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MORE THAN COPPER: TOWARDS THE DIVERSIFICATION AND STABILIZATION OF ZAMBIAN EXPORTS

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We analyze Zambian export patterns using a new transaction-level trade dataset for the period 1999–2011. The data show that, in international comparison, Zambian exports are exceptionally concentrated (on mining products). This reliance has been increasing in recent years. Zambia's exports are also characterized by a high level of churning in terms of firms and products. Multivariate models of survival probabilities suggest that exchange-rate volatility and difficult access to imported inputs significantly inhibit diversified and stable exports. We complement the econometric analysis with a qualitative study of the Zambian export sector. We conclude that one of the main policy levers for unleashing Zambia's full potential as an exporter is by facilitating access to imported inputs. Additional measures that ease foreign-exchange transactions, simplify export and certification requirements, and increase the predictability of Zambia's trade regime could be effective to promote Zambia's non-traditional exports.

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1. Introduction

Zambia is well known for its mineral riches, which naturally endow the country with a highly successful export industry. This lucrative asset, however, also implies an internationally exceptional degree of export product concentration. We show that, even controlling for its level of economic development, Zambia has one of the world's highest degrees of export concentration, as copper and cobalt account for more than 80% of the value of formal exports.

Zambia's exports are in addition characterized by a large degree of churning. Analyzing new transaction-level trade data covering the period 1999-2011, we find that Zambian firm-level export spells are numerous but short.

The Zambian authorities have long been aware of these features of their economy, and efforts at diversifying and stabilizing exports are ongoing.¹ For such efforts to be effective, it is important that the main impediments to export diversification and stabilization be understood. Interviews with Zambian exporters bring up two recurrent themes: problems with unexpected exchange-rate movements and constraints on foreign exchange transactions, and impediments to importing inputs required for export-oriented production – in addition to a number of well-known challenges linked to human capital shortages, bottlenecks in transport and telecommunications infrastructure, erratic policy changes, and political favoritism. We therefore analyze the export micro data with a view of substantiating these frequently heard explanations for the fragility of Zambian exports. The data are consistent with what many business people say: exchange-rate volatility and problems related to the importing of inputs contribute to destabilizing Zambian firm-level export spells.

Our paper is structured as follows. In the first two sections, we present the results of a statistical analysis based on the transaction-level trade data. Section 2 summarizes trade patterns at the

¹ See, for example, IGC (2012).

level of destination countries, products and firms, in particular presenting new results on firm-level dynamics in the Zambian export sector. In Section 3, we draw on regression analysis to explore the determinants of Zambian export instability. Sections 4 and 5 are qualitative in nature. Our insights gained from a large number of interviews with Zambian business and government representatives conducted in the first half of 2014 are summarized in Section 4. In Section 5 we conclude by drawing some policy conclusions from the foregoing analyses.

2. The composition of Zambian exports, 1999-2011

2.1 Export patterns across destinations and products

Main export destinations

The quantitative analysis of this paper is based on transactions-level Zambian customs data for the period 1999-2011, drawn from the ASYCUDA system. In total, the dataset covers 1.37 million trade transactions, of which some 99,000 are exports (see Table 1).²

We first present a number of key summary statistics, starting with Zambian export patterns across destination countries. Table 2 shows, that, averaged over our sample period, fully 80% of Zambian export transactions are with fellow Sub-Saharan countries. In value terms, however, exports to African clients account for less than 25%, with Europe by far the most important destination (53%). This means that export shipments to other African countries are on average much lower-value than shipments to overseas destinations.

As evident from Table 3, the composition of destinations has undergone significant changes since the turn of the millennium. In value terms, overseas markets have become even more

² This dataset has also been analyzed by Banda and Simumba (2013) in an interesting complementary study to ours. Note that our data do not cover two important components of Zambian trade: informal trade flows and services. On the former, see e.g. World Bank (2005, 2014), and on the latter, see e.g. Mattoo and Payton (2007).

dominant than they had been in 1999, with Europe's share rising from 50% to 57% and East Asia's share increasing nine-fold, from 2% to 18%.

The destination information reported by Zambian customs must be interpreted with considerable caution, however. This becomes apparent in Table 4, where we list the ten main destination countries in value terms across three sub-periods. Astonishingly, Switzerland appears as Zambia's main export destination in the most recent sub-period, 2008-2011, absorbing more than half of all Zambian exports. This cannot possibly reflect the true flow of goods. In Swiss import data, reported imports from Zambia are some 6,000 times smaller than reported Zambian exports to Switzerland. Moreover, Swiss import statistics do not suggest copper to feature among Switzerland's main import products from Zambia. Hence, a large part of Zambian mining exports are evidently assigned to Switzerland in the statistics because the relevant multinational firms are headquartered there and not because the goods are destined for or even physically shipped to Switzerland. This is a major flaw in data quality, and it also potentially has considerable revenue implications for the Zambian authorities.

Main export products

We now shift our attention to the product composition of Zambian exports. Table 5 shows export transactions and values across 16 product groups, averaged over the 1999-2011 sample period. The dominance of Metals and Mineral Products is evident, as they together accounted for 82% of the value of Zambian exports, dwarfing the main non-traditional sectors Foodstuffs (4.5%), Vegetable Products (3.3%) and Textiles (2.3%). In terms of transaction numbers, however, non-traditional exports are much more important, accounting for 64% of shipments. Given that administrative barriers to exports have a high fixed-cost component (i.e. are to a considerable extent unrelated to the value of the consignment) they should be of particular relevance when the aim is to facilitate non-traditional exports.

The customs data prior to 2006 report re-exports separately from “standard” exports of Zambian-sourced goods. We show those data by product category in Table 6. Re-exports account for a quarter of all export transactions overall, and the majority of transactions in Transportation (88% of transactions) and in Machinery/Electrical (67%). This alerts us to the fact that some non-traditional export data do not reflect underlying productive capacity of the Zambian economy. If we took out re-exports from the trade data, Zambia’s reliance on traditional exports would be even stronger. Applying the re-export shares from Table 6 to the export values of Table 5 leads us to conclude that the value share of Metals and Mineral Products in Zambian sourced exports is even higher than suggested by the raw data, i.e. somewhere in the order of 92%.

The reliance of Zambian exports on copper and related products becomes further evident in Table 7, where we report the ten main export products in value terms across three sub-periods. This table suggests that traditional exports if anything have become more dominant in recent years: while the top non-traditional product, sugar, made it into fourth place in 1999-2003 (4% of export value), it has dropped to seventh place in 2008-2011 (2% of export value). In the last sub-period, the top six products were all copper related and together accounted for 79% of Zambian exports.

While the rising share of mining products has given an increasing weight to overseas destination markets for Zambian exports, intra-African exports have actually grown in relative importance with regard to non-traditional exports. This is shown in Figure 1: while Sub-Saharan Africa (SSA) accounted for 60% of the value of non-traditional exports in 1999, it absorbed fully 80% of those exports by 2011. In sectors other than mining, therefore, some reorientation of trade towards regional destinations appears to have taken place. As we in addition show in Table 8, intra-SSA exporters became more diversified, and export values increase more, than exporters that exclusively served non-SSA destination markets. The bulk in the value of trade, however,

was accounted for by exporters that served both SSA and non-SSA destinations – presumably dominated by the large mining conglomerates.

Export concentration

In Figure 2, we summarize the evolution of Zambian export concentration in terms of both destination countries and products, using the Herfindahl index. This index ranges from $1/N$, where N is respectively the number of destinations or products, to 1. The lower the value of this index, the more diversified are export flows. The graph shows a trend towards export diversification in the early 2000s, followed by a steep increase in concentration after 2004.³ This observed reversal in 2005 is without doubt due in large part to the increases in global commodity prices that started in that period and thus boosted the weight of traditional exports in the total. Another way of putting this, though, is to point out that any efforts at export diversification have failed to compensate for the reemerging dominance of mineral exports due to increased foreign demand for Zambian copper.

Figure 3 places Zambian export concentration in international context. Panel A shows Zambia to have the fourth-highest Herfindahl index, surpassed only by Botswana, Laos and Niger. Panel B reveals that in terms of its reliance on the biggest export product category, Zambia is second in the world, behind only Botswana.

In sum, Zambia remains exceptionally reliant on a single export sector, copper and related products, and this reliance has been increasing over the last decade – to a large extent due to rising global commodity prices.

³ The steep increase of the Herfindahl indices observed in 1999-2000 is most likely explained by incomplete data in our initial sample year.

2.2 Firm-level exports: basic patterns

We now turn to the analytical level at which the customs micro-data are uniquely informative: individual firms. In Table 9, we show that the number of formally exporting firms has more than tripled over our sample period, from 516 in 2000 to 1,754 in 2011. The number of exported products has more than doubled, from 813 to 1,764, and the number of destinations has risen by half, from 73 to 109. These numbers indicate that despite the increased dominance of traditional products, there have been successes in developing non-traditional exports

In Table 10, we take a closer look at export product compositions by firm. We see that, in 2011, most firms export a single product, the median number of products per firm being one. Hence, the exporter distribution is highly skewed, with a few large multi-product exporters (for a maximum of 214 products exported by the most diversified firm) and a majority of small single-product exporters. This distribution appears to have remained roughly stable between 1999 and 2011.

In Tables 11 and 12, we document export transaction sizes per firm across destination regions and product categories, respectively. As expected, average transaction sizes in the metals and minerals sectors and in overseas exports dwarf the rest. This again highlights the dichotomy between traditional and non-traditional Zambian exporting firms.

2.3 Firm-level exports: dynamics

As a final descriptive analysis, we explore the firm-level dynamics of Zambian exports. We apply the following definitions to compute entry and exit statistics:

- *Entry* at time t : an exporting firm that does not exist in year $t-1$ but exists in year t
- *Exit*: an exporting firm that exists in year $t-1$ but does not exist in year t

- *Incumbent*: an exporting firm that exist in both years $t-1$ and t
- *Re-entry*: an exporting firm that reappears after initial failure (reappears at time t , does not exist at time $t-1$, but existed before $t-1$)
- *New entry*: an exporting firm that does not exist before time t but appears in year t
- *Temporary exit*: an exporting firm that exits at time t but reappears again
- *Failure*: an exporting firm that exits after first year of exporting and never reappears
- *Survivor* : an exporting firm that exists at time t and $t+1$ but did not exist at time $t-1$

Table 13 presents those computations. The high level of churning among Zambian exporting firms becomes immediately apparent. An average exit rate of 41%, for example, means that 41% of exporters in an average years no longer appear in the export statistics in the following year. And the entry rate of 50% implies that half of the exporters in an average year did not export in the previous year. By the nature of the underlying statistics, these numbers combine firm births and deaths with entry and exit to and from exports. Be that as it may, the fact that essentially half of the stock of exporters changes every year suggests remarkable dynamism (or instability, depending on the point of view). Indeed panel C of Figure 3 shows that Zambia has an exceptionally high rate of firm entry into exports also in international comparison.

In Table 14, we quantify firm-level export dynamics in a different way, by reporting the distribution of export spell durations. We find that roughly two thirds of export spells do not last more than a year. The average spell duration is a mere 1.9 years. This is consistent with panel D of Figure 3, which illustrates the record low export survival rates of Zambian exporters.

Some of the observations classified as exits in Tables 12 and 13 may be due to the essentially the same firms changing name or some other identifier. We can go some way to controlling for this by analyzing product-level instead of firm-level export dynamics. As we show in Table 15, though, even at the product level, the average exit and entry rates are 31% and 37% respectively.

Thus around a third of all products exported by Zambia in any given year have not been exported in the previous year, and a third will not be exported anymore in the subsequent year. The majority of product-level export spells do not last more than one year, with an average spell duration of 2.8 years (Table 16). Not surprisingly, average product-level spell durations are the longest in Mineral Products (3.3 years), given that these exports are dominated by large international corporations (Table 17). The lowest average spell durations are found in Textiles (2.0 years).

Yet another way of illustrating the detailed dynamics of exports is to graph Kaplan-Meier survival curves. These graphs show, across years t , the probability that an export link that existed in year 0 will still exist in year t . The more steeply these curves fall off after the initial year 0, the lower is the average survival probability of the related export types.

In Figure 4, we show Kaplan-Meier curves separately for different product types. Panels A and B show that export spells in copper products as well as in metals other than copper products on average survive longer than export spells in non-traditional products. This confirms the greater stability of export patterns found in the traditional sector. No such difference is found, however, between agricultural and non-agricultural products (Panels C and D). Hence, firm-level agricultural export patterns appear to be just as volatile as manufacturing exports.

The duration of export spells might also vary across destination markets. In Figure 5, we therefore trace Kaplan-Meier survival curves for different destination groupings. The one result that emerges from these graphs is that export spells with Zambia's neighboring countries (SACU and SADC, see Panels B and C), are shorter than export spells overall. This confirms that experimentation and sporadic exporting is particularly prevalent in regional trade links.

Overall, we find Zambia's structure of exporter firms and exported products to be extremely unstable. In the rest of this paper, we strive to find some explanations for this observation.

3. Determinants of export survival: econometric analysis

We now turn to regression analysis, allowing us to identify individual determinants of export survival. Specifically, we model the survival of trade relationships using a Cox proportional hazard model. Our dependent variable is a hazard function of an export spell, expressed as a multiplicative function of an unspecified time-dependent baseline hazard function and an exponential function of firm, spell, destination and product characteristics:

$$h(t|X) = h_0(t) \exp(X\beta),$$

where $h_0(t)$ represents how the baseline hazard changes as a function of time, the covariates X affect the hazard rate independently of time, and β is a vector of parameters.⁴ A positive coefficient, i.e. a positive element of β , implies that the relevant variable is associated with higher hazard rates. In other words, a positive regression coefficient implies that the associated variable contributes to making exports more unstable, all else equal.⁵

We control for gravity variables, various spell characteristics such as initial value and size of transaction, a dummy for multiple spells, and various product and firm characteristics.

Estimation results are reported in terms of coefficients (in contrast to hazard ratios) with clustered standard statistics in parentheses.

Our baseline results are shown in Table 18. The included control variables largely behave as expected: exports are more stable if they imply larger volumes and economically larger destination markets. The number of destinations served by the firm at the start of the export spell, however, is associated with shorter spell durations. This suggests that some firms

⁴ These parameters are estimated by maximizing the partial likelihood as opposed to the likelihood of an entirely specified parametric hazard model. Resulting estimates are not as efficient as maximum-likelihood estimates; however no arbitrary, and possibly incorrect, assumptions about the form of the baseline hazard need to be made.

⁵ For an excellent introduction to survival estimation, see Brenton, Cadot and Denisse Pierola (2012, Annexes to chapter 1).

experiment widely at a large range of destination countries, possibly taking greater risks. We also find, not surprisingly, that exports were less stable during the global economic crisis of 2008-2009.

The regression specifications of Table 18 are mainly constructed to allow us to explore the impact of various regional trade groupings – COMESA, SADC, SACU and the EU – on the stability of Zambian export spells. We include dummy variables for destination countries belonging to those groupings as well as interaction terms with the global economic crisis dummy, allowing us to investigate whether exports to any of those country groups were more resilient to the economic downturn. We find none of these dummy variables to be statistically significant. The data, therefore, do not to date show a stabilizing effect from regional trade integration schemes.⁶ The one statistically significant coefficient is found on the interaction term between the economic crisis dummy and the EU dummy. This coefficient having a negative sign, it implies that Zambian exports to EU countries were more resilient to the economic downturn than exports to other countries.

In Table 19, we in turn consider all products and non-traditional product only, and we turn our attention to exchange-rate volatility, a potential source of export disruption. We use a measure of month-on-month variability of the kwacha exchange rate with respect to the currency of the relevant destination country. The estimated coefficients on this variable are statistically significantly positive, suggesting that exchange-rate volatility is indeed a driver of firm-level export instability. The effect is almost identical when estimated for non-traditional products only. Hence, exchange-rate volatility emerges as an important constraint on export durability in both mining and non-mining sectors. A 10% increase in annualized exchange rate volatility is found to increase the hazard rate by some 4.7% on average.

⁶ On the (lack of) trade liberalization achieved through SADC and SACU, see e.g. Gillson (2010) and Brenton, Dihel, Gillson and Hoppe (2011).

In Table 20, we additionally explore the impact of relying on imported inputs. We estimate six regression models, all including the same control variables as those shown in Table 19. The results suggest that importing *per se* does not make exporters more vulnerable – quite the contrary. The variable “import exposure” yields negative and statistically significant coefficient estimates throughout. This suggests that exporting firms that are also importers have more stable export patterns.⁷ However, “import exposure” captures a wide range of imports, and not only imported inputs. We therefore augment the model with two measures of the intensity to which exporting firms import upstream products that are likely to enter as inputs into their production destined for export. As this intensity is not easily captured in the data, we use two measures, a broad one (“intermediate imports (1)”) and a narrow one (“intermediate imports (2)”).⁸ The first measure is the share of imported products in total exports of a firm, considering only imports whose processing level is inferior to the level of processing of the main exported product. The second measure is more refined. In addition to the level of processing we rely on broad product categories presented in Appendix Table 1 to check if the underlying broad product categories of an imported product and the main exported product can be vertically linked, so that products of the first can be used as inputs for the second.⁹ The narrow measure is likely to be more precise, whereas the broad one is available for a larger number of observations.

As can be seen in Table 20, it turns out to make no qualitative difference which measure of imported inputs one uses, nor whether one look at all exports or only at non-traditional exports:

⁷ This is in line with recent evidence found for France by Bas and Strauss-Kahn (2013). They identify three channels how imported inputs can be helpful to exports: they may improve productivity, they may increase margins between input costs and export prices, and they may reduce fixed costs to exporting by providing the quality needed for demanding export markets.

⁸ We rely on the classification prepared by the International Trade Centre, based on HS6 product codes. The level of processing is a categorical variable taking the value of 1 for raw materials, 2 for semi processed goods and 3 for processed goods

⁹ Specifically, if an imported product belongs to the same broad product category as the main exported product, we rely on the level of processing. If an imported product and the main exported product belong to different broad product categories, we check whether the products of the imported product broad category can serve as inputs for the broad category of the main exported product. Finally, for the products from seemingly unrelated broad product categories, we performed manual checks to see if an imported product can serve as an input for production of the main exported product.

in all cases, imported input intensity is found to increase export hazard rates statistically significantly. This means that, other things equal, the more a firm relies on imported inputs, the more unstable its export spells become. According to our estimated coefficients, a 10% increase in the share of intermediate imports would increase a hazard rate of nontraditional exports by 0.3-0.4%.

To sum up, our regression estimates suggest that regional integration schemes have not yet contributed significantly to stabilizing export spells, whereas exchange rate variability and imported input intensity are significant destabilizing factors.

4. Qualitative appraisal

Transaction-level data reveal a large degree of churning among Zambia's export firms. While firm entry rates into exporting are high compared to other countries, the export survival rates of these firms are uniquely low. Factors related to the domestic and the external policy environment, the specific export strategy adopted by firms and the organizational and managerial characteristics of firms influence the process of exporting and export survival rates. Interviews with firms engaged in exporting reveal a number of constraints to exports ranging from impediments to importing inputs required for export-oriented production, financial frictions, unexpected exchange-rate movements, inefficient and costly services inputs (finance, electricity, or infrastructure) to the emergence of new international competitors and political instability in destination markets.¹⁰

¹⁰ The interviews with 20 exporting firms from sectors such as agri-processing, steel, chemicals, plastics and other manufactures were conducted in Lusaka in January 2014.

Starting to export and sustaining exports

The majority of the interviewed Zambian exporters do not have a well-defined export strategy. Most respondents report that they export on an *ad hoc* basis, mainly to neighboring countries. For example, more than one exporter of beverages revealed that the management of the firm does not set specific or conscious objectives to enter foreign markets. Instead, small wholesalers from neighboring countries come to the factory and load up their trucks to avoid driving back empty. Similarly, several detergent or confectionery export transactions seem to happen spontaneously and sometimes informally with traders picking up individual shipments to take back to their countries. Other firms follow their clients as those clients enter foreign markets. An example is a manufacturer of folding, conical cartons and self-opening bags used for beer packaging that works closely with breweries in the domestic market. Its beer packaging exports follow closely beer exports to Malawi and the DRC.

Few firms select their target export markets based on professional, in-depth market research. Rather, they tend to undertake preliminary, informal screenings of potential export markets using business contacts' knowledge of the target market. Such informational gaps could partly explain the high exit rates of Zambian exporters.

To acquire new foreign clients, several of the interviewed Zambian firms make use of commission-paid agents or distributors in export markets. Also, as acknowledged by several exporters of steel products, ethnic Chinese networks seem to play a role in generating new export transactions. Some Indian, Lebanese and European networks seem to play a similar role. Interviews with several steel exporters revealed that exporters have no incentives to share information regarding destination markets with other steel producing firms and many firms resort to trial and error when exporting. In some cases after exporting to a foreign country for some time, a Zambian firm may identify new niche areas and underserved markets in that

country. For example, one steel exporter indicated that it is considering a diversification strategy into tourism and helicopter services to serve Zambia's Copper Belt and neighboring countries.

Most if not all firms started either their business and/or their exports with various types of government support. For example, products such as horticulture, coffee, and paprika were identified as having great potential for trade expansion and have benefited from extensive support such as technical assistance grants from the EU (EU Economic Development Grant), the US and the World Bank, duty waivers, duty free imports of inputs, VAT privileges and facilitated work permits. Each of the priority crops attracted considerable amounts of public and private investment capital as presumed focal points of agricultural growth. However, most firms have subsequently experienced significant decline for reasons that would have been difficult, if not impossible, to anticipate. These include falling world market prices, high input costs, and Zambia's thin production base that makes it difficult to achieve effective economies of scale. Paprika exports have virtually collapsed with only a handful of producers still involved in this activity. Similarly, most horticulture exporters have disappeared with only a few big players surviving the air freight price hike in 2004-2005 (transport costs soared from about 30% to 45-50% of gross costs). This clearly shows that trying to pick winners as part of an export diversification strategy has not been successful.

Challenges for Zambian exporters

High trade costs generated by taxes and tariffs on intermediate inputs as well as costs of complying with numerous behind the border measures constrain the diversification of Zambia's export bundle in terms of new products, new markets and new exporters, and may also explain the short export spells. These effects are most pronounced for manufactured exports, which often rely on access to cheap imported intermediate inputs.

(i) *Taxes and tariffs on intermediate inputs*

The interviewed exporters of agricultural and horticultural products, detergents, confectionary, fruit juices, and steel products complained about the high taxes and tariffs on intermediate inputs and a cumbersome duty drawback scheme. While the 2006 Zambian Development Agency (ZDA) Act stipulates a number of tariff exceptions (usually for five years) for designated priority sectors such as raw materials, capital goods, machinery including trucks and specialized motor vehicles, equipment acquired by enterprises operating in economic zones/priority sectors or rural enterprises, inputs used in the textile and clothing industry, materials used in the manufacturing and packaging of cement, and manufacturing of roofing sheets, or computer parts, the majority of interviewed firms stressed that high and complex taxation of intermediate inputs increases production costs and renders their products uncompetitive in the international markets.

Similarly, the duty drawback scheme, which aims at reducing costs through refunds of the customs duty levied on the importation of raw materials and intermediate goods used in exporters' production, suffers from long delays in refund payments to exporters of the duty on imported goods. Indeed, some exporters complain that the refund is almost non-existent. Also, there is considerable time-consuming documentation in applying for duty relief under the scheme. Horticultural exporters explained that the complicated administrative procedures for claiming refunds make this scheme inoperable. Many exporters do not want to join the scheme because, often, the cost of successfully obtaining a refund is greater than the value of the actual rebate. Finally, the scheme does not seem to be well publicized. The private sector finds that the duty drawback scheme does not work and suggests improvements to the scheme to enhance export diversification. In the long run, however, it might be more effective to simply lower or eliminate the tariffs on import duties.

(ii) *Costs of complying with numerous behind the border measures*

Insufficient trade barrier escalation – in the sense that non-tariff barriers on inputs are high relative to non-tariff barriers on finished goods – is often reinforced by the costs of complying with numerous behind the border measures. These include non-tariff regulatory measures, documentation requirements, and lengthy administrative procedures that impose delays at border crossings. The costs of compliance with these regulatory measures can be high for the exporter, increasing their fixed costs as they are usually independent of subsequent export flows. The lack of transparency and predictability about the behind the border measures can exacerbate these fixed costs if there is rent-seeking by officials who apply the regulations and can further undermine survival rates if firms may find that they have to pay higher fixed costs than they expected. In the case of Zambia, Arvis *et al.* (2013) find that the costs of exporting agricultural and manufacturing products from Zambia to key markets (China, Germany, Japan, and USA) are consistently higher than those for neighbors such as Malawi, Mozambique Tanzania, South Africa, Namibia, or Botswana in 2009 and 2010.

Take the example of agricultural commodities to illustrate some of the high regulatory costs faced by Zambian exporters. For all types of agricultural commodities and farm inputs, Zambia imposes a variety of requirements ranging from phytosanitary, non-GMO and fumigation certificates to quality analysis, product registration and testing, and trade permits.¹¹ In some cases the required certificates do not match buyers' requirements and traders are required to obtain certificates for the same products from different agencies. The cost of meeting regulatory requirements and procedures at the border can add up to as much as USD1136 for a 30-ton truck of formal maize exports to the DRC, representing about 15% of the farm gate price for maize in Zambia (World Bank, 2014 DTIS). Such high costs clearly call for regulatory simplification and streamlining.

¹¹ See Keyser (2012), Cadot and Gourdon (2012), and Cadot and Nsupila (2013).

Further, non-transparent rules and price controls intensify the challenges faced by producers and exporters of agricultural products. This is especially true for the maize sector where input prices, producer prices, and consumer prices have been the subject of various subsidy and price control interventions. These deter private investment and do little to address Zambia's underlying food security challenge or reduce dependence on rain fed maize production. Moreover, quantitative restrictions are being used to regulate exports. During the last two years the Government of Zambia has introduced and revoked several export bans/restrictions on private exports of maize, maize bran and mealie meal.¹² The political justification for the export restrictions is the avoidance of domestic food-price inflation or seasonal price spikes. However, simulation models suggest that freer trade in maize would if anything stabilize prices and consumption (Dorosh, Dradri and Haggblade, 2009). Finally, the allocation mechanisms of export licenses are not transparent. In Zambia, decisions to allow maize export permits are opaque and politically-charged. Such systems open the door for rent-seeking and cronyism (World Bank, 2014 DTIS).

Unpredictable trade policy restrictions are found in numerous other sectors. For example, Zambia has also used import bans to protect local wheat growers and has imposed trade restrictions on soybeans, poultry, pork, beef and other strategic commodities. These restrictions are typically placed on imports to ensure that domestic production is consumed first and on exports during bad harvest years to deal with food security. However, achieving domestic food security and export growth are not mutually exclusive or even opposing objectives and could actually be complementary in an improved policy environment (World Bank, 2014 ZEU).

Zambian exporters also complained about the rules regarding the monitoring of international financial transactions.¹³ Proceeds from international transactions of goods and services were expected to be deposited with local financial service providers, thus ensuring that as much of the

¹² See, for example, Statutory Instrument 85 of 2013 that bans maize exports and Statutory instrument (SI) No. 35 of 2014 that revokes the ban on maize exports, requiring exporters to specify the exact volume of maize, the source of the maize to be exported and the export destination of the maize, among other things.

¹³ Statutory Instrument 55 regarding Monitoring Balance of Payments.

revenue earned on the exporting of goods and services from Zambia stays in the country.¹⁴ An important implication of this measure was the requirement of pre-authorization of transactions above the thresholds. Additional documentation including audited accounts, credit scores, and proof of payment of taxes on certain items such as dividends had to be submitted. These pre-authorization procedures represented a huge cost to both exporters and the financial institutions. In fact, several of the interviewed exporters expressed concern that this measure is similar to the foreign exchange controls that existed before the liberalization of Zambia's financial sector. It should be noted, however, that the Statutory Instrument (SI55) that required all importers and exporters to report transactions above \$20k to BOZ was revoked in March 2014.

Zambian exporters face serious logistics concerns such as lengthy customs procedures and other procedural hurdles. The constraints facing Zambia's traders often come from inefficient interfaces with the systems of neighboring states; particularly with the Democratic Republic of Congo, Angola and Tanzania.

Zambian firms are penalized by an underdeveloped communication infrastructure and limited access to finance. Table 21 confirms that Zambia lags behind its neighbors in terms of domestic credit to the private sector. While Zambia performs slightly better than Malawi and Mozambique in terms of other financial development and telecom indicators, the country does not have a competitive industry for supplying basic linking services from which to draw high quality services inputs. Poor access to such critical services translates into competitive disadvantage in any sector, be it services, manufacturing or agriculture.

Undersupply of technical skills, in terms of level and quality, emerged as an important constraint to firms' expansion, especially for small-scale, skills-intensive businesses. The current shortage of skills puts a premium on production costs and undermines productivity. Anecdotal evidence

¹⁴ Transaction thresholds of US\$ 10,000 and above for mandatory account holders, and US\$ 5,000 and above for non-account holders; and US\$ 100,000 and above for large transactions have been set.

and interviews show that large infrastructure and construction works by foreign firms rely on imported labor, mainly from South Africa or China.

Finally, fluctuating foreign exchange rates make it difficult for local firms to plan expenditures and revenues. For example, some firms indicated that they quote and import in US dollars, and, in case of payment delays, exchange rate fluctuations can wipe out their profits.

5. Policy implications

Our research documents starkly the ongoing dependence of the Zambian economy on its mining sector, and the fragility of its non-traditional exports. While its natural riches are undoubtedly a blessing and a source of significant revenue to the economy at large, they by their nature will never employ a significant fraction of the population, nor are they sufficiently abundant for the country to turn into a “rentier nation” akin to some oil exporters. Moreover, its extreme reliance on copper exports puts Zambia at the mercy of price swings in global commodity markets. This has generally served Zambia well over the last decade, but the 2008 commodity price dip and the gradual fall in prices since 2011 show that high prices cannot be taken as a new given.

As we document, numerous well-intentioned attempts at favoring economic diversification have been undertaken in the past, but sustainable commercial export-oriented ventures have been few. Most exporting businesses benefit from some sort of targeted public-sector support, be it from foreign donors or from the Zambian government, or both. If and when such support is phased out, most businesses struggle. It would therefore seem more promising for government efforts to be targeted less at individual firms and even more at the general business environment.

Based on both the empirical analysis and the qualitative appraisal, two factors emerge as particular constraints on successful and sustainable exporting, namely high administrative and fiscal obstacles to importing equipment and inputs, and constraints on foreign-exchange

transactions. Action on these two fronts might be a more effective way of promoting non-traditional exports than any range of micro-level measures targeting individual exporters.

The high trade costs generated by taxes and tariffs on intermediate inputs are often amplified by costs of complying with numerous behind the border measures. Finally, the analysis reveals that many Zambian firms do not engage in systematic attempts to export their goods with most export transactions occurring on an ad-hoc basis. Information asymmetries seem to affect the export spells.

The Government of Zambia can, through its trade supporting institutions and in collaboration with the private sector, adopt policy measures to reduce the barriers that Zambian firms face in their export development efforts. While several Zambian exporters clamor for direct incentives to exports, such as tax exemptions for example, most interviewed firms consider that eliminating taxes on intermediate inputs, removing the burdensome, unpredictable non-tariff measures that affect exports, and facilitating access to foreign markets, are more important.

Address taxes on intermediate inputs

Private-sector exporters stress that high and complex taxes on intermediate inputs increases production costs and renders their products uncompetitive in the international markets, and that the duty drawback scheme does not work well for all. In general, businesses suggest changes/improvements to the input taxation and duty drawback schemes to enhance export diversification. In the long run, however, it might be more effective to further reduce tariffs and non-tariff barriers on imported inputs.

Address unexpected exchange-rate movements and constraints on foreign-exchange transactions

Zambia is attempting to contain excessive volatility through a managed floating exchange rate, with BOZ limiting its interventions to correcting transitory overshooting of the exchange rate and meeting its international reserve. Also, the Zambian Government has recently implemented an important reform measure that facilitates foreign-exchange transactions. The Statutory Instrument (SI55) that required all importers and exporters to report transactions above USD 20K has been revoked in March 2014. Additional reforms aimed at increasing the access of firms, especially SMEs to financial instruments to hedge foreign exchange risks like forwards, swaps, futures and options as well as enhancing payments systems – for example, as part of the Financial Sector Development Plan (FSDP) or regional negotiations (COMESA, APEI) – could further ease foreign-exchange volatility and transactions for Zambia’s exporters.

Address behind the border measures

One clear conclusion from the analysis is that Zambia needs to simplify export requirements especially for agricultural products. Numerous standards certifications can not only add up to trade costs but sometimes do not correspond to buyer requirements and overwhelm suppliers’ capabilities. Zambia needs to make sure that trade requirements match buyer requirements and supplier capacities.

Also, whenever possible, Zambia should use the regional integration process to address the various regulatory requirements for exports. The EAC harmonized standards for maize grains is a good example where minimum specifications for discolored and shriveled grains are a specific constraint to market participation by Zambian (and other southern African) smallholder farmers. Quality attributes that do not impact directly on human or animal and plant health (other than non-GMO status) are not regulated by law in Zambia as they are in the EAC. For example, there

are tight restrictions on the maximum share of discolored, immature, and shriveled grains in the EAC. However, sun bleached maize is perfectly safe to consume and merely yields flour that is less than snow white so is only important to appearance and a millers' financial returns. Similarly, immature and shriveled grains are common in smallholder maize when fertilizer is used late or in the wrong amounts, but are safe to consume. Increased awareness of the distinction between voluntary quality standards used to determine private value, and mandatory SPS requirements used to protect human, animal, and plant health will be therefore be critical for successful regional exports (see also World Bank, 2005).

Another conclusion emerging from the analysis is that Zambia needs a more predictable trade policy regime. The risk of trade restrictions/bans together with input and output price distortions are important deterrents to private investment and contribute to price volatility, uneven production and missed export opportunities. Zambia needs to simplify and make transparent marketing arrangements for export crops. As a first step, the government should improve communication regarding trade bans and other restrictions through official Government, APEI, COMESA and SADC websites. In addition to achieving greater policy predictability, it is recommended to review the export regime in maize and replace the opaque export-permit allocation system by a yearly auction in order to provide visibility to operators, avoid damaging contract breaches due to the unavailability or last-minute cancellation of permits, and eliminate favoritism in the distribution of licenses.

For a landlocked country such as Zambia, regional cooperation is imperative to improve the country's trade facilitation and logistics performance. Zambia should pursue regional approaches complemented by bilateral mechanisms to engage with its neighbors to resolve such constraints. For example, Zambia could address the delays at border crossings by complementing the establishment of One Stop Border Posts (OSBPs) with complementary measures (such as

pre-arrival clearance facilities).¹⁵ Procedural and process reforms should be implemented before the physical development of any new OSBPs. This will ensure that improved and streamlined procedures will inform the physical layout and flow of goods, instead of having outdated procedures locked into physical layouts that are more difficult to reconcile and correct later. Also, Zambia could enhance its collaboration with neighbors to improve cross-border access to transport infrastructure and markets. For instance, Tanzania requires trip by trip special permits for the most commonly used vehicle configuration in Southern Africa, limiting access of Zambian truckers to the Tanzanian market. Zambia should engage the authorities in those countries on the operating environment and adopt and implement the non-discriminatory policies stipulated in regional transport protocols. Similarly, Zambia should pursue bilateral and regional dialogues to address the country's access to more efficient services inputs such as transport and finance. While solutions can be regional, Zambia can take the lead to tackle operational constraints that impact disproportionately its service providers.

Finally, narrowing the education-skills mismatch would require reforming the technical and vocational curriculum, investing resources in research and development, and providing targeted incentives to firms that exhibit strong commitment to improving human capital development.¹⁶

¹⁵ See also Cadot and Gourdon (2012).

¹⁶ A useful step in this direction could be taken by further facilitating the cross-border mobility of qualified professionals (see Dihel, Fernandes and Mattoo, 2010).

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Figure 1: Share of Sub-Saharan African destination countries in total Zambian exports of non-traditional products

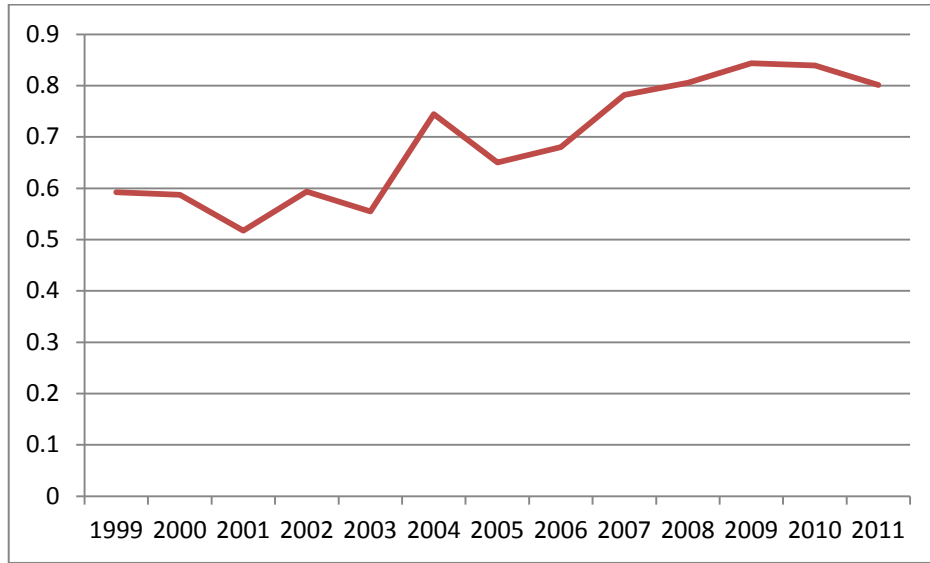


Figure 2: Herfindahl index of Zambian exports adjusted for zero trade flows

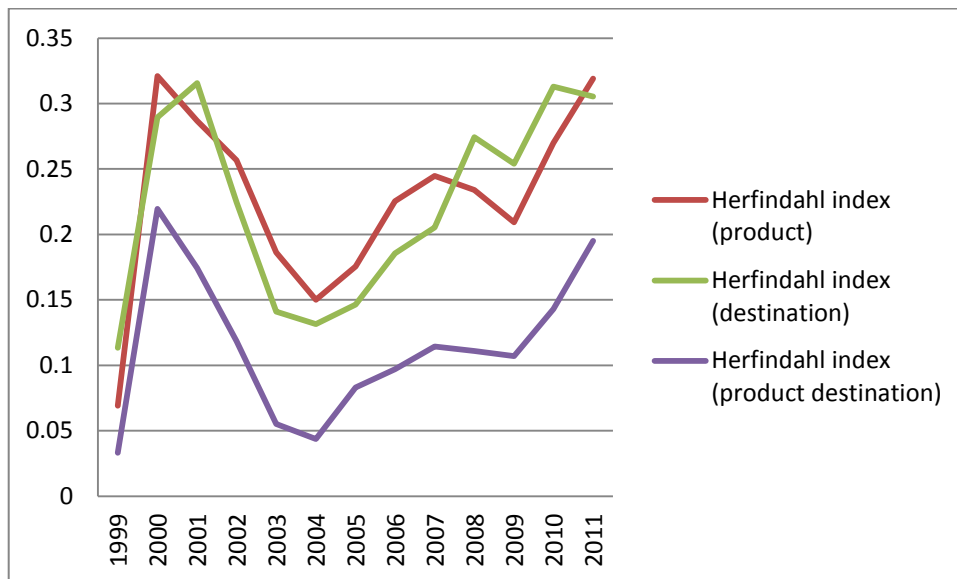


Figure 3: Zambian export concentration in international comparison

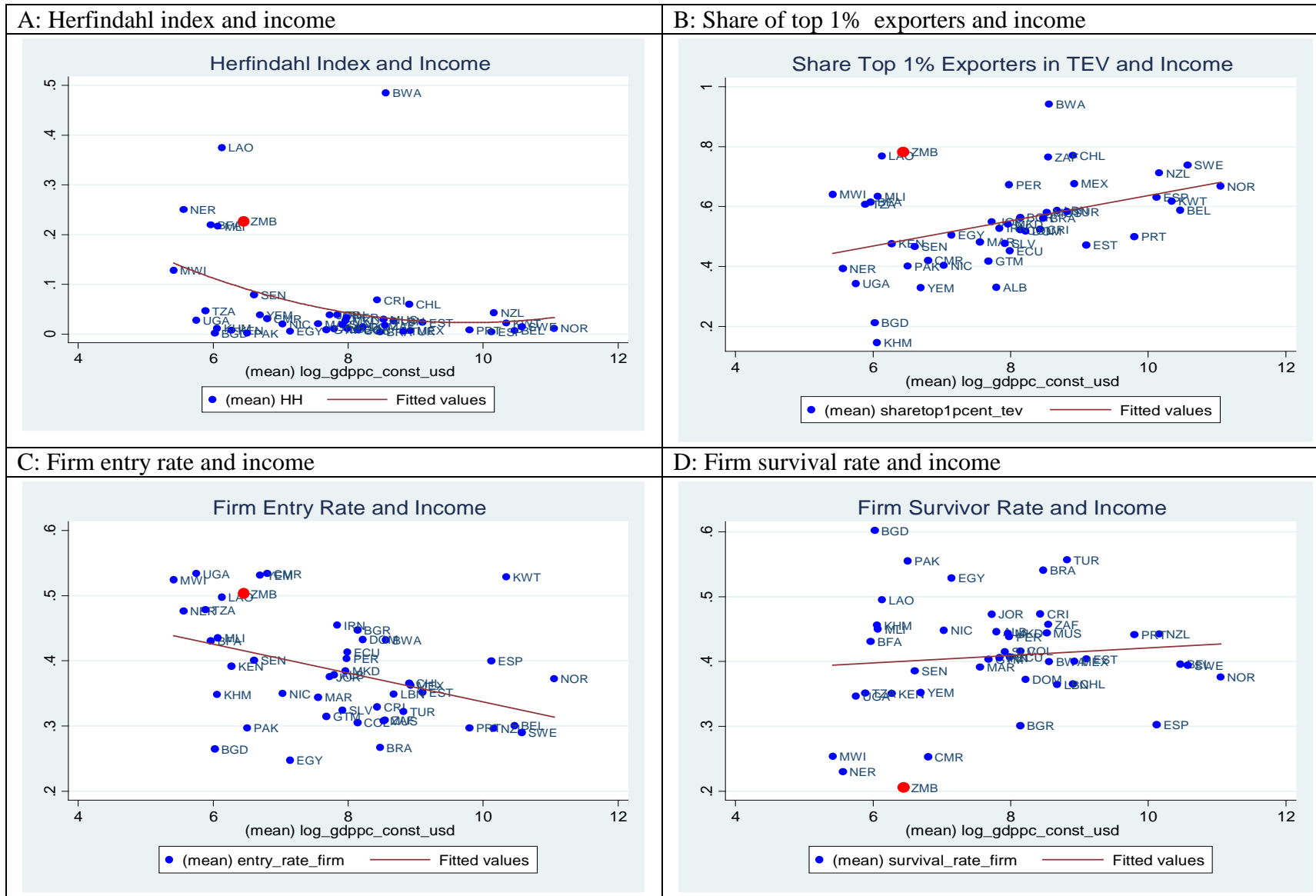


Figure 4: Kaplan-Meier survival functions for products

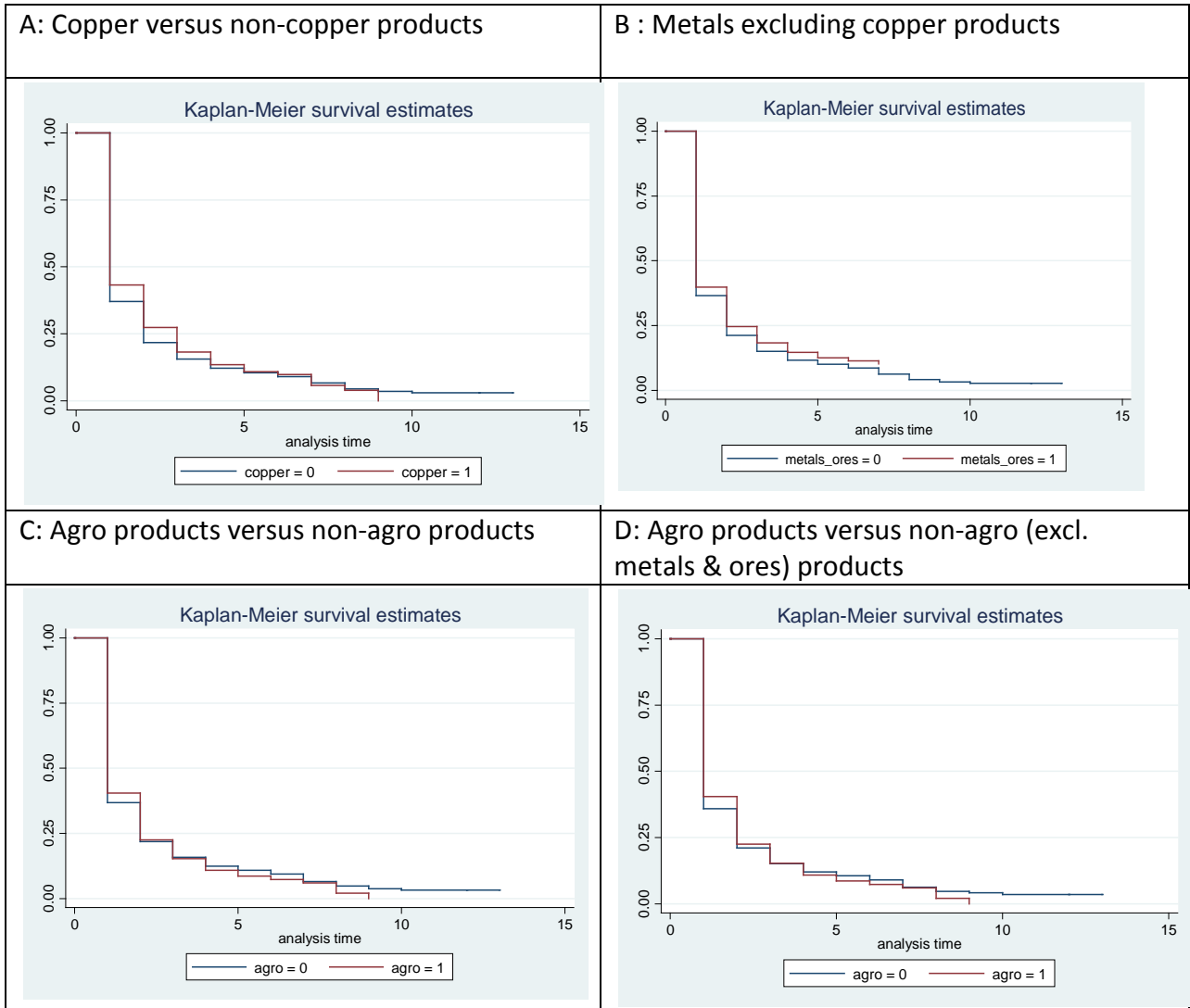


Figure 5: Kaplan-Meier survival functions, RTA versus non-RTA countries

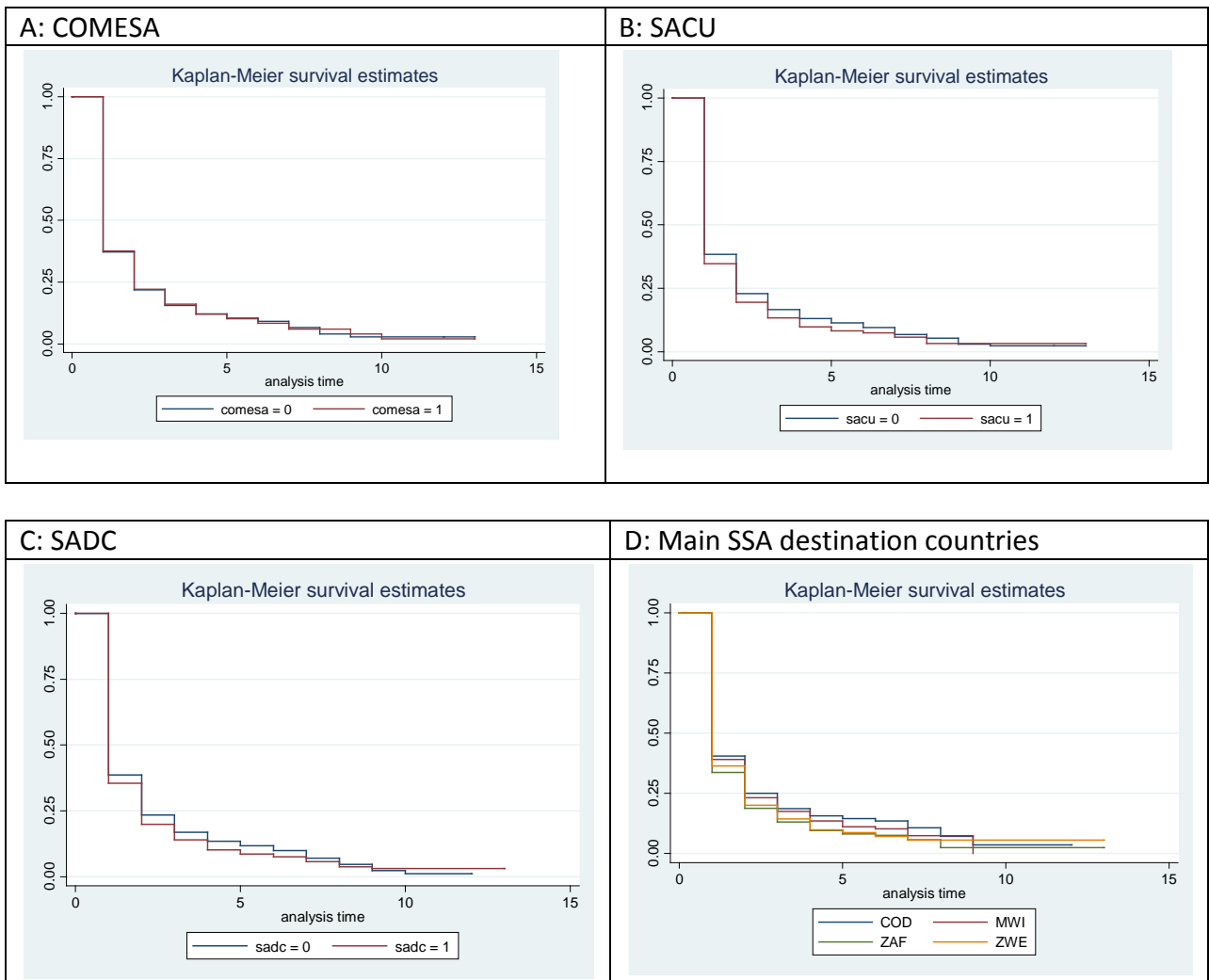


Table 1: Number of transactions in customs dataset

Year	Exports	Imports	Re-exports	Total transactions
1999	3,967	40,367	930	45,264
2000	3,144	65,516	1,483	70,143
2001	3,293	67,573	1,548	72,414
2002	3,993	73,196	2,152	79,341
2003	3,458	73,910	1,139	78,507
2004	3,965	83,281	1,074	88,320
2005	5,497	94,761	782	101,040
2006	7,161	104,394	0	111,555
2007	10,154	117,632	0	127,786
2008	11,798	121,913	0	133,711
2009	12,724	113,603	0	126,327
2010	12,209	139,883	0	152,092
2011	9,099	176,400	0	185,499
Total	90,462	1,272,429	9,108	1,371,999

Table 2: Export transactions and value by destination region, all observations

Region	Transactions	Percent	Value in bn USD	Percent
East Asia & Pacific	4,141	4.16	6.42	15.11
Europe & Central Asia	10,432	10.48	22.40	52.72
Latin America & Caribbean	366	0.37	0.03	0.07
Middle East & North Africa	1,459	1.47	2.32	5.46
North America	2,642	2.65	0.15	0.35
South Asia	1,362	1.37	0.67	1.58
Sub-Saharan Africa	79,154	79.51	10.50	24.71
Total	99,556	100.00	42.49	100.00

Table 3: Importance of destination regions over time

Region	Freq of trans. in 1999	Share of exports in 1999	Freq of trans. in 2005	Share of exports in 2005	Freq of trans. in 2011	Share of exports in 2011
East Asia & Pacific	3%	2%	5%	21%	5%	18%
Europe & Central Asia	23%	50%	13%	45%	6%	57%
Latin America & Caribbean	0%	0%	0%	0%	0%	0%
Middle East & North Africa	0%	2%	1%	7%	1%	1%
North America	1%	1%	3%	1%	2%	0%
South Asia	1%	0%	2%	3%	1%	0%
Sub-Saharan Africa	72%	45%	76%	23%	84%	23%
Total	100%	100%	100%	100%	100%	100%

Table 4: Top-10 destination countries for Zambian exports and their share over time

Top-10 destination country (1999-2003)	Average share (1999-2003)	Top-10 destination country (2004-2007)	Average share (2004-2007)	Top-10 destination country (2008-2011)	Average share (2008-2011)
United Kingdom	40%	Switzerland	37%	Switzerland	51%
South Africa	21%	South Africa	13%	China	15%
Switzerland	8%	China	6%	South Africa	10%
Tanzania	5%	Thailand	5%	DR Congo	5%
DR Congo	4%	DR Congo	5%	United Kingdom	3%
Belgium	3%	United Kingdom	4%	Egypt	2%
India	2%	Egypt	4%	Zimbabwe	2%
Zimbabwe	2%	Saudi Arabia	3%	United Arab Emirates	2%
Netherlands	2%	Zimbabwe	2%	Malawi	1%
Malawi	2%	India	2%	Belgium	1%

Table 5: Export transactions and value by broad product category, all observations

Product category*	Transactions	Percent	Value in bn USD	Percent
Animal & Animal Products	3,298	3.31	0.12	0.29
Chemicals & Allied Industries	6,460	6.49	0.69	1.63
Foodstuffs	5,971	6.00	1.89	4.45
Footwear / Headgear	1,237	1.24	0.03	0.07
Machinery / Electrical	20,744	20.83	0.79	1.85
Metals	14,788	14.85	31.2	73.38
Mineral Products	5,733	5.76	3.88	9.13
Miscellaneous manufactures	5,892	5.92	0.06	0.15
Plastics / Rubber	5,996	6.02	0.12	0.28
Raw Hides, Skins, Leather & Furs	1,065	1.07	0.10	0.22
Works of art, collectors' pieces and antiques	1,440	1.45	0.12	0.28
Stone / Glass	4,734	4.75	0.69	1.62
Textiles	5,769	5.79	0.97	2.29
Transportation	4,695	4.72	0.20	0.47
Vegetable Products	6,041	6.07	1.41	3.32
Wood & Wood Products	5,707	5.73	0.25	0.58
Total	99,570	100.00	42.49	100.00

* Animal & Animal Products: HS2<="05", Vegetable Products: HS2<="15" & HS2>="06", Foodstuffs: HS2<="24" & HS2>="16", Mineral Products: HS2>="25" & HS2<="27", Chemicals & Allied Industries: HS2>="28" & HS2<="38", Plastics / Rubber: HS2>="39" & HS2<="40", Raw Hides, Skins, Leather & Furs: HS2>="41" & HS2<="43", Wood & Wood Products: HS2>="44" & HS2<="49", Textiles: HS2>="50" & HS2<="63", Footwear / Headgear: HS2>="64" & HS2<="67", Stone / Glass: HS2>="68" & HS2<="71", Metals: HS2>="72" & HS2<="83", Machinery /Electrical: HS2>="84" & HS2<="85", Transportation: HS2>="86" & HS2<="89", Miscellaneous: HS2>="90" & HS2<="97", Services: HS2>="98"

Table 6: Export and re-export transactions by broad product category, before/after 2006

Product Category	1999-2005			2006-2011
	Exports	Re-exports	Re-exports / (Exports + Re-exports)	Exports + Re-exports
Animal & Animal Products	1,600	64	0.04	1,634
Chemicals & Allied Industries	2,101	573	0.21	3,786
Foodstuffs	2,171	513	0.19	3,287
Footwear / Headgear	544	93	0.15	600
Machinery / Electrical	1,408	2,850	0.67	16,486
Metals	4,082	787	0.16	9,919
Mineral Products	1,769	419	0.19	3,545
Miscellaneous manufactures	1,268	521	0.29	4,103
Plastics / Rubbers	1,366	697	0.34	3,933
Raw Hides, Skins, Leather & Furs	423	45	0.10	597
Works of art, collectors' pieces and antiques	61	174	0.74	1,205
Stone / Glass	2,144	132	0.06	2,458
Textiles	2,987	521	0.15	2,261
Transportation	146	1,034	0.88	3,515
Vegetable Products	2,789	250	0.08	3,002
Wood & Wood Products	2,458	435	0.15	2,814
Total	27,317	9,108	0.25	63,145

Table 7: Top-10 Zambian export products and their share

1999-2003			2004-2007			2008-2011		
HS code	Average share	Product description	HS code	Average share	Product description	HS code	Average share	Product description
740311	48%	Refined copper and copper alloys, unwrought.-- Cathodes and sections of cathodes	740311	40%	Refined copper and copper alloys, unwrought.-- Cathodes and sections of cathodes	740311	48%	Refined copper and copper alloys, unwrought.-- Cathodes and sections of cathodes
810510	9%	Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap.	740919	15%	Copper plates, sheets and strip, of a thickness exceeding 0.15 mm.-- Other	740319	11%	Refined copper and copper alloys, unwrought.-- Other
810590	6%	Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap.- Other	260300	7%	Copper ores and concentrates. Copper ores and concentrates.	740919	10%	Copper plates, sheets and strip, of a thickness exceeding 0.15 mm.-- Other
170111	4%	Cane or beet sugar and chemically pure sucrose, in solid form.-- Cane sugar	810590	7%	Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap.- Other	260300	5%	Copper ores and concentrates. Copper ores and concentrates.
710310	2%	Precious stones (other than diamonds) and semi-precious stones, unworked or ungraded	740911	4%	Copper plates, sheets and strip, of a thickness exceeding 0.15 mm.-- In coils	810590	3%	Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap.- Other
740911	2%	Copper plates, sheets and strip, of a thickness exceeding 0.15 mm.-- In coils	740811	3%	Copper wire.-- Of which the maximum cross-sectional dimension exceeds 6 mm	740811	2%	Copper wire.-- Of which the maximum cross-sectional dimension exceeds 6 mm
740811	2%	Copper wire.-- Of which the maximum cross-sectional dimension exceeds 6 mm	520100	2%	Cotton, not carded or combed. Cotton, not carded or combed.	170111	2%	Cane or beet sugar and chemically pure sucrose, in solid form.-- Cane sugar
710399	2%	Precious stones (other than diamonds) and semi-precious stones, whether or not worked or graded but not strung, mounted or set; ungraded precious stones (other than diamonds) and semi-precious stones, temporarily strung for convenience of trans-- Other	170111	2%	Cane or beet sugar and chemically pure sucrose, in solid form.-- Cane sugar	740323	1%	Refined copper and copper alloys, unwrought.-- Copper-nickel base alloys (cupro-nickel) or copper-nickel-zinc base alloys (nickel silver)
520100	1%	Cotton, not carded or combed. Cotton, not carded or combed.	740200	2%	Unrefined copper; copper anodes for electrolytic refining. Unrefined copper; copper anodes for electrolytic refining.	240110	1%	stripped- Tobacco, not stemmed
60240	1%	Other live plants (including their roots), cuttings and slips; mushroom spawn.- Roses, grafted or not	240110	1%	stripped- Tobacco, not stemmed	260500	1%	Cobalt ores and concentrates

Table 8: Exports within and beyond Sub-Saharan Africa

Exporter type	Period	Mean number of destinations per exporter	Mean number of products per exporter	Mean annual exports per exporter*
to SSA only	1999-2004	1.3	2.5	90
to SSA and other destinations		2.7	4.9	2,833
to other destinations only		1.3	1.4	183
to SSA only	2005-2011	1.2	4.2	142
to SSA and other destinations		2.8	7.3	8,991
to other destinations only		1.2	1.3	68

* in 1,000 USD

Table 9: Number of products, destinations and exporters per year

Year	N firms	N destinations	N products	Mean N destinations per firm	Median N destinations per firm	Max number of destinations per firm
1999	232	53	424	2	1	14
2000	516	73	813	2	1	16
2001	607	76	950	2	1	21
2002	677	80	1,259	2	1	34
2003	681	80	1,143	2	1	25
2004	826	82	1,245	2	1	20
2005	993	92	1,362	2	1	20
2006	1,087	92	1,589	2	1	20
2007	1,516	104	1,893	2	1	25
2008	1,570	108	2,027	2	1	22
2009	1,651	109	2,029	2	1	27
2010	1,775	116	1,876	2	1	28
2011	1,754	109	1,764	2	1	25
Average	1,068	90	1,413	2	1	23

Table 10: Number of products per firm, average/median transaction size

Year	Average N of products per firm	Median N of products per firm	Max N of products per firm	Average annual exports per firm*	Median annual exports per firm*	Average transaction size*	Median transaction size*
1999	3	1	35	579,487	24,696	46,168	7,445
2000	3	1	73	1,282,819	21,920	105,182	7,318
2001	3	1	168	1,544,012	18,594	113,018	6,006
2002	4	2	300	1,270,172	19,574	82,624	4,596
2003	4	2	179	1,419,805	23,706	121,753	6,221
2004	4	2	123	1,871,673	14,674	137,863	4,556
2005	4	1	141	2,150,629	9,940	137,309	3,031
2006	5	2	212	3,453,311	9,753	146,763	2,599
2007	5	2	430	3,068,929	10,145	114,363	2,698
2008	6	2	281	3,211,401	10,628	152,725	2,691
2009	6	2	247	2,571,101	10,239	122,575	2,394
2010	5	1	254	4,032,288	9,525	228,222	2,752
2011	4	1	214	4,902,316	9,943	242,723	3,983
Average	4	2	204	2,412,149	14,872	134,714	4,330

* in USD

Table 11: Average transaction size by geographic region

Region	Average size of export transaction per firm*	Median size of export transaction per firm*	Average number of exporters	Average number of products
East Asia & Pacific	2,107,589	8,664	119	86
Europe & Central Asia	2,837,575	7,186	184	235
Latin America & Caribbean	102,486	7,890	13	13
Middle East & North Africa	2,570,271	2,115	32	48
North America	66,954	1,530	84	80
South Asia	608,056	16,773	49	40
Sub-Saharan Africa	151,123	1,632	893	1,326

* in USD

Table 12: Average transaction size by product category

Product Category	Average size of export transaction per firm*	Median size of export transaction per firm*	Average number of products	Average number of exporters
Animal & Animal Products	46,156	2,922	43	56
Chemicals & Allied Industries	130,426	1,940	125	140
Foodstuffs	381,908	7,326	75	119
Footwear / Headgear	27,172	1,493	23	33
Machinery / Electrical	39,269	1,009	295	324
Metals	2,347,626	1,740	223	218
Mineral Products	795,019	7,027	53	155
Miscellaneous	11,359	530	102	142
Plastics / Rubbers	21,692	1,114	81	132
Raw Hides, Skins, Leather, & Furs	70,421	9,015	14	28
Stone / Glass	160,699	2,339	57	127
Textiles	201,594	3,374	122	98
Transportation	45,049	4,068	50	139
Vegetable Products	277,683	14,488	82	119
Wood & Wood Products	47,601	2,380	68	136

* in USD

Table 13: Entry and exit dynamics of firms

Year	N of firms	Incumbents	Exit	Entry	Re-entry	Failure	New entry	Temporary exit
1999	232	-	72		-	37		35
2000	516	160	226	356	-	108	356	101
2001	607	290	261	317	14	108	303	106
2002	677	346	295	331	51	101	280	147
2003	681	382	272	299	45	83	254	129
2004	826	409	327	417	99	121	318	145
2005	993	499	387	494	134	138	360	176
2006	1,087	606	386	481	125	150	356	136
2007	1,516	701	644	815	188	286	627	183
2008	1,570	872	703	698	158	311	540	182
2009	1,651	867	739	784	193	350	591	109
2010	1,775	912	895	863	196	473	667	-
2011	1,754	880		874	246		628	-
Average	1,068	577	434	561	132	189	440	132
Average % of total N of firms		50%	41%	50%	10%	18%	41%	16%

Table 14: Duration of firm-level export spells

Duration of spells	Freq.	Percent
1	4,508	65
2	1,120	16
3	458	7
4	253	4
5	164	2
6	127	2
7	81	1
8	61	1
9	39	1
10	35	1
11	22	0
12	38	1
13	55	1
Total	6,961	100
1-year failure rate	65%	
Average duration	1.9	

Table 15: Entry and exit dynamics of products

Year	N of products	Incumbents	Exit	Entry	Re-entry	Failure	New entry	Temporary exit
1999	424	-	150		-	14		136
2000	813	274	350	539	-	54	539	289
2001	950	463	318	487	62	31	425	276
2002	1,259	632	509	627	160	45	467	451
2003	1,143	750	385	393	151	37	242	334
2004	1,245	758	435	487	271	42	216	363
2005	1,362	810	380	552	321	34	231	308
2006	1,589	982	379	607	367	49	240	277
2007	1,893	1,210	420	683	425	72	258	262
2008	2,027	1,473	467	554	360	82	194	220
2009	2,029	1,560	511	469	351	71	118	182
2010	1,876	1,518	505	358	296	48	62	-
2011	1,764	1,371		393	334		59	-
Average	1,413	983	401	512	282	48	254	282
Average share		63%	31%	37%	18%	4%	21%	24%

Table 16: Duration of product-level export spells

Duration of spells	Freq.	Percent
1	3,493	53
2	1,039	16
3	476	7
4	302	5
5	294	4
6	216	3
7	173	3
8	114	2
9	57	1
10	96	1
11	79	1
12	106	2
13	128	2
Total	6,573	100
1-year failure rate	53%	
Average duration	2.8	

Table 17: Product-level spell duration by product category

Category	Total	1-year failure rate	Average duration
Animal & Animal Products	216	56%	2.6
Chemicals & Allied Industries	696	63%	2.3
Foodstuffs	316	46%	3.1
Footwear / Headgear	91	47%	3.2
Machinery / Electrical	1213	48%	3.2
Metals	942	49%	3.1
Mineral Products	208	50%	3.3
Miscellaneous	533	54%	2.5
Plastics / Rubbers	335	53%	3.2
Raw Hides, Skins, Leather, & Furs	67	49%	2.7
Stone / Glass	322	55%	2.3
Textiles	780	64%	2.0
Transportation	202	42%	3.2
Vegetable Products	394	56%	2.7
Wood & Wood Products	258	50%	3.4

Table 18: Export flow survival and RTAs

	(1)	(2)	(3)
Log of export value at the start of the spell	-0.0254** (0.011)	-0.0257** (0.011)	-0.0266** (0.011)
No. of suppliers serving the same product to a destination market	-0.0171*** (0.003)	-0.0172*** (0.003)	-0.0169*** (0.003)
No. of destinations served by a firm at the start of the spell	0.0068*** (0.002)	0.0070*** (0.002)	0.0061*** (0.002)
No. of products served by a firm to the same destination market	-0.0009*** (0.000)	-0.0010*** (0.000)	-0.0009*** (0.000)
Multiple spell dummy	-0.0273 (0.020)	-0.0276 (0.020)	-0.0279 (0.019)
Log of destination market population	0.0295 (0.043)	0.0288 (0.042)	0.1325 (0.081)
Log of destination market GDP	-0.0795 (0.064)	-0.0785 (0.063)	-0.2148* (0.114)
Dummy for contiguity	-0.0036 (0.150)	-0.0064 (0.149)	-0.2547 (0.235)
Dummy for common official of primary language	0.0896 (0.075)	0.0907 (0.075)	0.1790** (0.087)
Dummy for common colonizer post 1945	-0.0864 (0.077)	-0.0858 (0.077)	-0.1076 (0.067)
Log distance between Zambia and destination country	0.1975 (0.160)	0.1951 (0.159)	-0.1325 (0.190)
Global economic crisis dummy (GEC)	0.4544*** (0.049)	0.5246*** (0.031)	0.5235*** (0.033)
COMESA bloc dummy	0.0248 (0.129)	0.0312 (0.133)	-0.2354 (0.203)
SADC bloc dummy	0.1371 (0.093)	0.1487 (0.098)	0.1819* (0.108)
European Union dummy (EU)	0.1342 (0.104)	0.1692 (0.106)	0.1391 (0.103)
SACU bloc dummy	0.1180 (0.177)	0.1240 (0.178)	0.3036 (0.222)
GEC x COMESA		-0.0607 (0.060)	-0.0819 (0.073)
GEC x SADC		-0.0742 (0.067)	-0.0740 (0.076)
GEC x SACU		-0.0579 (0.061)	-0.0465 (0.069)
GEC x EU		-0.2951*** (0.044)	-0.2874*** (0.044)
<i>Fixed effects</i>			<i>region</i>
<i>Observations</i>	<i>61,710</i>	<i>61,710</i>	<i>61,710</i>

Cox proportional hazard regressions; clustered standard errors by destination country in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 19: Export spells and exchange-rate volatility

	(1)	(2)
	All products	Non-traditional products
Log of export value at the start of the spell	-0.0303*** (0.007)	-0.0278*** (0.007)
No. of suppliers serving the same product to a destination market	-0.0127*** (0.002)	-0.0125*** (0.002)
No. of destinations served by a firm at the start of the spell	0.0044 (0.004)	0.0054 (0.005)
No. of products served by a firm to the same destination market	-0.0006*** (0.000)	-0.0006*** (0.000)
Multiple spell dummy	-0.0337*** (0.011)	-0.0376*** (0.012)
Log of destination market population	-0.0126 (0.026)	-0.0150 (0.027)
Log of destination market GDP	-0.0977 (0.062)	-0.0982 (0.064)
Dummy for common official of primary language	0.3481* (0.203)	0.3506* (0.211)
Dummy for common colonizer post 1945	-0.2864* (0.158)	-0.2929* (0.165)
Log distance between Zambia and destination country	0.5224*** (0.168)	0.5299*** (0.173)
normalized annual exchange rate volatility (std/mean, cross rate)	0.4626*** (0.072)	0.4681*** (0.073)
<i>Observations</i>	43,598	42,860

Cox proportional hazard regressions; clustered standard errors by product category in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Regressions include regional and broad product category dummies.

Table 20: Export spells and dependency on intermediate-imports

	(1)	(2)	(3)	(4)	(5)	(6)
	All products	Non-traditional products	All products	Non-traditional products	All products	Non-traditional products
normalized annual exchange rate volatility (std/mean, cross rate)	0.3237*** (0.057)	0.3279*** (0.059)	0.2635*** (0.045)	0.2637*** (0.045)	0.3120*** (0.061)	0.3170*** (0.063)
Import exposure	-0.1136*** (0.023)	-0.1176*** (0.024)				
Intermediate imports (1)			0.0342** (0.016)	0.0343** (0.016)		
Intermediate imports (2)					0.0381** (0.016)	0.0403** (0.018)
<i>Observations</i>	38,096	37,445	14,935	14,865	29,646	29,116

Cox proportional hazard regressions; clustered standard errors by product category in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Regressions include regional and broad product category dummies, as well as the controls listed in Table 19.

Table 21: Performance indicators for selected services sectors

<i>Indicator</i>	Malawi	Mauritius	Mozambique	Seychelles	Zambia
<i>Financial services</i>					
Financial market development index (1-7: lowest - highest) ¹	3.38	4.35	3.17	4.10	3.80
Domestic credit to private sector (% GDP) ²	38.00	110.04	24.96	45.77	18.05
Account at a formal financial institution (% age 15+) ³	16.54	80.12	39.90	n/a	21.36
Accounts per 1,000 adults at ⁴ :					
- commercial banks	163.44	2,109.04	140.50	n/a	27.59
- cooperatives and credit unions	12.13				n/a
- microfinance institutions	n/a				0.17
Branches per 100,000 adults of ⁴ :	2.16	20.11	2.89	n/a	3.64
- commercial bank	n/a	n/a	0.10	n/a	n/a
- cooperatives and credit unions	n/a	n/a	0.30	n/a	1.56
Loan from a financial institution in the past year (% age 15+) ³	9.19	14.27	5.87	n/a	6.13
Saved at a financial institution in the past year (% age 15+) ³	8.24	30.83	17.46	n/a	11.77
Debit card (% age 15+) ³	9.36	50.94	37.35	n/a	15.69
ATMs per 100,000 adults / per 1,000 sq.km. ⁴	1.23	0.21	6.45	n/a	10.96
<i>Telecommunication services</i>					
Fixed and mobile cellular subscriptions (per 100 people) ²	27	128	33	178	61
Internet users (per 100 people) ²	3.33	34.95	4.3	43.16	11.5
Source: ¹ WEF Global Competitiveness Index 2013; ² World Bank WDI (2011 data); ³ World Bank Global Findex (2011 data) ; ⁴ CGAP Branchless Banking Database (2011 data)					

Appendix Table 1: Broad product categories

Broad product category	HS 2 levels
Animal & Animal Products	hs2<="05"
Vegetable Products	"06" <=hs2<="15"
Foodstuffs	"16" <=hs2<="24"
Mineral Products	"25" <=hs2<="27"
Chemicals & Allied Industries	"28" <= hs2<="38"
Plastics / Rubbers	"39" <= hs2<="40"
Raw Hides, Skins, Leather, & Furs	"41" <= hs2<="43"
Wood & Wood Products	"44" <= hs2<="49"
Textiles	"50" <=s2<="63"
Footwear / Headgear	"64" <= hs2<="67"
Stone / Glass	"68" <=hs2<="71"
Metals	"72" <=hs2<="83"
Machinery / Electrical	"84" <= hs2<="85"
Transportation	"86" <= hs2<="89"
Miscellaneous	"90" <=hs2<="97"
Works of art, collectors' pieces and antiques	hs2>="98"