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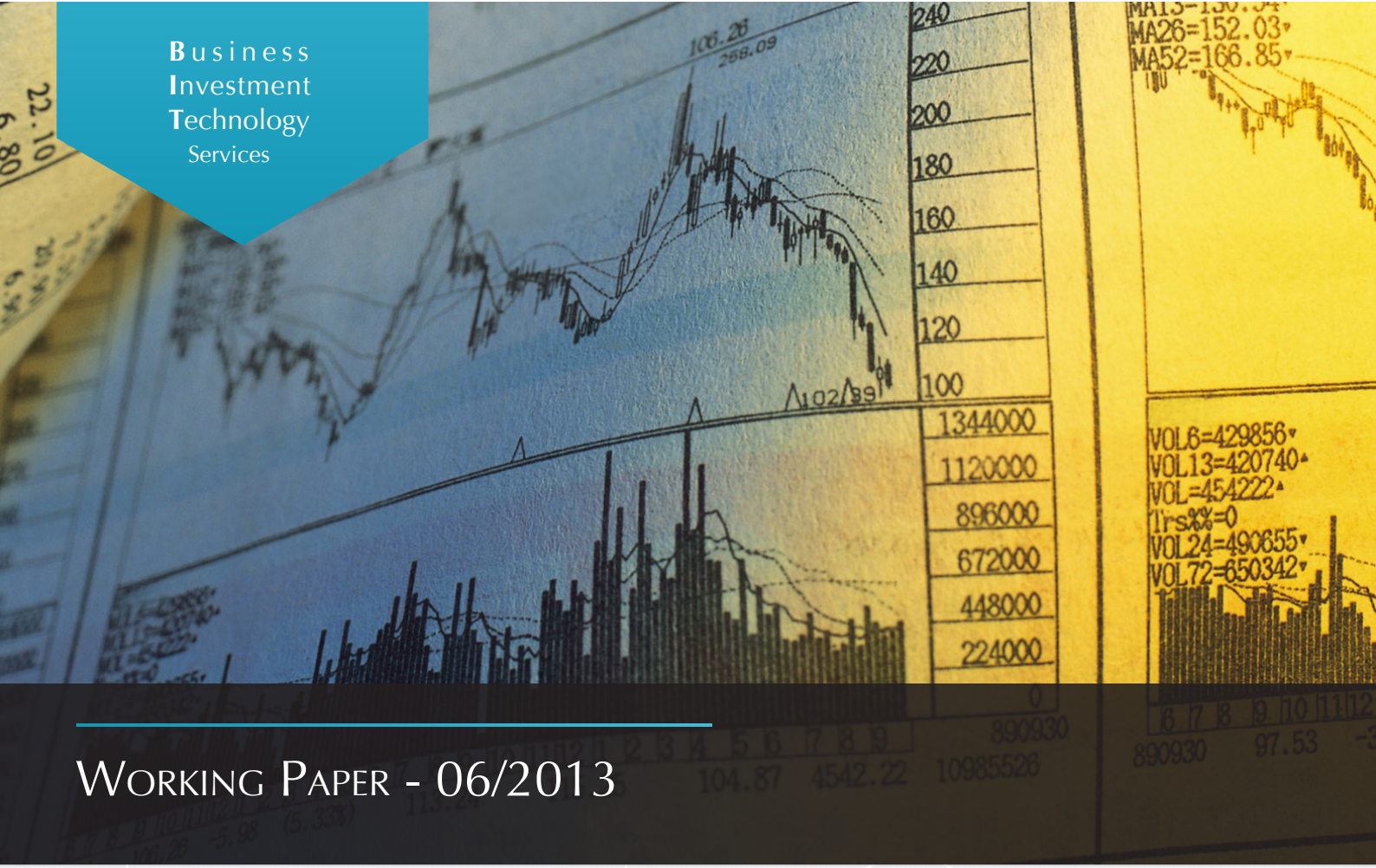

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Did the global financial crisis hit Africa? Insights from a multi-country firm level survey

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Did the global financial crisis hit Africa? Insights from a multi-country firm level survey

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Abstract

In order to craft the most appropriate policy responses, it is imperative to identify the degree to which the firms in sub-Saharan Africa (SSA) were affected by the global financial crisis, despite the common perception amongst macro analysts that the global financial crisis was mainly confined to industrialized countries, as opposed to countries in the SSA. Whilst macro figures for various reasons might not display strong signs of financial crisis, because of mitigating effects in sectors less integrated in the world economy, directly interviewing private sector firms in SSA reveals a very different reality. We use a new and unique cross-sectional firm-level dataset mainly collected in 2010 covering some 19 countries and about 2,500 firms and show that SSA countries were indeed affected by the financial crisis. Our results also suggest that productivity levels, labour and TFP, are significantly important indicators for the probability of whether a plant will feel the ramifications of an exogenous shock like the recent financial crisis. Other important variables identified are firms' per worker levels of human and physical capital, size and age. Moreover, we find strong evidence for the role of trade as a transmission channel of the crisis, as it carries over from northern economies to SSA. It turns out that invoking the destination of exports into the analysis is crucial for understanding how African countries were affected by the crisis.

Keywords: Firm-level Performance, Importers, Exporters

JEL Classification: D22, D24, D53, E22, G01

♦ The views expressed herein are those of the author(s) and do not necessarily reflect the views of the United Nations Industrial Development Organization.

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1. Introduction

Has Sub-Saharan Africa been affected by the current global financial crisis? It is imperative to identify the degree to which the firms in sub-Saharan Africa (SSA) were affected by the global financial crisis, in order to craft the most appropriate policy responses. There is a conventional wisdom amongst macro analysts that the financial crisis was mainly confined to industrialized economies, as opposed to countries in the developing world and, in particular, those of Sub-Saharan Africa (SSA). SSA's low integration in world's financial markets was believed to shield these economies from the repercussions of the severe economic downturn in the industrialized countries (Berman and Martin, 2009). At the onset of global financial crisis, macro figures for various reasons also did not display strong signs of crisis, because of mitigating effects in sectors less integrated in the world economy.

Our work is motivated by the need to provide empirical evidence and some policy levers that are useful to understand and address the impact of global financial crisis on SSA, which has hitherto research little attention. Using a new and unique cross-sectional firm-level dataset, mainly collected in 2010 and covering 19 countries in SSA and about 2,500 manufacturing firms,[1] through direct interviews with private sector firms, we seek to address whether the global financial crisis had a significant impact on SSA economies. Empirically, we explore a range of firm characteristics, including performance and trade indicators to test whether firm vulnerability to the recent financial crisis worked through these factors. Our results reveal a very different reality in that we show that SSA was indeed affected by the financial crisis.

Based on firm level information, we set out to answer following three questions: (i) What type of firms in SSA economies were affected by the financial crisis? (ii) What was the extent of the affectedness? (iii) What transmission channels propagated the shock? Identifying which types of firms were more severely affected by the recent crisis would inform policy makers of the kinds of firms that will benefit from some measures of protection as well as its extent. Moreover, knowledge about the particular form of the crisis' transmission from those countries where the crisis has started to other countries would help policy makers to enhance the effectiveness of the protective policies.

[1] The dataset contains some 6,500 firms from all economic sectors, but we restricted our analysis to firms in the manufacturing sector, which amounts to some 2,500.

As this paper demonstrates, a large portion of African firms, independent of whether they are foreign or domestic, claim that they have been affected by the financial crisis. Our results suggest that productivity levels, labour and TFP, are significant indicators to determine whether a plant will feel the ramifications of an exogenous shock like the recent financial crisis. Other important variables identified are firms' per worker levels of human and physical capital, size and age. Yet, the degree to which they have been affected varies extensively and, as is also be shown, impacts on the conclusions of this paper. Moreover, and perhaps most relevant in this context, we find strong evidence for the role of trade as a transmission channel of the crisis, as it carries over from northern economies to SSA. It turns out that invoking the destination of exports into the analysis is crucial for understanding how African countries were affected by the crisis.

Our study contributes to the existing literature in a number of ways. First, it improves the understanding of the impact of the global financial crisis on SSA based a new dataset. Second, it provides micro evidence on the role of identifying the types of firms that were hit severely by the crisis, and infers the transmission channels propagating the shock. Third, our results have potential to assist policy makers in identifying the firms and sectors that need some measure of protection from the current crisis. The paper is organised as follows: The next section summarizes the related literature. Section 3 describes the models and econometric methods used. Section 4 presents the empirical findings, with policy implications in Section 5. Robustness considerations are summarized in Section 6, while Section 7 concludes.

2. Literature Review

An emerging literature attempts to examine the transmission of the recent crisis across national borders and investigates the way countries were affected. The evidence, however, is mixed. For example, according to Claessens et al (2010) and Blanchard et al (2010) those countries that are closely integrated in the global financial system are more affected by the crisis than those economies with lower integration. On the contrary, some studies (Rose and Spiegel, 2010) fail to find strong links between country factors, including trade and financial linkages, and the way the recent crisis affected different countries. It is worth to note that the common feature of these studies is that they all use macro-level data which aggregates a number of underlying factors but fails to distinguish separate effects of crisis which likely transmits through a combination of trade and financial channels (Claessens et al 2011).

An alternative to aggregated macro data has been the use of firm-level information to enable researchers to separate and quantify various channels. Forbes (2004) is the first to examine how crises in emerging markets are transmitted to other markets using firm-level information. She investigates the types of firms that are worst hit by the East Asian and Russian crises using a data set of 10,000 firms in 46 countries, with three possible transmission mechanisms, such as product competitiveness; income effect; and credit crunch. The results suggest that both product-competitiveness and income effect are important transmission mechanisms whilst credit crunch is not significant in either crisis. To examine the impact of the recent crisis, Claessens, Tong and Wei (2011) use firm level accounting data from non-financial forms in 42 countries on firm performance and the role of global linkages. They examine how various linkages transmit impact across border and identify possible three channels through which the crisis may have affected firms: a financial channel, a demand channel and a trade channel. They report that the global financial crisis hit those firms with greater sensitivity to demand and trade while the evidence for the role of financial linkages is not strong.

Africa-specific empirical studies in the literature, however, are rather thin and provide mixed evidence. Berman and Martin (2009) document some evidence that the recent crisis had a significant impact on SSA countries through its effect on the exports of the region. On the other hand, Aly and Strazicicih (2011) confirms the common perception that the North Africa region experiences no significant impact from the recent global crisis. Using firm-level data Boshoff (2006) examines the impact of financial crises emanating from emerging countries on the large firms of South Africa and finds that trade and financial linkages are not significant in explaining crisis transmission to South African firms and economy. However, it is documented in the recent policy papers that the impact of global financial crisis on SSA has significantly worsened the economic outlook for SSA (Beck et al, 2009; IMF 2009; Arieff et al 2010; and Naudé, 2010). Yet it appears that the reviewed literature has limitations in offering empirical evidence on the impact of global financial crisis on SSA, which can have significant policy implications. We contribute to the debate to address such weaknesses and thus, improve the understanding of the financial crisis impact on SSA using a new data set which is collected from 19 countries in SSA. We identify the types of firms that were affected by the crisis as well as the transmission channels which propagated the shock.

3. Methodology

This section describes the models and econometric methods used. Our goal with this section is twofold: First, to better understand the characteristics of firms that were affected by the crisis and examine whether plant performance is correlated with lower risk of being hit by the crisis. This can be modelled as a dichotomous outcome, that is, either plants were affected or they were not. Secondly, because plants were hit at differential degrees, we need to accompany the rather restrictive dichotomous analysis with a model that allows for continuous variation, that is, what determines the extent to which a firm was affected by the crisis.

Since the first variable to be explained is dichotomous—either plants claim they were affected or they claim they were not—we choose the probit estimator for our analysis. In terms of a model of financial crisis, our estimating regression is admittedly ad hoc in that we have set up a model with variables which may help to explain why plants were affected or not.

Our base model (1) looks as follows:

$$Prob\ (CRISIS_i = 1) = F(x'\beta)$$

$$Prob\ (CRISIS_i = 0) = 1 - F(x'\beta) \qquad (1a)$$

where *CRISIS* is a dummy variable taking the value of unity if capacity utilization was reduced because of the crisis, $\boldsymbol{x}$ is a vector of explanatory variables, including indicators of whether firms trade internationally, are domestic- or foreign-owned, have high levels of capital intensity and human capital (measured in terms of the ratio of white-collar workers in all workers), age and size (measured by number of employees), $\boldsymbol{F}$ denotes the normal distribution function, *i* indicates plant and $\boldsymbol{\beta}$ is a vector of parameters. All models control for country and sector by including dummies for the 19 countries and the 23 sectors.

The other major regression model we estimate is based on the case when the dependent variable now becomes CRISIS%. As will be seen in the description of the data below, this variable ranges from -100 percent to +90 percent. In other words, while some plants reduced capacity utilization, others manage to increase the same during the financial crisis. However, because the data contain a wide range of values and the distribution is skewed, it is not meaningful to estimate this model

using OLS. Instead we employ the Least Absolute Deviations (LAD) estimator, i.e. the Quantile Regression (QReg) at the median.

$$CRISIS\%_i = F(x'\beta) \tag{1b}$$

To these base models, we add performance indicators to test whether performance reduces the risk of being affected by world crisis. The performance indicator we use is productivity in different forms, namely, gross output per worker, value added per worker, gross output-based total factor productivity (TFP1) and value-added-based TFP (TFP2). The probit base model thus changes to (2):

$$Prob\ (CRISIS_i = 1) = F(x'\beta + \gamma' z)$$

$$Prob\ (CRISIS_i = 0) = 1 - F(x'\beta + \gamma' z) \tag{2a}$$

where $\boldsymbol{z}$ is the vector representing the performance indicators and $\boldsymbol{\gamma}$ its corresponding vector of parameters. The corresponding LAD model is:

$$CRISIS\%_i = F(x'\beta + \gamma' z) \tag{2b}$$

Next we test whether plants that trade, be it export or import, are more or less insulated from exogenous shocks. On the one hand, one may view exporting as an activity that adds to insulation in the sense of diversifying the markets. However, exporting also implies opening up a propagation channel for the shock, effectively making the plant more vulnerable. Which of the effects that dominates is ultimately the empirical question addressed here. This gives us the next model (3):

$$Prob\ (CRISIS_i = 1) = F(x'\beta + \gamma' z + \delta' w)$$

$$Prob\ (CRISIS_i = 0) = 1 - F(x'\beta + \gamma' z + \delta' w), \tag{3a}$$

where $\boldsymbol{w}$ is a vector representing exports and imports and $\boldsymbol{\delta}$ is the corresponding vector of parameters. The LAD model again changes to:

$$CRISIS\%_i = F(x'\beta + \gamma'z + \delta'w) \quad (3b) \tag{3b}$$

Having estimated these models, we test whether the destination of exports and source of import matters, giving us:

$$Prob\ (CRISIS_i = 1) = F(x'\beta + \gamma'z + \mu'DEST)$$

$$Prob\ (CRISIS_i = 0) = 1 - F(x'\beta + \gamma'z + \mu'DEST) \tag{4a}$$

where $\boldsymbol{DEST}$ is a vector containing two export (import) dummy variables representing whether exports (imports) are destined (sourced) to an industrialized or developing country, and, again, $\boldsymbol{\mu}$ is the parameter vector. The corresponding LAD model is:

$$CRISIS\%_i = F(x'\beta + \gamma'z + \mu'DEST) \tag{4b}$$

These models will subsequently, in the robustness section, be tested for heteroscedasticity, which is important for the probit estimator. The assumption that any change in the rate of capacity utilization relates to the financial crisis is tested by way of sensitivity analysis, where the dependent variable is changed as a function of different levels of change of capacity utilization.

4. Data – Basic characteristics

As the descriptive analysis shortly shows, a large portion of African plants, independent of whether they are foreign or domestic, claim that they have been affected by the financial crisis.

Yet, the degree to which they have been affected varies extensively and, as will also be shown, this impacts on the conclusions of this paper. It turns out that invoking the destination of exports into the analysis is crucial for understanding how African countries were affected by the crisis.

Before embarking on regression results, it is useful to glance at the data in Tables 1a to 1d. Nearly 57 percent of the plants indicate that they had to reduce capacity utilization because of the financial crisis. This stands in stark contrast to the notion that Africa was more or less insulated from what was going on in OECD countries and other more advanced developing countries at the time. It is also evident that the mean reduction in capacity utilization is some 20 percent, which might fall into more regular business cycle adjustment. However, the maximum and minimum show a wide range of adjustment, suggesting that a second, more flexible, type of modelling is called for.

It is interesting to note that nearly twice as many plants import (59 per cent) than export (32 per cent), which implies a lot of exposure to international markets and, thus, the crisis. Altogether, slightly more than a third of the plants are foreign (36 per cent). The average plant age is 14.6 years, while the average plant size is 49, measured in terms of full-time employees. The latter is a reflection of the fact that the survey did not include plants with less than 10 employees.[2]

5. Regression results

With this information, we are now in a position to move on to regression analysis. The first column in Table 2a contains the marginal effects evaluated at the mean of the base model. Judging by the Chi^2 test for joint significance of all parameters, all models appear to perform, despite the low levels of pseudo-R^2.

The results from the base model in the first column of Table 2a show that firms with a larger ratio of capital to labour, i.e., firms that invested relatively more into their physical production capacities, have a lower likelihood of being hit by the crisis. The same holds for human capital, where firms with a larger share of skilled workers are less likely to be hit by the crisis. Moreover, firm size also seems to protect from the crisis, as larger firms have a lower chance of being hit. On the contrary, older firms face a higher probability of being hit by the crisis. There is no significant effect of whether the firm is domestic or foreign-owned.

[2] Exceptions were Cape Verde, Lesotho and Burundi, where firms with 5 to 10 employees were also interviewed.

At this stage, different productivity performance indicators are added to the base model, see columns 2 to 5 in Table 2a, where one performance indicator is added at a time. Starting with the gross output per worker model in the column 2, we see that firms with greater labour productivity performance are less likely to claim they have been hit by the crisis. In particular, improving labour productivity by one percent decreases the probability of being hit by three percent. Like in the base model, it is evident that firms with more human capital, that are larger and younger and, are also less likely to be hit, while foreign ownership remains insignificant. In this model, the coefficient of capital intensity is not statistically significant at conventional levels and thus less attention is paid to this result.

Column 3 in Table 2a presents the corresponding TFP model. The coefficient of TFP is statistically significant, but at 0.01, the marginal effect is smaller than in the former model. The coefficient for capital intensity appears statistically significant. The remaining two columns focus on value-added based labour productivity and TFP, with both having marginal effects of two per cent. In both of these cases, the performance indicators are statistically significant. Furthermore, capital intensity, human capital, plant size and age remain significant and unaffected by the choice of performance indicator.

Turning to column 1 in Table 2b with the QReg results for the base model and the degree to which capacity utilization was affected, qualitatively we obtain similar results as for the probit regression, except that the coefficients for human capital and age no longer are statistically significant. Once we add the various performance indicators, they are significant with the expected sign in most cases. The estimated coefficients show that increasing output per worker by one percent is associated with being 0.61 percentage points less affected in terms of reduction of capacity utilization. In terms of TFP, the effect is only 0.32 percentage points. The corresponding value-added based productivity measures produce -0.29 and -0.32 percentage points for labour productivity for TFP, respectively.

All in all, this means that productivity levels are significant indicators for the probability of whether a plant will feel the ramifications of an exogenous shock like the recent financial crisis. Other important variables identified are plants' per worker levels of human and physical capital, size and age, with the latter indicating that younger plants fare better.

5.1 Trade extension

The next step is to introduce exporting and importing to the model, while retaining the productivity indicators, under the assumption that international trade may both increase and decrease the risk of being hit by a shock by connecting to international markets and by way of diversifying sales to more markets than the domestic.

Beginning with the output per worker model in Column 1 of Table 3a, there are two striking results to report. Firstly, exporter status enters positively and with an economically meaningful marginal effect. Being an exporter increases the probability of being hit by the financial crisis by between five and seven percent. Secondly, being an importer has little effect and if anything the sign is negative, implying some sort of insulation. In other words, exporting, but not importing, may be a likely transmission channel for crises like this. The marginal effects of the productivity indicators remain unchanged independent of which trade indicators that is included.

When analysing the extent of being affected in Table 3b, we obtain similar results for all models with respect to the two trading indicators. However, an interesting difference between gross-output and value-added based models is that, for the former, the exporter status is statistically significant, with coefficients 1.18 and 1.31, respectively, while for the latter exporting is not a significant transmission channel. Like in the case of the probit, importer status is negative but not statistically significant. Human capital and age turn insignificant, too. The conclusion at this stage is that exporting activities, but not importing, increase the probability of being affected by the crisis, as well as the extent of being affected.

We next ask whether there is a difference between trading with industrialized and developing countries. This is a fair question to ask because the crisis was much more intense amongst advanced countries. Tables 4a and 4b present those results for the probit and the QReg model, respectively.[3]

The first to notice is that exporting to advanced economies is what affects the risk of being hit by the crisis, while south-south trade has no impact on capacity utilization (Table 4a). Moreover, the marginal effect of exporting increases from 5-7 per cent to 13-16 per cent, depending on model specification, when looking at exports to North. Exports to south, on the other hand, are completely insignificant, revealing the importance of the geographic destination of exports. All other coefficients remain unchanged.

[3] In all models, the importer status, even when split by origin, was never significant.

In terms of the extent firms are affected, there is no doubt that export to north is what matters (Table 4b). For the gross-output based models, exporters to north face a reduction of capacity utilization ranging from 3.36 to 3.44 percent. For value-added based models, the corresponding effect ranges from 2.32 to 2.80. There is no effect from imports on the rate of capacity utilization.

6. Robustness check

In the probit model, the dependent variable indicating whether a firm was negatively affected by the financial crisis was defined as "yes" if there was any reduction of capacity utilization[4] and "no" if there was no change or an increase in capacity utilization. However, small changes may have little to do with exogenous shocks, so we examined how the results are affected by imposing more flexible criteria. These criteria are 5, 10 and 20 per cent decrease in capacity utilization for it to be coded as a "yes". For the 5%-criterion, the overall exporter dummy is insignificant, while the coefficient for the exporter-to-north dummy slightly falls to the range 0.10-0.14, which is consistent with the previous results. Moreover, the coefficients for capital intensity, human capital, size and performance remain the same in terms of scope, only age turns insignificant. When applying the 10 per cent criterion, the overall export dummy remains insignificant, while the exporter to north dummy stays positive and significant. Increasing the criterion to 20 per cent, only exporting to north (0.05) and size (-0.04) and, in some cases, performance remain significant. Overall, the consistent behaviour of the export to north indicator strengthens our conclusions.

It was shown that export destination to north was an even stronger predictor of change in capacity utilization. Like above, this idea is tested for different criteria. In particular, we test whether the definition of north exporter matters by setting the criterion to 50 per cent, that is, only if at least half of all exports are destined to industrialized countries is the export north dummy a "yes". The results on all fronts prove remarkably robust to this harsh condition. In addition, imports that have hitherto not been significant, turns out to be significant in the two value-added productivity models, however with negative signs and only for imports from other developing countries. We do not wish to read too much into this but note that the result suggests a sign of resilience rather than an additional transmission channel.

[4] Note that the question in the questionnaire asks for the level of capacity utilization before and during the financial crisis.

It is well known that limited-dependent estimators such as the probit produce inconsistent results when affected by heteroscedasticity. We test the sensitivity of our export-based models—any export and destination of exports—to heteroscedasticity caused by variables inside and outside the model, the latter being sales and employment growth. Generally, there is very little heteroscedasticity to report. In the export model, both age and human capital are sensitive to the assumption that they are causing heteroscedasticity. When gross output per worker and firm size are the assumed causes, exporter status drops out. The only significant heteroscedasticity is caused by sales growth in one of the models, but it has no effect on the results.

In the exporter-destination model, exporting is found to cause heteroscedasticity. However, it has no impact on the results. Capital-labour ratio renders exporting-to-north insignificant in the value-added per worker model. As there are no other effects to report we conclude that heteroscedasticity is no big issue for our results, in particular for our conclusion that it is exporting to industrialized countries that works as a transmission channel.

To the quantile regressions, we increase the tolerance level to 50 per cent for both exports and imports. The export results are maintained. However, for imports we again obtain the result in value-added models that importing activities help insulate firms.

We have also investigated the distribution of the marginal effects of the continuous variables. Although these distributions are somewhat skewed in most cases, their span is within reasonable range, i.e. both the minima and the maxima are consistent with our results.[5]

Finally, we have indicated that outliers may be an issue. Therefore, we ask whether our findings are driven by some influential observations. In all used variables, the most extreme outliers have been removed manually, which, however, did not alter the results drastically.

Our conclusion is that while "any exporting" activity is sensitive to the definition, exporting- to-north is what really drives the results. This is in line with the notion that the crisis started in advanced economies and spread between them and further over to developing countries, including Africa.

7. Conclusions

The current global financial crisis has raised questions whether the countries in the developing world and, in particular, those of Sub-Saharan Africa (SSA) were affected by the crisis in the same

[5] The histograms of MEs are available upon request.

way that industrialized economies were affected. According to what seems to be the common perception, the SSA economies, being less integrated into the world economy, were protected from the ramifications of the severe economic downturn in the industrialized countries. The academic literature, on the other hand, generally appears inconclusive regarding the impact of financial crisis across national borders. Consequently, predictions on how and the extent SSA economies were affected based on such literature are proven difficult to make. If SSA economies were affected by the crisis, it is important to understand the relevant transmission channels of the crisis. Moreover, this will inform appropriate policy responses to, if not avoid, lessen the impact on their economies of future shocks.

To this end, we have used a new cross-sectional firm-level dataset, mainly collected in 2010, which covers about 2,500 manufacturing firms in 19 SSA countries. The work has been guided by three main objectives: Firstly, to identify the type of firms in SSA economies that were affected by the financial crisis; secondly, identify the transmission channels that propagated the shock, and finally, examine the extent SSA economies were affected. We suggest that such identification will be informative for policy makers in their pursuit to target those firms that either needs some measures of protection or assistance toward self-protection.

The paper has provided several insights, of which an important one is that SSA countries indeed were affected by the global financial crisis. We have provided empirical evidence and some policy levers that are useful to increase our understanding of the impact of the global financial crisis on SSA. Empirically, we have explored a range of firm characteristics, including performance and trade indicators, and offered novel results with respect to the relationship between the afore-mentioned characteristics and firm vulnerability to the crisis.

The probability of being affected differs across firms. Firms with more human capital and those that are larger and younger were less likely to being affected by the crisis. Productivity levels—both labour and TFP—are important indicators for the probability of whether a plant will feel the implications of the recent financial crisis. For example, firms with greater labour productivity performance were less likely claim that they were affected by the crisis. As a policy response, firms should receive support in the development of productive capacities to reduce their vulnerability to external shocks. While in the very short-term such support can be directed more or less directly to firms, in the longer term governments need to strengthen those factors that

impact on productive capacities. These may, for instance, include the educational system and institutional quality, as well as addressing conditions for small firms and growth constraints.

The other main result is that international trade, in particular exporting activities, functions as a transmission channel for shocks. That is, firms that involved in exporting were more likely to be hit by the crisis. However, it needs to be stressed that incorporating the destination of exports into the analysis is fundamental for understanding how African countries were affected. The results show that the transmission channel that propagated the shock was exports to industrialized economies, but not trade with other developing countries. While this to some extent only shows from where the crisis emanated, in terms of policy it suggests that governments may wish to stimulate firms to diversify their production and exports, which will increase their resilience to future international shocks.

Thus, contrary to the common perception, the bottom line of the paper is that industry in Africa was affected by the global financial crisis and that the effects mainly worked through exports. Firms that are relatively competitive in the sense of productivity were also better able to shield themselves from the negative consequences.

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Tables

Table 1a. General description of data

Variable	Obs	Mean	Std. Dev.	Min	Max
Crisis dummy	2862			0.00	1.00
Crisis percentage change	2862	9.89	17.54	-100.00	90.00
Exporter dummy	3067			0.00	1.00
Importer dummy	3067			0.00	1.00
Foreign dummy	3067			0.00	1.00
Two-way trader dummy	3067			0.00	1.00
Log(Output per worker)	2935	9.77	1.60	-2.80	16.64
Log(TFP output-based)	2665	2.81	2.78	-9.17	15.07
Log(Value added per worker)	2512	8.90	1.59	-0.11	13.65
Log(TFP VA-based)	2457	5.89	1.49	-0.78	15.10
Log(Capital-labor-ratio)	2886	9.20	1.73	-2.05	18.21
Human capital	2937	0.33	0.21	0.00	1.00
Log(Age)	3036	2.68	0.83	0.00	5.09
Log(Size)	3046	3.89	1.37	0.00	8.81

Table 1b. Hit by crisis, by country

Country	Not hit (%)	Hit (%)
Burkina Faso	28.2	71.8
Burundi	78.8	21.2
Cameroon	47.6	52.4
Cape Verde	46.0	54.0
Ethiopia	56.2	43.8
Ghana	37.0	63.0
Kenya	56.2	43.8
Lesotho	36.7	63.3
Madagascar	35.4	64.6
Malawi	44.4	55.6
Mali	44.6	55.5
Mozambique	52.3	47.7
Niger	58.8	41.2
Nigeria	25.5	74.5
Rwanda	73.6	26.4
Senegal	29.3	70.7
Tanzania	35.7	64.3
Uganda	41.8	58.3
Zambia	27.2	72.8
Total	**43.1**	**56.9**

Table 1c. Hit by crisis, by sector

ISIC 2-digit		Not hit (%)	Hit (%)
15	Manufacture of food products and beverages	47.2	52.8
16	Manufacture of tobacco products	62.5	37.5
17	Manufacture of textiles	38.9	61.1
18	Manufacture of wearing apparel; dressing and dyeing of fur	35.9	64.1
19	Tanning/dressing of leather; manuf. of footwear, luggage, handbags, saddlery,…	34.4	65.6
20	Manufacture of wood and of products of wood and cork, except furniture,…	39.0	61.0
21	Manufacture of paper and paper products	40.6	59.4
22	Publishing, printing and reproduction of recorded media	41.8	58.2
23	Manufacture of coke, refined petroleum products and nuclear fuel	33.3	66.7
24	Manufacture of chemicals and chemical products	42.4	57.6
25	Manufacture of rubber and plastics products	38.4	61.6
26	Manufacture of other non	44.9	55.1
27	Manufacture of basic metals	46.0	54.1
28	Manufacture of fabricated metal products, except machinery and equipment	42.9	57.1
29	Manufacture of machinery and equipment n.e.c.	48.7	51.3
30	Manufacture of office, accounting and computing machinery	100.0	0.0
31	Manufacture of electrical machinery and apparatus n.e.c.	35.6	64.4
32	Manufacture of radio, television and communication equipment and apparatus	57.1	42.9
33	Manufacture of medical, precision and optical instruments, watches and clocks	60.0	40.0
34	Manufacture of motor vehicles, trailers and semi	40.0	60.0
35	Manufacture of other transport equipment	36.4	63.6
36	Manufacture of furniture; manufacturing n.e.c.	51.5	48.5
37	Recycling	50.0	50.0
Total		**43.1**	**56.9**

Table 1d. Hit by crisis, by ownership

Ownership	Not hit (%)	Hit (%)
Domestic	41.2	58.8
Foreign	46.4	53.7
Total	**43.1**	**56.9**

Table 2a. Probit regression, marginal effects (at mean), base model and by performance indicator

	(1) Crisis dummy	(2) Crisis dummy	(3) Crisis dummy	(4) Crisis dummy	(5) Crisis dummy
Foreign	-0.01	0.00	0.00	0.00	0.01
	(-0.41)	(0.12)	(0.02)	(0.13)	(0.21)
Log(Capital-labor-ratio)	-0.02***	-0.01	-0.02***	-0.02**	-0.02***
	(-2.96)	(-0.92)	(-2.87)	(-2.14)	(-3.19)
Human capital	-0.12**	-0.10*	-0.14**	-0.12**	-0.12**
	(-2.09)	(-1.76)	(-2.37)	(-1.99)	(-2.02)
Log(Age)	0.03**	0.03**	0.03**	0.04**	0.04**
	(2.30)	(2.39)	(2.12)	(2.37)	(2.44)
Log(Size)	-0.02**	-0.02**	-0.02**	-0.02**	-0.03**
	(-2.36)	(-2.25)	(-2.54)	(-2.37)	(-2.45)
Log(Output per worker)		-0.03***			
		(-3.57)			
Log(TFP output-based)			-0.01***		
			(-3.82)		
Log(VA per worker)				-0.02**	
				(-2.32)	
Log(TFP VA-based)					-0.02**
					(-2.41)
Observations	2,626	2,580	2,446	2,223	2,241
Pseudo-R2	0.06	0.07	0.07	0.07	0.07
Chi2	224	240	240	221	222
Prob > Chi2	0.00	0.00	0.00	0.00	0.00

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Country and sector dummies not shown

Table 2b. QReg regression, marginal effects (at mean), base model and by performance indicator

VARIABLES	(1) Crisis percentage	(2) Crisis percentage	(3) Crisis percentage	(4) Crisis percentage	(5) Crisis percentage
Foreign	-0.11	-0.15	-0.09	-0.07	-0.08
	(-0.25)	(-0.31)	(-0.18)	(-0.18)	(-0.21)
Log(Capital-labor-ratio)	-0.36***	-0.18	-0.41***	-0.28**	-0.37***
	(-2.95)	(-1.18)	(-2.74)	(-2.28)	(-3.53)
Human capital	-1.42	-2.09*	-1.78	-1.62*	-1.53*
	(-1.39)	(-1.83)	(-1.40)	(-1.69)	(-1.75)
Log(Age)	0.37	0.57**	0.43	0.43*	0.42*
	(1.42)	(1.99)	(1.36)	(1.81)	(1.94)
Log(Size)	-0.45***	-0.62***	-0.62***	-0.52***	-0.49***
	(-2.60)	(-3.27)	(-2.98)	(-3.36)	(-3.42)
Log(Output per worker)		-0.61***			
		(-3.61)			
Log(TFP output-based)			-0.32***		
			(-3.77)		
Log(VA per worker)				-0.29**	
				(-2.22)	
Log(TFP VA-based)					-0.32***
					(-2.82)
Constant	8.38	6.90	3.21	15.38***	11.76***
	(1.64)	(1.19)	(0.52)	(3.83)	(5.17)
Observations	2,632	2,585	2,450	2,230	2,248
Pseudo R-squared	0.0608	0.0638	0.0654	0.0678	0.0668

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Country and sector dummies not shown

Table 3a Probit regression, marginal effects (at mean), base model and by performance indicator, plus Exporter/Importer

	(1) CrisisDummy	(2) CrisisDummy	(3) CrisisDummy	(4) CrisisDummy
Exporter	0.05**	0.06**	0.07**	0.07**
	(1.99)	(2.12)	(2.38)	(2.37)
Foreign	-0.00	-0.01	-0.00	0.00
	(-0.05)	(-0.21)	(-0.06)	(0.02)
Log(Capital-labor-ratio)	-0.01	-0.02***	-0.02**	-0.03***
	(-1.07)	(-3.04)	(-2.45)	(-3.42)
Human capital	-0.10*	-0.14**	-0.12*	-0.12**
	(-1.73)	(-2.36)	(-1.90)	(-1.99)
Log(Age)	0.03**	0.03**	0.03**	0.04**
	(2.29)	(2.05)	(2.21)	(2.31)
Log(Size)	-0.03***	-0.03***	-0.03***	-0.03***
	(-2.68)	(-3.01)	(-2.91)	(-2.95)
Log(Output per worker)	-0.03***			
	(-3.65)			
Log(TFP output-based)		-0.01***		
		(-3.76)		
Log(VA per worker)			-0.02**	
			(-2.36)	
Log(TFP VA-based)				-0.02**
				(-2.39)
Observations	2,574	2,439	2,215	2,234
Pseudo-R2	0.0681	0.0714	0.0735	0.0724
Chi2	240.0	239.0	224.0	222.4
Prob > Chi2	0	0	0	0

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Country and sector dummies not shown

	(5) CrisisDummy	(6) CrisisDummy	(7) CrisisDummy	(8) CrisisDummy
Exporter	0.05**	0.06**	0.07**	0.07**
	(2.03)	(2.24)	(2.51)	(2.49)
Importer	-0.01	-0.03	-0.04	-0.04
	(-0.62)	(-1.39)	(-1.46)	(-1.42)
Foreign	0.00	-0.00	0.00	0.00
	(0.00)	(-0.07)	(0.06)	(0.15)
Log(Capital-labor-ratio)	-0.01	-0.02***	-0.02**	-0.02***
	(-1.02)	(-2.81)	(-2.27)	(-3.17)
Human capital	-0.10*	-0.13**	-0.11*	-0.12*
	(-1.69)	(-2.24)	(-1.81)	(-1.91)
Log(Age)	0.03**	0.03**	0.03**	0.03**
	(2.26)	(2.01)	(2.14)	(2.25)
Log(Size)	-0.03**	-0.03***	-0.03***	-0.03***
	(-2.56)	(-2.75)	(-2.65)	(-2.71)
Log(Output per worker)	-0.03***			
	(-3.54)			
Log(TFP output-based)		-0.01***		
		(-3.80)		
Log(VA per worker)			-0.02**	
			(-2.26)	
Log(TFP VA-based)				-0.02**
				(-2.28)
Observations	2,574	2,439	2,215	2,234
Pseudo-R2	0.0682	0.0720	0.0742	0.0730
Chi2	240.4	240.9	226.1	224.5
Prob > Chi2	0	0	0	0

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Country and sector dummies not shown

Table 3b. QReg regression, marginal effects (at mean), base model and by performance indicator, plus Exporter

	(1) CrisisPercentage	(2) CrisisPercentage	(3) CrisisPercentage	(4) CrisisPercentage
Exporter	1.07*	1.28**	0.66	0.84
	(1.77)	(2.10)	(1.40)	(1.45)
Foreign	-0.16	-0.04	0.01	-0.04
	(-0.29)	(-0.07)	(0.03)	(-0.07)
Log(Capital-labor-ratio)	-0.30*	-0.45***	-0.30**	-0.40***
	(-1.68)	(-2.83)	(-2.16)	(-2.62)
Human capital	-1.74	-2.08	-1.49	-1.72
	(-1.32)	(-1.55)	(-1.39)	(-1.34)
Log(Age)	0.51	0.39	0.45*	0.48
	(1.53)	(1.17)	(1.71)	(1.51)
Log(Size)	-0.77***	-0.76***	-0.67***	-0.73***
	(-3.39)	(-3.32)	(-3.69)	(-3.32)
Log(Output per worker)	-0.65***			
	(-3.32)			
Log(TFP output-based)		-0.33***		
		(-3.71)		
Log(VA per worker)			-0.33**	
			(-2.27)	
Log(TFP VA-based)				-0.36**
				(-2.16)
Constant	20.53***	14.07**	12.22***	15.74***
	(3.78)	(2.53)	(4.36)	(2.89)
Observations	2,583	2,448	2,229	2,247
Pseudo R-squared	0.06	0.07	0.07	0.07

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Country and sector dummies not shown

	(5) CrisisPercentage	(6) CrisisPercentage	(7) CrisisPercentage	(8) CrisisPercentage
Exporter	1.18**	1.31**	0.72	0.84
	(2.02)	(2.13)	(1.44)	(1.64)
Importer	-0.35	-0.40	-0.45	-0.44
	(-0.66)	(-0.70)	(-0.96)	(-0.92)
Foreign	-0.01	-0.04	-0.01	0.14
	(-0.02)	(-0.06)	(-0.01)	(0.29)
Log(Capital-labor-ratio)	-0.27	-0.48***	-0.35**	-0.44***
	(-1.57)	(-2.94)	(-2.39)	(-3.18)
Human capital	-1.89	-2.31*	-1.85*	-1.78
	(-1.49)	(-1.71)	(-1.66)	(-1.56)
Log(Age)	0.49	0.40	0.44	0.51*
	(1.52)	(1.18)	(1.60)	(1.81)
Log(Size)	-0.82***	-0.79***	-0.65***	-0.65***
	(-3.71)	(-3.37)	(-3.41)	(-3.28)
Log(Output per worker)	-0.71***			
	(-3.75)			
Log(TFP output-based)		-0.34***		
		(-3.78)		
Log(VA per worker)			-0.37**	
			(-2.38)	
Log(TFP VA-based)				-0.35**
				(-2.37)
Constant	15.87**	14.74***	16.86***	16.19***
	(2.40)	(2.64)	(3.58)	(3.36)
Observations	2,583	2,448	2,229	2,247
Pseudo R-squared	0.0642	0.0665	0.0685	0.0675

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Country and sector dummies not shown

Table 4a. Probit regression, marginal effects (at mean), base model and by performance indicator, plus Exporter destination

VARIABLES	(1) CrisisDummy	(2) CrisisDummy	(3) CrisisDummy	(4) CrisisDummy
Export Dest.:North	0.16***	0.16***	0.13***	0.15***
	(4.13)	(3.97)	(3.16)	(3.64)
Export Dest.:South	0.02	0.02	0.04	0.03
	(0.64)	(0.90)	(1.24)	(1.11)
Foreign	-0.00	-0.01	-0.00	-0.00
	(-0.13)	(-0.29)	(-0.13)	(-0.06)
Log(Capital-labor-ratio)	-0.01	-0.02***	-0.02**	-0.02***
	(-1.10)	(-3.04)	(-2.37)	(-3.35)
Human capital	-0.10*	-0.14**	-0.12*	-0.12**
	(-1.71)	(-2.37)	(-1.93)	(-2.00)
Log(Age)	0.03**	0.03**	0.03**	0.04**
	(2.37)	(2.09)	(2.23)	(2.33)
Log(Size)	-0.03***	-0.03***	-0.03***	-0.04***
	(-3.11)	(-3.42)	(-3.16)	(-3.27)
Log(Output per worker)	-0.03***			
	(-3.59)			
Log(TFP output-based)		-0.02***		
		(-3.90)		
Log(VA per worker)			-0.02**	
			(-2.34)	
Log(TFP VA-based)				-0.02**
				(-2.38)
Observations	2,574	2,439	2,215	2,234
Pseudo-R2	0.0724	0.0755	0.0760	0.0759
Chi2	255.1	252.7	231.6	233.1
Prob > Chi2	0	0	0	0

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Country and sector dummies not shown

Table 4b. QReg regression, marginal effects (at mean), base model and by performance indicator, plus Exporter destination

	(1) CrisisPercentage	(2) CrisisPercentage	(3) CrisisPercentage	(4) CrisisPercentage
Export Dest.:North	3.44***	3.36***	2.32**	2.80***
	(3.90)	(4.48)	(2.42)	(3.69)
Export Dest.:South	0.39	0.82	0.51	0.47
	(0.63)	(1.58)	(0.78)	(0.89)
Foreign	-0.32	-0.27	0.05	0.06
	(-0.57)	(-0.58)	(0.08)	(0.12)
Log(Capital-labor-ratio)	-0.24	-0.49***	-0.44**	-0.51***
	(-1.40)	(-3.68)	(-2.37)	(-3.79)
Human capital	-2.07	-1.95*	-2.23	-1.74
	(-1.59)	(-1.75)	(-1.56)	(-1.55)
Log(Age)	0.68**	0.49*	0.62*	0.61**
	(2.08)	(1.76)	(1.76)	(2.18)
Log(Size)	-0.83***	-0.84***	-0.81***	-0.83***
	(-3.68)	(-4.43)	(-3.38)	(-4.35)
Log(Output per worker)	-0.68***			
	(-3.54)			
Log(TFP output-based)		-0.38***		
		(-5.19)		
Log(VA per worker)			-0.41**	
			(-2.08)	
Log(TFP VA-based)				-0.44***
				(-2.97)
Constant	9.22	4.87	17.93***	13.37***
	(1.40)	(0.89)	(2.98)	(4.62)
Observations	2,585	2,450	2,230	2,248
Pseudo R-squared	0.0667	0.0690	0.0696	0.0689

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Country and sector dummies not shown

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