	(0.0886)	(0.0130)	(0.0179)	(0.0322)	(0.0461)	(0.0808)	(0.107)	(0.0195)	(0.00937)	(0.0268)
	Ghana						**Morocco**					
size	0.0280	0.386**	0.500**	-0.0699	0.0470	0.0713	-0.303	1.045***	0.923**	-0.283	-0.272**	-0.159
	(0.166)	(0.164)	(0.230)	(0.108)	(0.0825)	(0.102)	(0.340)	(0.266)	(0.380)	(0.204)	(0.135)	(0.240)
exporting	0.418	1.433*	2.518*	-0.441	0.125	0.350	0.195	0.0539	-0.674	-0.105	-0.891***	-0.502
	(0.614)	(0.744)	(1.412)	(0.702)	(0.495)	(0.751)	(0.762)	(0.604)	(1.040)	(0.375)	(0.290)	(0.423)
industry	-0.00668	0.0294**	0.00906	0.0139	0.0235***	0.0238***	0.0553	-0.0543	-0.0365	-0.00132	-0.0557	0.000105
	(0.0130)	(0.0117)	(0.0164)	(0.00936)	(0.00735)	(0.00852)	(0.185)	(0.140)	(0.200)	(0.0872)	(0.0741)	(0.140)
age	-0.000397	-0.00914	0.114**	0.000158	0.0147	0.0145	0.0319**	0.0137	0.00678	0.0111**	0.00745	0.0133
	(0.0134)	(0.0213)	(0.0500)	(0.00972)	(0.0112)	(0.0171)	(0.0131)	(0.0122)	(0.0295)	(0.00515)	(0.00692)	(0.0121)
ownership	0.898**	2.482***	3.528***	0.583**	1.751***	1.671***	1.281***	1.068*	2.070	0.396	0.592*	0.223
	(0.357)	(0.474)	(1.223)	(0.297)	(0.289)	(0.578)	(0.294)	(0.568)	(1.721)	(0.368)	(0.314)	(0.682)
Legal status	1.686**	4.803***	4.926	1.390**	3.008***	4.031	1.232***	0.164	0.131	0.682***	0.404*	0.583
	(0.725)	(1.768)	(5.135)	(0.569)	(1.076)	(3.655)	(0.357)	(0.502)	(0.908)	(0.225)	(0.240)	(0.522)

Manager_exp	0.0288	0.0218	-0.0613	0.00840	0.00452	-0.00817	0.000458	0.00499	0.0262	0.00915	0.000215	0.00164
	(0.0180)	(0.0227)	(0.0424)	(0.0129)	(0.0135)	(0.0179)	(0.0241)	(0.0176)	(0.0358)	(0.0113)	(0.00893)	(0.0162)
	Nigeria											
size	0.293***	0.756***	3.390***	-0.189*	-0.139*	0.255						
	(0.112)	(0.173)	(0.929)	(0.109)	(0.0832)	(0.212)						
exporting	0.0221	-0.532	-1.418	-0.0642	-0.328	-0.511						
	(0.318)	(0.437)	(1.426)	(0.288)	(0.251)	(0.456)						
industry	-0.0251	0.0467*	-0.0217	-0.0245	0.00885	0.0380						
	(0.0218)	(0.0251)	(0.0705)	(0.0176)	(0.0125)	(0.0276)						
age	0.0106	0.0304**	0.123**	-0.00841	0.0149*	0.0298*						
	(0.00932)	(0.0152)	(0.0552)	(0.00961)	(0.00800)	(0.0178)						
ownership	-0.596	-0.00189	1.521	-1.177**	-0.667**	0.541						
	(0.462)	(0.525)	(1.889)	(0.477)	(0.272)	(0.707)						
Legal status	0.641***	0.687	-1.343	0.0633	-0.0146	0.0258						
	(0.205)	(0.968)	(2.975)	(0.883)	(0.482)	(1.444)						
Manager_exp	-0.00395	-0.0499***	-0.0648	-0.0199*	-0.0284***	-0.0532***						
	(0.0125)	(0.0175)	(0.0677)	(0.0112)	(0.00783)	(0.0198)						

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Formal1 takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%.

4.3 Robustness checks

For purposes of verifying our results, we carry out a propensity score matching, where we match firms using formal financing with those using informal financing. Matching involves pairing firms using formal financing and those using informal sources that are similar in terms of their characteristics, and then comparing their outcomes. We do this using the three categorizations of financing source that we used while carrying out the recentered influence function regressions. In this particular case, we seek to estimate the impact of formal financing, on firm performance and growth, relative to informal finance. The general model we are estimating here can be expressed as:

$$Firmgrowth = \beta_0 + \beta_1 Finance + \beta_2 X + \varepsilon$$

Where *Finance* is the financial access dummy variable (which takes a value of 1 if the firm uses formal financing and 0 if the firm is using informal financing in their working capital and new investment), X represents a set of firm characteristics and ε is a well behaved error term. Our coefficient of interest is β_1 .

Table 4.3.1: Propensity score matching results

	Sales			**Labor Productivity**		
	Formal1	**Formal2**	**Bank dummy**	**Formal1**	**Formal2**	**Bank dummy**
Ghana	1.437***	0.750*	-0.813	0.751***	0.278	-1.097
	(0.353)	(0.384)	(1.471)	(0.191)	(0.243)	(1.053)
Nigeria	0.921***	0.696	1.589	-0.115	0.292	0.694
	(0.351)	(0.782)	(1.843)	(0.183)	(0.259)	(1.839)
Sudan	0.420	-0.216		0.667***	0.394*	
	(1.402)	(1.300)		(0.197)	(0.235)	
Cameroon	-0.263	1.294***		-0.463	0.690**	
	(0.508)	(0.378)		(0.285)	(0.296)	
Burundi	0.377	1.618***	1.525	-0.223	0.523**	-1.015
	(0.542)	(0.587)	(1.198)	(0.348)	(0.264)	(0.789)
Morocco	0.992**	1.293***	0.256	0.139	1.014***	0.855
	(0.407)	(0.475)	(0.739)	(0.201)	(0.205)	(0.685)
Senegal	1.577***	1.769***		0.0999	0.605***	
	(0.443)	(0.298)		(0.276)	(0.210)	
Kenya	1.180***	0.981**	0.989	0.326	0.551***	0.318
	(0.368)	(0.385)	(1.451)	(0.206)	(0.168)	(0.505)
Ethiopia	1.027***	1.144***	-0.0294	0.437***	0.555***	0.385
	(0.334)	(0.251)	(0.726)	(0.163)	(0.129)	(0.795)
DRC	-0.122	2.128***		0.245	0.747*	
	(0.414)	(0.554)		(0.315)	(0.443)	
Zimbabwe	0.791*	0.404		0.438***	0.232	
	(0.412)	(0.521)		(0.160)	(0.169)	
Namibia	1.331***	1.291	-0.0888	0.566***	1.077***	-0.341
	(0.491)	(0.813)	(0.675)	(0.207)	(0.298)	(0.282)

Malawi	0.887*	1.849***	0.805	0.566**	0.676**	-0.909
	(0.473)	(0.433)	(1.320)	(0.272)	(0.316)	(1.033)

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1; Bank dummy takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions. Formal1 takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%. Formal2 takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft. Sales growth is the log of the difference between sales 3 years ago and current sales, while labor productivity is the log of the ratio of sales to the number of employees.

Table 4.3.1 shows the propensity score matching results across the 13 African countries, with all the three finance categorization variables *(Formal1, Formal2 and bank dummy*)[7]. The results portray a positive significant effect of formal financing on firm performance and growth. Across all the 13 countries, the effect is positive and significant when using the first two categorization variables. The bank dummy however is not significant, and in some countries we could not get results due to lack of enough firms in the comparison group. According to this categorization variable, almost all firms use self-financing unlike bank and non-bank financial institutions (see Table 3.2).

5. CONCLUSION AND POLICY RECOMMENDATIONS

Using a sample of 8,932 firms from the World Bank Enterprise survey data set, we investigated the extent to which firms in 13 African countries use formal versus informal financing sources to fund their investment and working capital. We used the Relative Distribution methods by Handcock and Morris (1998) and Recentered Influence Function techniques by Firpo, Fortin and Lemieux (2009), to evaluate the growth differential that exists among firms that finance their working capital and investment through formal finance relative to those that use informal sources.

We developed three categorization measures of whether a firm uses formal or informal finance to fund its investment and working capital. Two of the categorization measures are those that were used by previous studies done in China by Allen et al. (2005) and Ayyagari et al. (2010). This was done purposely to ensure consistency in our conclusions on the use of formal versus informal finance among firms.

The study found that approximately 68% of the firms in the sample rely on informal finance when using the first formal/informal finance categorization variable, 57% and 97% rely on informal finance when using the Allen et al. (2005) and Ayyagari et al. (2010) categorization measures respectively. This heavy reliance on informal finance may be associated with information asymmetry, lack of collateral and even poor lending terms by banks and non-bank financial institutions in Africa.

The study found a positive effect of formal finance on sales growth and labor productivity, implying that formal finance is more growth enhancing than informal finance. This result was evident regardless of the measure of financial categorization used, implying that our results are robust. The study also found that formal finance impacts differently on firm performance and growth, depending on whether a firm is at the lower, middle or upper level of sales and labor productivity distribution.

Since formal finance is more growth enhancing, it is necessary for firms to be sensitized to rely more on formal finance than informal sources. Countries should put measures in place that address any obstacles to the access of formal finance, in order to make it accessible to all firms regardless of size. In addition, while designing policy interventions, policy makers need to design policies that fit each segment of firms. This is due to the fact that formal finance impacts on firms differently. Therefore, even banks and other financial institutions should have products that are designed to benefit all groups of firms.

[7] Bank dummy takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions. Formal1 takes the value of 1 if financing of working capital and investment through bank, non-bank financial institutions and retained earnings is greater or equal to 50%, and the firm has a loan or overdraft. It takes a value of zero if financing of working capital and investment through trade credit, other money lenders, friend and relatives is greater or equal to 50%. Formal2 takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft. Sales growth is the log of the difference between sales 3 years ago and current sales, while labor productivity is the log of the ratio of sales to the number of employees

We however note that the study was limited to cross sectional data which implies that we could not take into considerations some dynamics of firms changing from using one form of financing into another form of financing over time. We therefore recommend the use of panel data in future studies in order to capture such dynamics.

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APPENDIX

Table A.1: Description of key variables

Variable	Description
Age	Age of the firm based on the year in which the firm began operations
Ownership	Dummy variables for firm ownership; whether foreign or domestically owned
Listed	Dummy variable=1 if listed in stock markets 0 otherwise
Firm size	Dummy variable for small (5-19 workers), medium (20-99 workers) and large(100+)
Export	Dummy variable for export status (1 if firm exports and 0 otherwise)
Manager Experience	Manager's years of experience in the firm
Industry	Dummy variable for sector
Sales growth	Real annual sales growth
Labor Productivity	Ratio of sales to number of employees

Source: Author's compilation based on the enterprise survey data

Table A3.1: RIF regression estimates for other firm characteristics using *formal2* categorization model

	Sales Growth			Labor Productivity			Sales Growth			Labor Productivity		
VARIABLES	Q10	Q50	Q90	Q10	Q50	Q90	Q10	Q50	Q90	Q10	Q50	Q90
	Senegal						**Zimbabwe**					
size	0.226	0.966***	0.274	0.189**	0.339***	0.442**	0.724***	1.576***	0.941*	0.0380	0.252**	-0.0569
	(0.176)	(0.266)	(0.251)	(0.0906)	(0.129)	(0.180)	(0.265)	(0.391)	(0.480)	(0.109)	(0.105)	(0.169)
exporting	0.711**	3.537***	0.757	0.461***	0.797	1.531	-0.165	-1.952	-1.002	0.532***	0.0402	0.330
	(0.325)	(0.831)	(1.950)	(0.178)	(0.613)	(1.307)	(0.736)	(2.888)	(2.202)	(0.133)	(0.513)	(0.898)
industry	0.0218	-0.00292	-0.00556	0.0114*	0.00956	0.00476	-0.136	-0.0808	-0.116	0.0213	-0.00336	-0.0328
	(0.0154)	(0.0142)	(0.0153)	(0.00675)	(0.00644)	(0.00889)	(0.179)	(0.145)	(0.205)	(0.0518)	(0.0472)	(0.0695)
age	-0.0131	0.0105	0.0792*	0.00101	0.0182**	0.0169	0.0125	0.0122	0.0149	0.00491*	0.00614*	0.000641
	(0.0145)	(0.0261)	(0.0466)	(0.00715)	(0.00794)	(0.0158)	(0.00797)	(0.0114)	(0.0118)	(0.00296)	(0.00322)	(0.00441)
ownership	0.653*	0.956	3.686**	0.509***	0.296	1.108	0.667	1.303	-2.199	0.00474	0.514**	0.772*
	(0.343)	(1.060)	(1.761)	(0.136)	(0.416)	(0.733)	(0.424)	(1.112)	(1.505)	(0.268)	(0.234)	(0.463)
Legal status	0.340	2.298***	5.256**	0.298	1.023*	0.779	-0.522	0.938*	2.557	0.426***	0.881***	1.310**
	(0.309)	(0.714)	(2.214)	(0.191)	(0.544)	(0.960)	(0.432)	(0.551)	(2.020)	(0.156)	(0.218)	(0.525)
Manager _exp	0.0176	0.0708**	-0.00623	0.0114	0.0121	-0.0114	0.0130	0.00292	0.0235	-0.00114	-0.00663	-0.00275
	(0.0168)	(0.0345)	(0.0322)	(0.0108)	(0.0125)	(0.0196)	(0.0193)	(0.0221)	(0.0276)	(0.00846)	(0.00753)	(0.0103)
	Cameroon						**Namibia**					
size	0.124	0.481*	1.207*	-0.0776	0.0825	0.0626	-0.00985	1.447**	1.020	-0.447	0.633**	0.992**
	(0.139)	(0.248)	(0.707)	(0.194)	(0.133)	(0.251)	(0.501)	(0.667)	(1.185)	(0.408)	(0.299)	(0.446)
exporting	0.554*	0.00177	-4.244	-0.756	-0.388	-1.285	0.731	-2.330	-1.507	1.393	-0.137	-1.489**
	(0.324)	(1.039)	(2.961)	(0.876)	(0.496)	(1.299)	(0.679)	(2.396)	(3.026)	(1.704)	(1.574)	(0.750)
industry	-0.159	0.185	0.00413	-0.0427	0.00748	-0.0951	0.154	-0.314	-0.281	0.227	0.133	-0.174
	(0.119)	(0.228)	(0.701)	(0.159)	(0.120)	(0.229)	(0.430)	(0.485)	(0.751)	(0.276)	(0.283)	(0.259)
age	-0.00354	0.0181	0.0476	0.0220*	0.00741	0.0426	0.0283	0.0339	0.0591	-0.00500	0.0406**	0.0168
	(0.0116)	(0.0131)	(0.0842)	(0.0126)	(0.00778)	(0.0307)	(0.0231)	(0.0402)	(0.0668)	(0.0173)	(0.0184)	(0.0287)
ownership	0.237	0.0928	4.678	0.222	0.468	2.085	0.931	0.834	0.710	0.290	-0.00860	0.362
	(0.192)	(0.664)	(4.166)	(0.424)	(0.389)	(1.800)	(0.677)	(1.875)	(2.737)	(0.779)	(0.677)	(1.043)
Legal status	0.387**	0.646	0.962	0.221	0.443	1.827**	-1.422	-0.0543	-4.911	0.333	-0.628	0.478
	(0.191)	(0.504)	(1.732)	(0.350)	(0.353)	(0.850)	(1.217)	(1.638)	(3.609)	(0.738)	(1.101)	(2.121)
Manager _exp	0.0124	0.00952	-0.0217	-0.0126	-0.00754	-0.0337	0.0311	0.0254	0.00569	0.0877***	0.0517**	0.0116
	(0.0139)	(0.0183)	(0.0646)	(0.0171)	(0.0106)	(0.0254)	(0.0400)	(0.0577)	(0.0999)	(0.0263)	(0.0244)	(0.0270)
	Ethiopia						**Kenya**					
size	0.225	0.501***	0.396***	0.477***	0.126	-0.0398	0.766***	1.200***	1.815***	0.00942	0.237**	0.256
	(0.175)	(0.158)	(0.150)	(0.0956)	(0.0773)	(0.107)	(0.246)	(0.397)	(0.635)	(0.214)	(0.106)	(0.172)
exporting	0.215	1.122**	3.070***	0.524***	0.334	0.824	-0.321	0.638	0.955	-1.092*	-0.322	-0.201
	(0.372)	(0.569)	(1.184)	(0.198)	(0.259)	(0.702)	(0.520)	(0.685)	(1.456)	(0.597)	(0.212)	(0.360)
industry	0.00198	-0.00538	-0.00535	0.00593	0.0116***	0.0314***	-0.00972	-0.0105	-0.0215	-0.00386	0.00986*	0.00896
	(0.00876)	(0.00794)	(0.0103)	(0.00654)	(0.00416)	(0.00747)	(0.0121)	(0.0154)	(0.0283)	(0.00930)	(0.00534)	(0.00838)
age	0.0130	0.0395***	0.0647***	0.0132**	0.0129**	0.00776	0.0116	0.00213	0.000947	0.00213	0.00345	0.00206
	(0.00930)	(0.0125)	(0.0195)	(0.00558)	(0.00650)	(0.00930)	(0.00801)	(0.0141)	(0.0310)	(0.00928)	(0.00474)	(0.00830)
ownership	0.635**	2.069***	1.092	0.394**	0.349	0.899	-0.139	1.633**	4.876*	0.388	0.586**	1.239*
	(0.305)	(0.468)	(0.854)	(0.164)	(0.258)	(0.589)	(0.545)	(0.743)	(2.530)	(0.514)	(0.296)	(0.716)
Legal status	0.510	0.599	-3.610**	0.499**	-0.531	-1.256***	-0.0127	1.816*	-1.003	-0.408	0.893*	0.583
	(0.357)	(1.122)	(1.583)	(0.201)	(0.608)	(0.307)	(0.457)	(0.966)	(4.456)	(1.242)	(0.536)	(1.591)
Manager _exp	0.00667	0.0160	-0.0179	0.0320***	0.00648	-0.0140	0.0394*	0.0345	-0.0348	0.0315*	0.00848	-0.0128
	(0.0143)	(0.0171)	(0.0199)	(0.00718)	(0.00730)	(0.0114)	(0.0213)	(0.0242)	(0.0416)	(0.0170)	(0.00796)	(0.0123)
	DRC						**Malawi**					
size	0.313	1.278***	6.185***	-0.181	0.333	2.757***	-0.451*	-0.0143	0.479*	-0.149	0.211*	0.0655
	(0.342)	(0.365)	(1.545)	(0.276)	(0.220)	(0.807)	(0.259)	(0.214)	(0.262)	(0.181)	(0.110)	(0.174)
exporting	0.747	1.978*	8.793	0.257	1.067	6.959*	0.157	0.608	3.313	-2.930	-0.614	-0.338
	(0.584)	(1.097)	(5.703)	(0.955)	(0.795)	(4.081)	(0.416)	(0.733)	(5.776)	(1.987)	(0.711)	(1.418)
industry	0.0304**	0.0136	-0.0131	0.0178**	0.0177**	0.0229						
	(0.0139)	(0.0145)	(0.0295)	(0.00899)	(0.00824)	(0.0185)						
age	-0.000663	0.0184	0.0293	0.0208*	0.0140	-0.0467	0.00851	0.0356*	0.0607*	0.0137	0.0135	0.00219
	(0.0156)	(0.0195)	(0.0740)	(0.0120)	(0.0133)	(0.0509)	(0.0137)	(0.0182)	(0.0341)	(0.0132)	(0.0108)	(0.0162)
ownership	1.076***	1.793***	2.847*	0.824**	1.492***	1.510	-0.0807	1.305**	2.008*	-0.0562	0.424	0.145

	(0.270)	(0.485)	(1.577)	(0.330)	(0.364)	(1.031)	(0.491)	(0.537)	(1.117)	(0.442)	(0.291)	(0.487)
Legal status							-1.935	-0.687	5.237	-2.732	-1.945***	-1.741***
							(2.581)	(1.486)	(4.127)	(2.525)	(0.542)	(0.455)
Manager_exp	0.0252	0.00616	0.0410	0.0345**	0.0147	0.100*	0.0300	0.0214	-0.0231	0.0106	-0.00556	0.00390
	(0.0172)	(0.0206)	(0.0725)	(0.0134)	(0.0145)	(0.0554)	(0.0183)	(0.0244)	(0.0414)	(0.0161)	(0.0125)	(0.0230)
	Burundi						**Sudan**					
size	0.399	0.594**	0.622	0.267*	0.589***	0.302	0.104	0.0800	1.862	-0.0174	0.292*	1.407***
	(0.440)	(0.283)	(0.515)	(0.155)	(0.162)	(0.244)	(0.518)	(1.291)	(3.133)	(0.322)	(0.162)	(0.514)
exporting	1.604**	0.173	2.020	-0.950	-0.322	-0.860	0.584	1.265	-2.892	-0.306	0.637	-0.902**
	(0.803)	(0.754)	(2.717)	(1.056)	(0.746)	(0.912)	(0.556)	(1.881)	(2.828)	(1.372)	(0.704)	(0.374)
industry	-0.0146	-0.0361*	0.00130	-0.0139	-0.0245**	-0.0171	0.0198	-0.00628	0.0118	0.00426	0.00863	0.0137
	(0.0279)	(0.0186)	(0.0357)	(0.0103)	(0.0104)	(0.0149)	(0.0399)	(0.0481)	(0.0670)	(0.0111)	(0.00530)	(0.0122)
age	0.0306	0.000897	0.0867	-0.00743	0.00839	0.0246	0.165	0.0564	-0.0809	-0.0372	-0.0127	0.0249
	(0.0272)	(0.0288)	(0.0653)	(0.00962)	(0.0126)	(0.0302)	(0.116)	(0.170)	(0.263)	(0.0342)	(0.0174)	(0.0437)
ownership	-1.166	-0.729	1.180	-0.161	0.761*	-0.291	1.236*	2.129	2.926	0.341	0.181	0.486**
	(1.160)	(0.743)	(2.238)	(0.472)	(0.439)	(1.027)	(0.714)	(1.573)	(2.076)	(0.231)	(0.118)	(0.240)
Legal status	0.758	0.197	1.357	0.170	-0.454	-0.0676	-0.322	0.652	5.048	-1.417	-0.869**	-0.436
	(0.489)	(0.636)	(1.496)	(0.293)	(0.411)	(0.706)	(1.431)	(2.419)	(6.553)	(1.021)	(0.378)	(0.774)
Manager_exp	0.0205	0.0221	-0.0442	0.0128	-0.0164	-0.0247	0.0406	-0.0547	-0.0285	0.0154	0.0129	0.0257
	(0.0337)	(0.0274)	(0.0836)	(0.0135)	(0.0167)	(0.0289)	(0.0610)	(0.0990)	(0.129)	(0.0190)	(0.00982)	(0.0228)
	Ghana						**Morocco**					
size	-0.0141	0.388**	0.487**	-0.0949	0.0344	0.0653	-0.541	0.904***	0.860**	-0.309*	-0.320**	-0.168
	(0.166)	(0.158)	(0.221)	(0.103)	(0.0820)	(0.0983)	(0.370)	(0.278)	(0.384)	(0.174)	(0.132)	(0.192)
exporting	0.383	1.352*	2.013	-0.450	0.0906	0.330	0.466	0.0128	-0.750	-0.0387	-0.823***	-0.446
	(0.632)	(0.769)	(1.353)	(0.789)	(0.548)	(0.733)	(0.808)	(0.676)	(0.943)	(0.325)	(0.285)	(0.420)
industry	-0.00514	0.0286**	0.00991	0.0147*	0.0237***	0.0239***	-0.0466	-0.112	-0.0736	0.00843	-0.0593	-0.0291
	(0.0140)	(0.0120)	(0.0163)	(0.00860)	(0.00789)	(0.00812)	(0.167)	(0.148)	(0.203)	(0.0937)	(0.0820)	(0.135)
age	0.00532	-0.00208	0.123**	-0.00209	0.0165	0.0161	0.0286**	0.0116	0.00527	0.00906**	0.00458	0.0113
	(0.0134)	(0.0185)	(0.0487)	(0.00887)	(0.0102)	(0.0182)	(0.0124)	(0.0122)	(0.0293)	(0.00433)	(0.00701)	(0.0110)
ownership	0.912**	2.525***	3.359***	0.591*	1.839***	1.679***	1.569***	0.962	1.928	0.430	0.630*	0.284
	(0.376)	(0.449)	(1.160)	(0.301)	(0.293)	(0.565)	(0.394)	(0.582)	(1.402)	(0.317)	(0.332)	(0.609)
Legal status	0.414	4.074***	3.465	0.970**	2.593***	3.668	1.150***	0.123	0.242	0.604**	0.373*	0.400
	(0.387)	(1.351)	(4.869)	(0.399)	(0.974)	(3.345)	(0.347)	(0.484)	(0.903)	(0.245)	(0.221)	(0.451)
Manager_exp	0.0245	0.0107	-0.0681	0.00693	0.00121	-0.0100	0.0106	0.0135	0.0307	0.00789	0.00414	0.00203
	(0.0182)	(0.0205)	(0.0441)	(0.0158)	(0.0137)	(0.0178)	(0.0251)	(0.0159)	(0.0354)	(0.0109)	(0.00922)	(0.0167)
	Nigeria											
size	0.397**	0.777***	1.981**	-0.329	-0.384***	0.223						
	(0.188)	(0.264)	(0.989)	(0.200)	(0.146)	(0.242)						
exporting	0.0948	-0.590	-1.269	0.321	-0.482	-0.543						
	(0.520)	(0.621)	(1.384)	(0.487)	(0.367)	(0.584)						
industry	-0.0500	0.0576	0.283**	-0.0211	0.00163	0.0804**						
	(0.0322)	(0.0444)	(0.129)	(0.0299)	(0.0194)	(0.0402)						
age	0.0246	0.0352	0.0757	-0.0249	0.0135	-0.00746						
	(0.0173)	(0.0316)	(0.0832)	(0.0230)	(0.0135)	(0.0278)						
ownership	-2.038*	-0.672	-0.229	-2.082**	-1.421***	0.141						
	(1.046)	(0.937)	(2.251)	(0.931)	(0.367)	(0.785)						
Legal status	0.346	-0.0784	4.499	-0.683	0.139	1.001						
	(0.454)	(1.799)	(8.424)	(2.022)	(1.204)	(2.350)						
Manager_exp	-0.00895	-0.0717**	-0.109	-0.0171	-0.0367**	-0.0214						
	(0.0183)	(0.0309)	(0.0929)	(0.0249)	(0.0154)	(0.0321)						

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 *Formal2is the Ayyagari et al. (2010) measure of formal finance, which* takes the value 1 if a firm has a loan or overdraft, 0 if a firm does not have either loan or overdraft

Table A3.2: RIF regression estimates for other firm characteristics using *the Bank dummy* categorization model

	Sales Growth			Labor Productivity			Sales Growth			Labor Productivity		
VARIABLES	Q10	Q50	Q90	Q10	Q50	Q90	Q10	Q50	Q90	Q10	Q50	Q90
	Senegal						**Zimbabwe**					
size	0.247	1.135***	0.406*	0.189*	0.328***	0.455***	0.513*	1.659***	0.652	0.00899	0.279**	-0.0430
	(0.172)	(0.290)	(0.228)	(0.0962)	(0.116)	(0.156)	(0.284)	(0.379)	(0.472)	(0.114)	(0.113)	(0.154)
exporting	0.721**	3.781***	1.006	0.568***	0.863	1.445	0.145	-0.873	-0.518	0.579***	-0.0978	0.207
	(0.319)	(0.878)	(1.968)	(0.217)	(0.669)	(1.420)	(0.442)	(2.448)	(1.714)	(0.158)	(0.500)	(0.940)
industry	0.0198	0.000384	-0.00506	0.0124**	0.00750	0.00760	-0.200	-0.0946	-0.118	0.0304	0.0130	-0.0253
	(0.0161)	(0.0137)	(0.0165)	(0.00604)	(0.00645)	(0.00769)	(0.190)	(0.158)	(0.245)	(0.0559)	(0.0528)	(0.0730)
age	-0.0125	0.0153	0.0839**	0.00309	0.0209***	0.0264	0.00862	0.0142	0.0222	0.00552*	0.00587*	0.00196
	(0.0131)	(0.0253)	(0.0423)	(0.00646)	(0.00776)	(0.0169)	(0.00692)	(0.0114)	(0.0135)	(0.00286)	(0.00325)	(0.00436)
ownership	0.627*	0.903	3.733**	0.504***	0.266	1.232	0.680*	1.553*	-1.162	0.0223	0.494**	0.980*
	(0.327)	(0.914)	(1.841)	(0.115)	(0.391)	(0.864)	(0.368)	(0.925)	(1.728)	(0.246)	(0.235)	(0.506)
Legal status	0.366	2.394***	5.498**	0.444***	1.132***	1.155	-0.167	1.125*	3.075	0.335*	0.997***	1.490**
	(0.304)	(0.701)	(2.253)	(0.174)	(0.427)	(0.975)	(0.385)	(0.641)	(1.877)	(0.192)	(0.198)	(0.582)
Manager_exp	0.0153	0.0707**	-0.00725	0.0125	0.0142	0.00144	0.0358*	0.00620	0.0230	-0.00112	-0.00382	-0.00299
	(0.0163)	(0.0327)	(0.0323)	(0.0116)	(0.0125)	(0.0211)	(0.0196)	(0.0238)	(0.0308)	(0.00790)	(0.00681)	(0.0103)
	Cameroon						**Namibia**					
size	0.248*	0.554***	1.483**	0.0941	0.131	0.0458	-0.00868	1.518**	1.325	0.0807	0.395*	0.883***
	(0.138)	(0.196)	(0.707)	(0.188)	(0.116)	(0.212)	(0.320)	(0.609)	(1.314)	(0.290)	(0.222)	(0.310)
exporting	0.566	0.140	-3.851	-0.706	-0.315	-0.971	0.720	-2.764	-2.002	0.921	-0.290	-1.602**
	(0.349)	(0.762)	(2.880)	(0.879)	(0.530)	(1.147)	(0.465)	(2.450)	(2.746)	(1.061)	(1.617)	(0.755)
industry	-0.245	0.189	0.148	-0.127	-0.0335	-0.148	0.0697	-0.0519	-0.148	0.328	0.288	-0.134
	(0.158)	(0.207)	(0.639)	(0.158)	(0.127)	(0.204)	(0.329)	(0.478)	(0.597)	(0.246)	(0.183)	(0.239)
age	-0.00277	0.0242**	0.0682	0.0260**	0.0124	0.0370	0.0256	0.0268	0.0703	-0.00431	0.0457***	0.0541*
	(0.0127)	(0.0122)	(0.0759)	(0.0127)	(0.00802)	(0.0275)	(0.0193)	(0.0333)	(0.0658)	(0.0152)	(0.0152)	(0.0280)
ownership	0.295	0.143	5.321	0.399	0.569	2.042	0.887**	1.429	1.858	0.380	0.0180	-0.232
	(0.204)	(0.565)	(4.642)	(0.416)	(0.403)	(1.521)	(0.346)	(1.466)	(2.793)	(0.462)	(0.509)	(0.743)
Legal_status	-0.106	0.285	0.916	-0.0221	0.329	1.605**	-1.231	-0.474	-5.969	0.283	-0.767	0.241
	(0.383)	(0.393)	(2.009)	(0.429)	(0.316)	(0.723)	(0.814)	(1.270)	(3.992)	(0.539)	(1.239)	(2.964)
Manager_exp	0.0198	0.0152	-0.0189	-0.0160	-0.00879	-0.0307	0.0288	0.0350	-0.00281	0.0595***	0.0458**	0.0256
	(0.0162)	(0.0154)	(0.0593)	(0.0178)	(0.0110)	(0.0220)	(0.0282)	(0.0483)	(0.0747)	(0.0165)	(0.0180)	(0.0195)
	Ethiopia						**Kenya**					
size	0.257	0.608***	0.491***	0.483***	0.161**	-0.00952	0.745***	1.260***	1.689***	0.0437	0.230**	0.279*
	(0.181)	(0.180)	(0.171)	(0.0928)	(0.0786)	(0.111)	(0.212)	(0.381)	(0.645)	(0.195)	(0.104)	(0.167)
exporting	0.238	1.402**	3.310***	0.555***	0.494*	0.860	-0.297	0.633	1.141	-1.143**	-0.305	-0.196
	(0.412)	(0.648)	(1.173)	(0.199)	(0.264)	(0.606)	(0.520)	(0.710)	(1.268)	(0.543)	(0.215)	(0.372)
industry	0.00248	-0.00515	-0.00509	0.00603	0.0116***	0.0323***	-0.0127	-0.0164	-0.0208	-0.00313	0.00757	0.00585

	(0.00827)	(0.00942)	(0.0102)	(0.00607)	(0.00392)	(0.00712)	(0.0121)	(0.0164)	(0.0255)	(0.00892)	(0.00498)	(0.0086)
age	0.0140	0.0432***	0.0679***	0.0136**	0.0150**	0.0105	0.0157**	0.00933	0.00178	0.00301	0.00329	0.00271
	(0.00896)	(0.0120)	(0.0202)	(0.00540)	(0.00685)	(0.00949)	(0.00660)	(0.0133)	(0.0286)	(0.00896)	(0.00501)	(0.00925)
ownership	0.642**	2.063***	1.088	0.388**	0.312	0.897	-0.165	1.627**	4.490*	0.277	0.389	1.288*
	(0.308)	(0.424)	(0.813)	(0.171)	(0.256)	(0.572)	(0.448)	(0.682)	(2.335)	(0.496)	(0.314)	(0.731)
Legal status	0.624**	0.871	-3.364***	0.521***	-0.431	-1.096***	-0.0100	1.973*	-0.875	-0.270	1.058*	0.582
	(0.293)	(1.213)	(1.353)	(0.197)	(0.638)	(0.316)	(0.478)	(1.162)	(5.131)	(1.074)	(0.573)	(1.566)
Manager_exp	0.0103	0.0261	-0.00884	0.0327***	0.0104	-0.0101	0.0384**	0.0348	-0.0286	0.0312*	0.0131	-0.0120
	(0.0125)	(0.0169)	(0.0190)	(0.00723)	(0.00661)	(0.0121)	(0.0189)	(0.0241)	(0.0378)	(0.0159)	(0.00856)	(0.0104)
	Burundi						**Malawi**					
size	0.288	0.387	0.519	0.260*	0.567***	0.322	-0.463*	-0.0992	0.460*	-0.0880	0.209*	0.0347
	(0.490)	(0.240)	(0.510)	(0.149)	(0.151)	(0.254)	(0.238)	(0.227)	(0.251)	(0.179)	(0.110)	(0.168)
exporting	1.208*	-0.551	1.588	-0.926	-0.696	-0.904	0.293	0.144	4.182	-3.013	-0.394	0.183
	(0.666)	(1.045)	(3.337)	(0.986)	(0.783)	(0.797)	(0.475)	(0.676)	(6.273)	(2.260)	(0.817)	(1.379)
industry	-0.00980	-0.0272	0.00605	-0.0131	-0.0248***	-0.0183						
	(0.0313)	(0.0173)	(0.0310)	(0.0100)	(0.00946)	(0.0163)						
age	0.0336	0.00635	0.0900	-0.00713	0.00824	0.0242	0.00943	0.0380*	0.0593	0.0155	0.0170*	0.0112
	(0.0378)	(0.0271)	(0.0683)	(0.00910)	(0.0125)	(0.0282)	(0.0146)	(0.0209)	(0.0362)	(0.0145)	(0.0102)	(0.0154)
ownership	-0.771	-0.0101	1.631	-0.0762	0.709	-0.304	0.0680	1.616***	2.235**	0.151	0.466*	0.141
	(1.168)	(0.782)	(1.821)	(0.449)	(0.453)	(0.838)	(0.480)	(0.559)	(1.133)	(0.476)	(0.281)	(0.510)
Legal status	0.487	-0.321	1.172	0.177	-0.441	0.000509	-1.585	-0.0113	5.744	-2.624	-1.670***	-1.315***
	(0.472)	(0.734)	(1.554)	(0.329)	(0.405)	(0.817)	(3.016)	(1.773)	(4.398)	(2.395)	(0.519)	(0.358)
Manager_exp	0.0352	0.0495*	-0.0314	0.0110	-0.00848	-0.0261	0.0276	0.0158	-0.0248	0.0121	-0.00661	-4.21e-05
	(0.0401)	(0.0280)	(0.0790)	(0.0130)	(0.0170)	(0.0299)	(0.0190)	(0.0262)	(0.0383)	(0.0173)	(0.0121)	(0.0208)
	Ghana						**Morocco**					
size	0.0491	0.407**	0.522**	-0.0682	0.0544	0.0751	-0.367	0.985***	0.900**	-0.288	-0.273**	-0.149
	(0.166)	(0.165)	(0.207)	(0.106)	(0.0781)	(0.107)	(0.338)	(0.281)	(0.437)	(0.200)	(0.128)	(0.199)
exporting	0.334	1.377*	2.423*	-0.447	0.0680	0.321	0.239	-0.146	-0.786	-0.0842	-0.924***	-0.519
	(0.666)	(0.780)	(1.437)	(0.709)	(0.503)	(0.738)	(0.789)	(0.672)	(0.948)	(0.368)	(0.284)	(0.436)
industry	-0.00749	0.0286**	0.00821	0.0145	0.0239***	0.0240***	-0.00175	-0.0804	-0.0605	-0.00330	-0.0652	-0.00270
	(0.0137)	(0.0122)	(0.0162)	(0.00914)	(0.00662)	(0.00801)	(0.190)	(0.145)	(0.209)	(0.0891)	(0.0741)	(0.153)
age	0.0120	0.00131	0.128***	0.00283	0.0202*	0.0175	0.0317***	0.0115	0.00753	0.0106**	0.00663	0.0133
	(0.0139)	(0.0186)	(0.0465)	(0.00951)	(0.0111)	(0.0180)	(0.0116)	(0.0112)	(0.0298)	(0.00479)	(0.00601)	(0.0102)
ownership	1.004***	2.557***	3.647***	0.626**	1.818***	1.707***	1.362***	0.863	1.817	0.444	0.570*	0.192
	(0.337)	(0.450)	(1.200)	(0.296)	(0.310)	(0.560)	(0.307)	(0.649)	(1.444)	(0.371)	(0.338)	(0.682)
Legal status	0.936*	4.170***	4.109	1.168**	2.554***	3.788	1.371***	0.303	0.287	0.661***	0.454*	0.610

	(0.547)	(1.513)	(4.942)	(0.474)	(0.941)	(3.237)	(0.325)	(0.466)	(0.841)	(0.236)	(0.231)	(0.478)
Manager_exp	0.0152	0.0109	-0.0763*	0.00532	-0.00123	-0.0113	0.00442	0.00984	0.0286	0.00918	0.00238	0.00230
	(0.0201)	(0.0229)	(0.0424)	(0.0144)	(0.0128)	(0.0171)	(0.0230)	(0.0172)	(0.0351)	(0.0125)	(0.00806)	(0.0161)
	Nigeria											
size	0.314***	0.780***	3.369***	-0.190*	-0.141*	0.236						
	(0.110)	(0.161)	(0.934)	(0.114)	(0.0804)	(0.211)						
exporting	0.0767	-0.464	-1.494	-0.0722	-0.325	-0.555						
	(0.327)	(0.380)	(1.337)	(0.292)	(0.203)	(0.399)						
industry	-0.0210	0.0521**	-0.0293	-0.0252	0.00918	0.0341						
	(0.0197)	(0.0239)	(0.0692)	(0.0155)	(0.0131)	(0.0229)						
age	0.0112	0.0307**	0.124**	-0.00833	0.0147**	0.0290**						
	(0.00908)	(0.0138)	(0.0542)	(0.0109)	(0.00676)	(0.0158)						
ownership	-0.607	-0.0202	1.560	-1.174**	-0.669**	0.557						
	(0.496)	(0.571)	(1.916)	(0.488)	(0.287)	(0.648)						
Legal status	0.691***	0.723	-1.297	0.0651	-0.0206	0.00916						
	(0.192)	(0.943)	(2.835)	(0.754)	(0.521)	(1.266)						
Manager_exp	-0.00438	-0.0502**	-0.0658	-0.0199*	-0.0282**	-0.0524**						
	(0.0134)	(0.0176)	(0.0556)	(0.0109)	(0.00827)	(0.0183)						

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 The *bank dummy* measure takes the value of 1 if financing of working capital and investment is through bank and non-bank financial institutions, 0 if financing is through any other sources other than bank and non-bank financial institutions