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Financial Inclusion, ICBT And The Role Of ICT In COMESA

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Financial Inclusion, ICT and Intra Regional Trade in COMESA

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Abstract

Financial inclusion has quickly become a policy priority in the global economy and developments in Information Communication Technology (ICT) such as mobile phone penetration have become catalysts in achieving the policy objective. At the same time, despite the existence of regional economic communities such as the Common Market for Eastern and Southern Africa (COMESA), intra regional trade is still at unsatisfactory levels with informal cross border trade still prevalent in Africa. The study suggests that financial inclusion can lead to formalization of these firms and also increased reach of initiatives such as REPSS. We use dynamic panel data models to assess the impact of financial access and usage indicators, and include the channels of ICT development, on intra-regional trade in COMESA. The study finds that intra-regional trade can improve with increased usage of formal financial services and that mobile phone subscription has significant positive impact on trade through financial inclusion.

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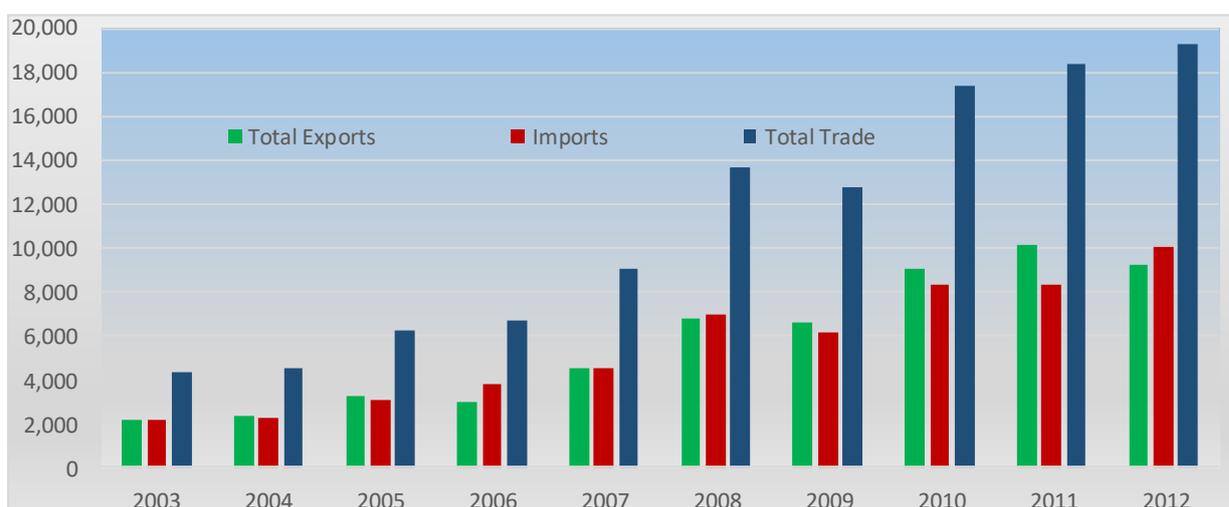
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Chapter 1: Introduction

Expanding intra-African trade has generally been esteemed as key to fast-tracking economic growth on the continent. This may be the main reason for the existence of Regional Economic Communities (REC) such as the Common Market for Eastern and Southern Africa (COMESA). Many African countries are actually members of more than one REC. Intra trade is especially important for Africa's many small, landlocked countries that face challenges trading internationally (Brookings Africa Growth Initiative, 2012). Africa's internal trade however, is low—making up only about 10 percent of its total trade (Brookings Africa Growth Initiative, 2012). In the COMESA region, the percentage of intra-COMESA trade to total COMESA trade in 2012 was at 7%, a slight decline from the 8% recorded in 2011 (COMESA, 2013). Although the trend is an increasing one (Chart 1), significant improvements need to be made. Some indications suggest that informal trade, which is not captured by official statistics, is widespread on the continent and may be the cause. The existence of an informal sector implies the existence of incomplete information but most policies are made with the assumption of a representative household. Financial inclusion has implications for This paper will explore how financial inclusion and developments in ICT can increase trade within COMESA.

Chart 1: Intra-COMESA Trade, 2003-2012 (Value in US \$ million)¹



One of the objectives of COMESA is creation of an enabling environment for foreign, cross-border and domestic investment. Absence of a secure and reliable payment infrastructure within the COMESA region can hinder development of the market. This is the reason the Regional Payment and Settlement System (REPSS) was introduced and recent TFA . REPSS allows member countries to transfer funds more easily within COMESA and from member states to other countries outside through respective central banks with the main aim of stimulating economic growth through an increase in intra-regional trade (Thakoor, 2012). The system operates through member countries' central banks and their corresponding banking systems. With an increase in intra-COMESA imports from US \$8.3 billion in 2011 to a projected amount of US \$13 billion in 2019, the region would make an estimated savings of US \$454 million in 2019 if the totality of the payment for that trade is channelled through REPSS. The system however, requires the importer/exporter to use their respective commercial banks. If member countries' adult population are still functioning outside the regulated financial system, then efforts of a system as beneficial as REPSS may prove futile as its reach will be limited. Such traders will be unable to reap the fruits of integration in the region and globalization, due to the lack of access to, and usage of the formal financial institutions.

¹Source: COMESA 2013

Besides enabling access to such a payment system, financial inclusion has risen on the global agenda in recent years also because studies show that when people participate in the financial system, they are better able to start and expand businesses, invest in education, manage risk, and absorb financial shocks (Demirguc-Kunt et al 2015). A greater access to financial services can contribute to an increase in the productivity of Micro, Small and Medium Enterprises (MSMEs), and greater formalization of firms. Ironically, one common characteristic of those who are financially excluded is low incomes yet financial inclusion has the capacity to increase incomes. At the macro level, there is also evidence that an increase in access to financial services has positive effects on stability of the financial system, effectiveness of monetary policy, growth and inequality reduction. Besides the broader impact on growth and redistribution for poor people, access to credit, savings and payment services provides opportunities to increase incomes through exchange of goods and services, remit money, trade in goods and services and reduce their transaction costs.

On the one hand, financial services may contribute to facilitate trade flows by reducing their cost and maximizing their developmental impact. Increased financial inclusion also means increased access to credit, a process that will attract more entrepreneurs to take up business opportunities and increase trade. This includes access to an affordable system such as REPSS. The REPSS system is affordable with fewer expenses including the elimination of the need for confirmed Letters of Credit and associated costs. Thus, the initiative makes the process faster and cheaper for both the commercial bank and the importer/exporter. On the other hand, increased trade expands the demand for financial services and policy makers have to have infrastructures in place to accommodate that demand. For instance, a system such as REPSS can increase the demand for regulated financial products. As more and more traders benefit from its many advantages, others would opt to join, as most quote high costs as one of the reasons they rather use payment systems outside the regulated institutions. In addition, the availability of credit can also enable microenterprises to improve their production capacities as well as production efficiency. The microenterprises can thus utilize the loans to increase their productive assets and to meet their working capital requirements as well as hire workers that are more skilled and generate higher revenues and profits.

Financial inclusion is one of the channels through which ICT (Information Communication Technology) can affect both intraregional trade and economic growth. ICT developments such as mobile telephone subscriptions allow expansion and access to financial services to previously underserved groups in remote areas of developing countries. A recent initiative in this regard of mobile money is the cross-border money transfer service for that Airtel Money launched in March 2015 between customers of The Democratic Republic of Congo (DRC), Zambia and Rwanda, all of which are members of COMESA. The aim is to facilitate increased remittances and regional trades at very low cost with permeating distribution network. Such initiatives will deepen financial inclusion, reduce transaction costs across Africa, and thus increase intra-regional trade between the three countries. Similarly, an example cited by Scharwatt and Williamson (2015) is in the West African Economic Monetary Union (WAEMU) where a significant share of remittances is being moved. A range of uses such as regular and seasonal remittances from diaspora populations, as well as cross-border trade, would see underserved consumers (the financially excluded) stand to benefit from much more affordable, convenient, and secure money transfer services.

The relationship that the paper intends to study for COMESA is that increased mobile phone subscriptions will increase intra-regional trade in COMESA through financial inclusion, as it is likely to lead to formalisation of informal firms. The empirical relationship measured is the impact of financial inclusion and ICT on intraregional trade in COMESA. However, the existence of the informal sector because of the existence of high levels of financial exclusion is argued.

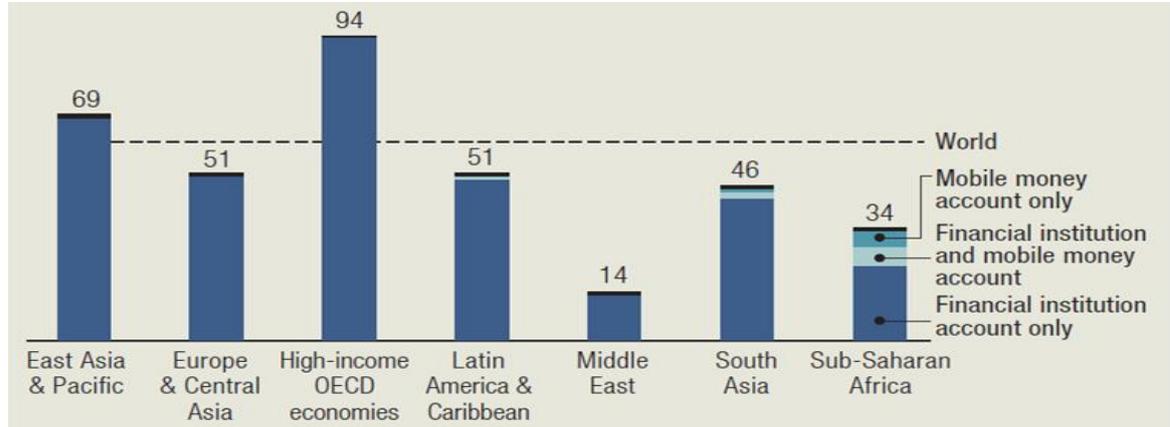
Chapter 2: Financial Inclusion, Developments in ICT and Informal Trade

2.1 Financial Inclusion: Definitions and Current Status

Financial inclusion is usually defined as the proportion of individuals and firms that have access to or use financial services (World Bank, 2014). Burkett and Sheehan (2009, Page v) define financial exclusion as “A process whereby a person, group or organisation lacks or is denied access to affordable, appropriate and fair financial products...” According to Subbarao (2009), financial inclusion is a necessary condition for sustainable and equitable growth and is important for development and spurring economic activity. The World Bank Global Findex Database of 2014 states that globally, 62 percent of adults are reported to own an account at a formal institution (Demirguc-Kunt et al, 2015). This indicates efforts in governments globally to increase financial inclusion as the same database reported 50 percent of the adult population to have been unbanked as of 2011 (Demirguc-Kunt and Klapper 2012).

In Sub-Saharan Africa, 34 percent of the adult population are reported to have a formal account in the region as of 2014. Chart 1 below shows latest update on financial inclusion globally. Financial systems in Africa generally lag behind those in other developing economies. The low level of financial inclusion in Africa is reflected in constraints on both the demand and the supply side of the economy. Existing financial systems are underdeveloped, credit reporting from financial institutions is lacking and the level of financial literacy is often poor. Financial inclusion is further limited by low-quality financial infrastructure and the small size of many African economies. An underdeveloped infrastructure makes it more expensive for financial institutions to provide their services. This may have a negative impact on business activities since customers are more likely to face higher transaction costs, thus reducing the overall demand for financial services.

Chart 2: Account Penetration- Percentage of Adults with an account (2014)²

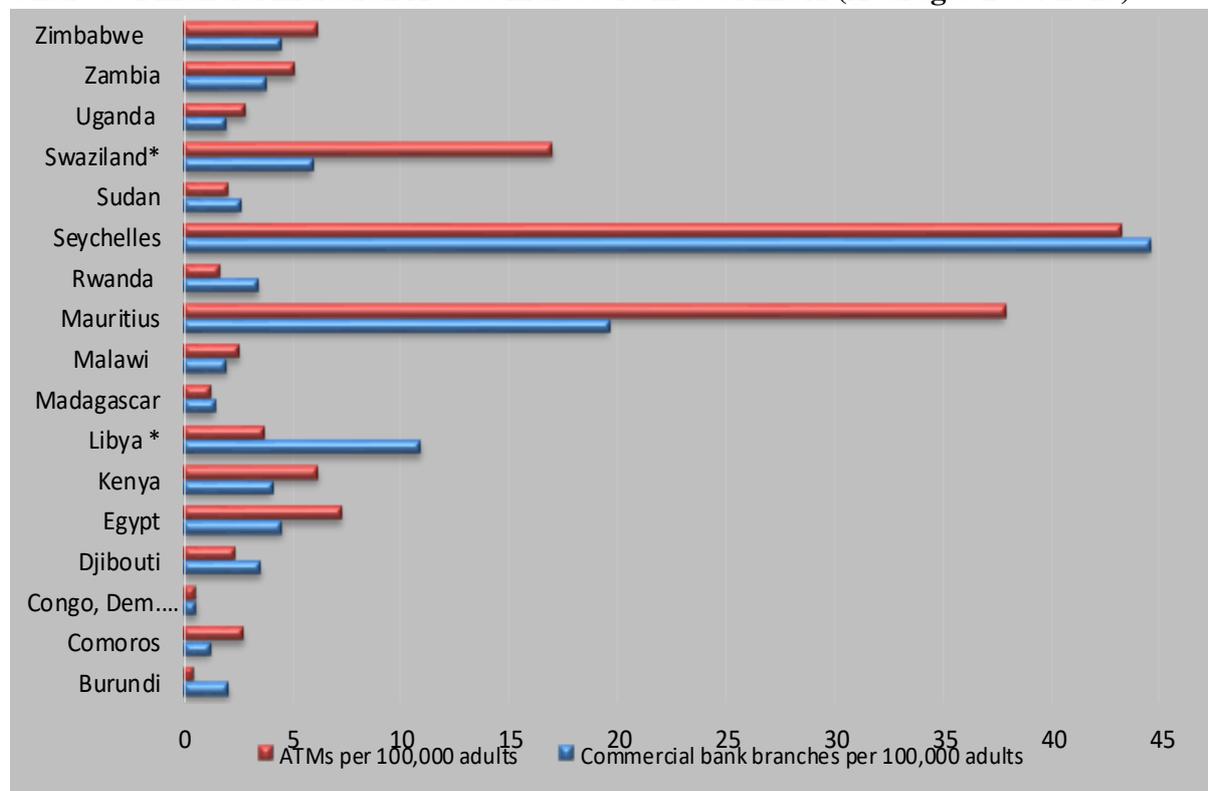


The Common Market for Eastern & Southern Africa (COMESA) was reported as Africa's largest economic community in early 2014 (Niway, 2014). COMESA is a huge regional market in Africa, accounting for 19 of the 54 countries on the African continent, representing 35 percent. COMESA's total geographic area of 11.6 million square km covers 38 percent of the African continent; and its population of 444 million inhabitants (in 2011) accounts for 43 percent of Africa's total population. GDP growth in the region has been on the decline in recent years (COMESA 2013) but higher than world averages. Formal financial services are dominated by banks. Formal bank service is the most-used system in most developing countries with deposits being more common than loans. Still, loans are what eventually translate into investments. Financial inclusion varies widely within the COMESA Region (Chart 2 and chart 3). Averages for

²Source: Demirguc-Kunt et al 2015

the region between 2004-2013: 8 ATM's and 7 bank branches per 100,000 adults (Chart 3). Access indicators using averages for the period 2004 to 2013 are highest in Seychelles with an average of 44.5 bank branches and 43.2 ATM's per 100,000 adults. The indicators are lowest in Burundi and Congo DR with the ATM's and commercial bank branches indicators recording averages of 2.0 and 0.5 per 100,000 adults respectively.

Chart 3: Financial Inclusion Access indicators in COMESA (Averages 2004-2013)³

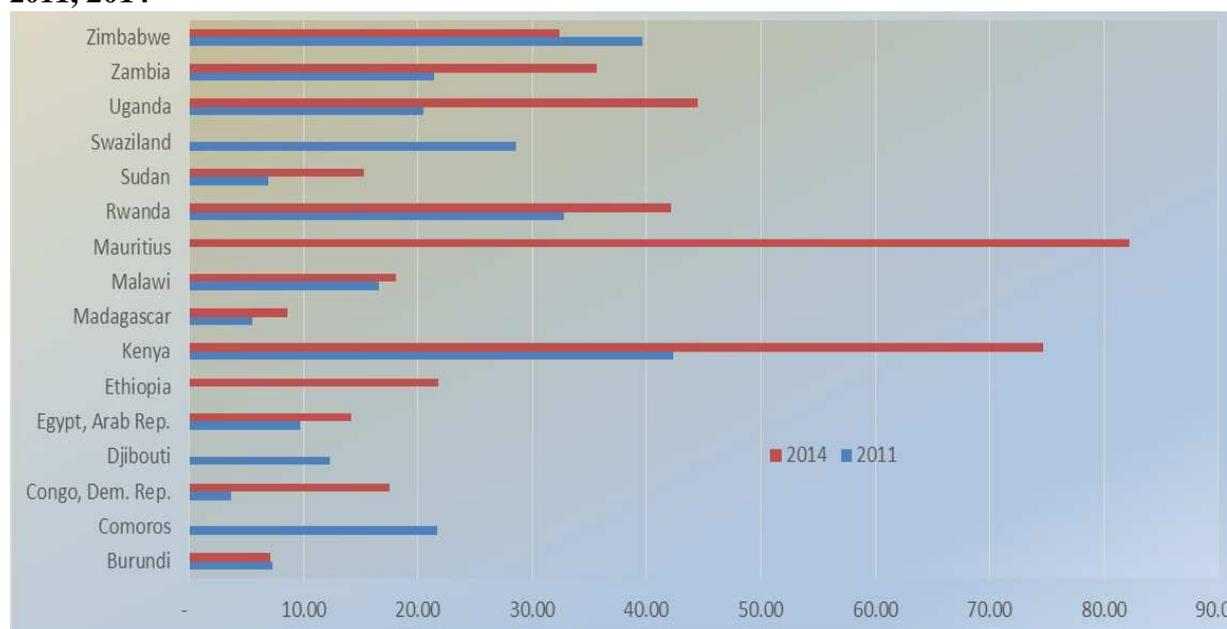


Access to formal financial institutions however, does not necessarily translate to usage. Usage indicators nevertheless follow a similar trend. The IMF FAS survey captures outstanding deposits and outstanding loans as percentages of GDP in each country for usage indicators. Chart 4 however uses variables from the World Bank Global Findex survey data which is unavailable annually but based on 2011 and 2014 surveys. The statistics reveal that the region average of adults with a bank account was 19.2% and 31.8% in 2011 and 2014 respectively⁴. Mauritius had the largest number of adults with a bank/mobile account at 82.2% of the adult population whilst Burundi was the lowest with 7.1. The 2014 figure include mobile money accounts whilst 2011 only bank accounts.

³ Source: IMF FAS Surveys; Author computations

⁴ Some countries had data missing when calculating the proxy. In 2011, Ethiopia and Mauritius had no data. In 2014, Comoros, Djibouti and Swaziland were missing data. Got both year, Eritrea, Seychelles and Libya are missing.

Chart 4: Financial Inclusion Usage Indicator in COMESA- Account Ownership (% age 15+) 2011, 2014⁵



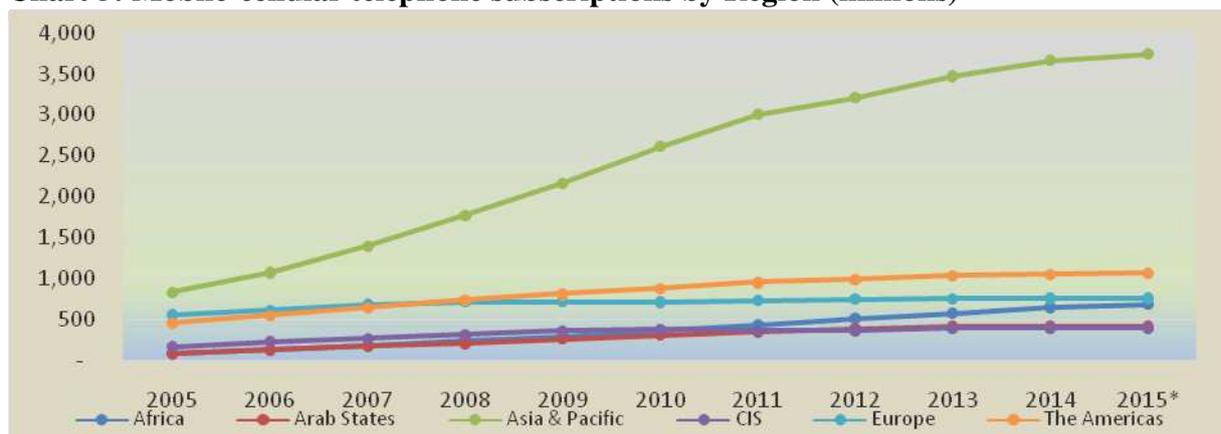
2.2 Developments in ICT and Financial Inclusion

The degree of financial inclusion is likely to increase in the next few years because not only it has become a policy priority, but also because new technologies such as mobile financial services reduce transaction costs and increase outreach (FI2020, 2013). Total mobile penetration has more than doubled in all, the regions of the world since 2005. The WTO (2013) cited technology as one of the key fundamental economic factors that can shape the future of international trade. Some studies have quantified the impact of ICT on economic growth, such as Waverman et al (2005) who concluded that 10 more mobile phones per 100 people would increase GDP per capita growth by up to 0.6 percentage points whilst studies focusing on developing countries, found this impact to be larger, between 0.8 and 1.2 percentage points. Mobile phones have improved communication, social inclusion, economic activity and productivity in sectors such as agriculture, health, education and finance. Financial inclusion is one of the channels through which ICT (Information Communication Technology) can affect economic development and intraregional trade and thus contribute to growth of member countries (Tumusiime-Mutebile, 2013). In addition, advances in informational technologies can help reduce the impact of physical barriers among nations.

Mobile telephone subscriptions allow expansion and access to financial services to previously underserved groups in remote areas of developing countries. It reduces the costs of running physical bank branches for the supplier and reduces the otherwise high costs of distance and time for the user. The increasing use of mobile phones in developing countries has contributed to the emergence of branchless banking services, thereby improving financial inclusion. Chart 5 shows the upward trend of mobile-cellular telephone subscriptions between 2005 and 2015. Although the figures are lowest in sub-Saharan Africa and in South Asia, the upward trend is also present in these regions.

⁵ Denotes the percentage of respondents who report having an account (by themselves or together with someone else); this can be a mobile account as well (Demirguc-Kunt et al., 2015). Those which are empty shows unavailability of the data. Source: World Bank 2014 and Author computations

Chart 5: Mobile-cellular telephone subscriptions by Region (millions)⁶



It is striking to see the role that ICT and innovative business models have played in the explosive growth of financial inclusion. In Africa, let alone COMESA it is recognised that developments in ICT have now made it possible for both the banked and the unbanked to “move money...much faster with greater convenience”.⁷ The most visible case in Africa is Kenya, where active bank accounts have grown more than fourfold between 2007 and 2012. Indeed, the experience of countries where digital payments are more widely available suggests that this can be certainly a relevant and fast way of expanding access to financial services. Africa’s growth in mobile phone penetration looks promising for future progress towards greater financial inclusion (Faye and Triki, 2013). By cutting costs even further, technology can make it feasible to reach an even broader population and can help expand operations in rural areas.

The expansion of the financial system however lags behind that of mobile telephone development not only in Africa but globally. This implies there are mobile telephone users who are unbanked but are certainly active in the economy. This therefore means there is room for mobile financial services to leverage the expansion of a more financially included Africa. The increase in ICT development provides the much-needed platform for financial inclusion to increase especially in Africa. Furthermore, ICT growth brings with it other macroeconomic benefits such as economic growth, employments and financial system stability through less information asymmetry. However, there has not been specific policy in this regard in terms of boosting this potential whilst regulating the same for the stability of the financial system in the COMESA region. It is noteworthy however, that COMESA recognizes the need to increase financial inclusion.

2.3 Informal Trade: Characteristics and Challenges

The existence of high levels of financial exclusion implies the existence of an informal economy. The informal economy is multi-faceted and can include informal labor markets, informal financial sectors and informal corporate or business sectors. Because of its heterogeneous nature, researchers have found it difficult to come up with a precise single definition of informality. This paper will focus on informal corporate or business sector that is engaged in informal cross border trade (ICBT) and thus use informal payment systems. The informal sector is the part of the economy, which is characterised by entrepreneurs operating

⁶Note: * Estimate; Source: ITU World Telecommunication /ICT Indicators database (2014); Author computations

⁷ Opening remarks by Mr Emmanuel Tumusiime-Mutebile, Governor of the Bank of Uganda, at the COMESA (Common Market for Eastern and Southern Africa) Committee of Central Bank Governors Symposium on “Financial innovation and inclusion – challenges and implications for monetary policy and financial stability”, Kampala, 24 May 2013

without licenses or titled property rights and doing family-based businesses that do not generate taxes (Qureshi & Trehan 2014). For purposes of this paper, ICBT is generally defined as an economic activity that is legal but unregulated, and refers to unrecorded business transactions undertaken across the borders (Uganda Bureau of Statistics (UBOS), 2009). It includes goods moved through unofficial and official trade routes (through under-invoicing and mis-declarations of cargo).

Many firms in the developing world—including a majority of micro, small and medium enterprises—operate in the informal economy. In Africa it is estimated that the informal sector represent about 43% of the official Gross Domestic Product (GDP), this being almost equivalent to the formal sector (Afrika and Ajumbo, 2012). COMESA's small and medium enterprises (SME's) are a key driver of growth and jobs in the private sector (Lundqvist & Erlandsson, 2014) yet it is majority of informal traders that operate as SME's. The average contribution by SMEs to GDP in the COMESA region is estimated at 20-25 percent, with a minimum and maximum contribution of 12 percent and 39 percent attributed to Sudan and Malawi respectively (COMESA 2013). Yet . The presence of the informal economy represents wastage and significant leakages from the circular flow of income, in the region. The fate of millions of potential entrepreneurs is trapped in a vicious circle of exclusion and they are unable to reap the fruits of integration in the region and globalization, due to the inadequacy of access to, and usage of the formal financial institutions. This therefore may work against efforts to improve intra-regional trade.

The majority of the African economies remain reliant on cash, implying that the population still have their trust in physical money (although Chipeta (2012) makes mention of indigenous/informal commodity money but this is less likely across borders). On the other hand, informal economies can potentially play a positive role, especially in developing countries where they may be viewed as the nursery of future economic growth in the formal economy. In economies and business environments hindered by overly excessive barriers and poorly designed regulations, informality provides an alternative to entrepreneurs and small firms. In many instances, informal trade represents the only type of exchange that is possible under conditions prevailing in some regional economic communities. Poor regional infrastructure and communications often render near-impossible "official" trade between neighboring countries.

However, to date, there is still limited information on the dimension of ICBT, as the tools for its measurement have not been very well developed. The situation has had some adverse impact on the estimation and reporting of intra-African trade i.e. there is probably more trade than what has been reported. Moreover, inadequate knowledge of the informal trade magnitude may lead to under estimated figures in national trade statistics of respective countries. GDP could be far greater if the potential enterprises of the informal sector could also be included. This paper argues that an increase in financial inclusion in the COMESA economic region will not only address the issue of measurement of informal trade but will also reduce it. The reason for this argument is that financial inclusion can be the process of transforming the informal into formal sector through its instruments thus increasing reported intra-regional trade.

The constraints that informal firms face make it harder for them to do business and grow. The main barrier is access to finance and the main obstacles to this are costs, distances and bureaucracy (World Bank, 2014). Thus one of the greatest needs of informal traders is improved access to financial services—not just loans, but savings, insurance, payments, pensions, and other products. The majority of the SMEs that were interviewed during the profiling exercise that was undertaken by the COMESA Secretariat considered the shortage of suitable finance as one of the major constraint that has hampered the production of quality products and productivity (COMESA, 2013).

As a result of these barriers, in many African countries, most people in the middle- and lower-income brackets continue to use informal or semi-formal savings clubs, associations and co-operatives to save money and access credit when necessary. The lack of appropriate and effective regulations over these schemes and participants' activities makes it difficult to leverage informal financial institutions' potential to contribute optimally to development. Enhancing the

financial inclusion of informal firms interested in registering can potentially help them grow and pave their path toward formalization. When coupled with related nonfinancial services, such as consumer awareness, training, and market information, access to formal finance can lead to breakthrough opportunities for people who have had limited economic avenues and ultimately for the economies in which they function.

Such cooperatives have high level of responsiveness to local needs. Emerging markets such as is the characteristic of most of the COMESA member states, face the pressing challenge of how to turn SMEs into companies that can compete on a regional scale, and raise the living standards of their people. Separate provisions or chapters in Free trade agreements (FTAs) relating to financial cooperatives would enable these institutions to develop on the ground and serve sections of the population and business that are, at present, marginalised and lack access to finance. This can lead to formalisation of these informal or semi-formal savings clubs.

Not too many cross-country studies on informal firms are available in the literature, especially on the topic of financial access and inclusion of these firms. This could partly be explained by unavailability of data that uniformly describes informality across countries. Although this paper does not empirically tackle informal cross border trade, it seeks to add to the literature by on taking a deeper look at cross-country analysis at issues around financial inclusion and consequently intra-regional trade in COMESA. With the aforementioned possible linkages between financial inclusion, ICT and subsequent decrease in informal trade, intra-regional trade is likely to increase in COMESA.

Chapter 3: Literature Review

3.1 Financial Development and International Trade

A considerable amount of literature exists on financial development and international trade. Mainly the argument leans towards trade credit. Studies using cross-section and panel data for both developed and developing countries, find evidence that countries' level of international trade is exogenously affected by the level of development of their financial sector (Becker & Greenberg, 2007; Manova, 2008; Amiti & Weinstrein, 2011). Others have argued that the financial sector development is an outcome of the supply and demand for finance as international trade increases (Huang & Temple, 2005; Klein & Olivei, 2008;). It is the former however that this study is focusing on.

Kletzer and Bardhan (1987) show that in a world in which countries have identical technology or endowments, comparative advantage may differ in the presence of credit market imperfections, such as incomplete information. This is exactly the case with the existence of informal trade. They show that the country with less credit market restrictions specializes in the sector that uses external finance and the country with the higher level of credit market restrictions specialize in the sector that does not require working capital or external finance. Their analysis concluded that a well developed financial sector can theoretically lead to a comparative advantage in industries that rely more on external financing and can explain the variance of the trade structure across countries.

Beck (2003) verifies successfully the possible link between financial development and trade structure. That is, his empirical results provide robust evidence that countries with a higher level of financial development have higher export shares and trade balances. These two studies firmly show that an increase in the level of financial development has a positive impact on the value of exports. Zingales (2003) argue that trade openness, especially when combined with openness to capital flows, weakens the incentives of incumbent firms to block financial development in order to reduce entry and competition. Furthermore, the relative political power of incumbents may decrease with trade as well

3.2 Literature on Intra regional trade

Various works have been done to determine the determinants of intra-regional trade in Africa. A crucial study was the one by Seid (2013) in which COMESA was found to have had a negative coefficient suggesting that it has not expanded trade among the member states, unlike regions such as SADC. If anything, that may imply it has had a negative effect on intra-regional trade. It is an agreed fact in the literature that intra-regional trade in Africa is quite poor despite the existing number of economic regions and trade agreements. Below are some of the studies using various empirical tools to assess the determinants of successful intra-regional trade.

Ebaidalla and Yahia (2013) assessed the performance of intra-COMESA trade integration based on success of ASEAN integration, using an out-of-sample approach. The analysis employed gravity model to estimate the coefficients of ASEAN model, which are used as a benchmark to project the potential trade for eight COMESA member states. The variables were Gross Domestic Product (GDP), population size and the distance between the countries. In addition, dummy variables to capture common language or colonial history, and if the trade collaborators share a common land borders or sea borders, were included. The success of COMESA is estimated by the ratio of potential to actual trade. The results pointed out that all countries of the selected sample are far from their potential trade level, implying unfavorable performance of the regional trade integration among COMESA members. This paper will expand the sample of countries and the methodology.

Seid (2013) conducted a study to uncover the main factors behind the low level of intra-regional trade and the role of RECs in promoting intra-regional trade, by taking four RECs in Africa (COMESA, ECOWAS, IGAD and SADC) and applying the intuitive and theoretical gravity model of Anderson-van Wincoop in panel data framework. The variables used were GDP, population, distance, border, language, and colonial links. The study found the traditional gravity model variables of GDP, bilateral distance, common border, common official language, common colonizer and land lockedness were important determinants of bilateral trade flows in Africa. Besides these factors bilateral real exchange rate between partner countries and difference in preference and taste among countries do affect trade flows. The GDP variable was adopted for this study.

The Brookings Africa Growth Initiative (2012) also conducted a study on intra-regional trade. The following were considered the main factors that impinge on increasing intra-African trade levels: regional integration, economic diversification, conflict, infrastructure and border issues. On regional integration, this is the reason Regional economic communities (RECs) have been formed such as COMESA. Whether these economic communities are improving the intra trade levels however is an issue of constant debate.

Thiemann et al (2012) test the hypothesis of an ICT effect on trade in bananas, oranges, tomatoes, and vegetables and fruit in general. They employ a gravity model of international trade between major exporting and importing countries for the period 1995 to 2009. The model explains the value of trade in terms of export and import countries' levels of internet and mobile phone penetration, and of a broad range of factors that might also affect bilateral trade. We test whether a fixed effects model or random effects model best suits the data; results suggest a fixed effects model is appropriate. Model results suggest that mobile phone penetration significantly stimulates trade in vegetables and fruit and oranges by exporting countries. , but its impact is less than that of fixed telephone usage which has an unexpected negative influence on banana imports. Internet usage has only a positive effect on trade in imports of tomatoes. Internet usage in exporting countries for fruit and vegetables are negatively associated.

Keane et al (2010) examine the effects of non-tariff measures (NTB) on intra-regional trade in 4 countries in SADC using Generalized Methods of Moments (GMM) estimator for 2003-2006. They define a NTB as an unnecessarily restrictive non-tariff measure (NTM) which affects trade in goods. price control measures, such as multiple exchange rates, or foreign exchange allocation; finance control measures, such as anti-dumping or countervailing measures; quantity restrictions, such as non-automatic licensing, quotas; monopolistic measures; technical measures, such as regulations and customs procedures; and miscellaneous including subsidies. The results found that the introduction of one or more NTMs in a sector significantly penalises imports from other SADC countries in that sector (intra-regional trade) to the benefit of non-SADC countries, whose exports increase. This confirms the hypothesis that NTBs are indeed barriers to intra-regional trade for SADC countries. Moreover, to the extent that these barriers divert imports away from regional towards non-regional partners, their presence seems to stifle intra-regional trade.

Zannou (2010) also used the gravity model to capture factors affecting the importance of the Economic Community of West African States (ECOWAS) intra-community trade flows. The results suggested that remoteness and enclosure reduce the volume of intra-community trade while proximity (geographical, linguistic or monetary) stability of exchange rates and the openness of national economies increases it. However, taking into consideration the heterogeneity of flows through the control over invariable factors in time, only the depreciation of exchange rates and the openness of economies determine the volumes of intra-ECOWAS trade flows.

Another study by Geda and Kibret (2002) tests the determinants of trade flows using the conventional gravity model in the experience of COMESA as a case study. The study found that: regional groupings has had insignificant effect on the flow of bilateral trade despite its perceived importance in the increasingly globalized world. Secondly, the review of the issues indicates that

the performance of regional blocs is mainly constrained by problems of variation in initial condition, compensation issues, real political commitment, overlapping membership, policy harmonization and poor private sector participation. The aspects of initial condition of trade were taken into account in this study by using lagged variables of trade and participation of private sector in this study is proxied by financial inclusion.

Spiridon (nd) used the econometric analysis model of a Principal Component Analysis (PCA) and the construction of a multiple linear regression model after the selection of the significant variables. The author identified variables such as a country's share in the world trade, the number of multinationals in the host country, the aggregate gross domestic product, the number of working immigrants or the degree of openness to international trade. The author sought to conduct analysis on building a relevant equation to capture the existing interrelations between the above variables for a sample of 50 countries. Main findings showed that there are strong connections among the determinants of international trade but they cannot provide a clear picture of the world trade dynamics.

A brief look at studies in other economic regions outside of Africa is a study by Trivić and Klimczak (2015) which purposed to identify factors that have an influence on bilateral trade among the Western Balkan countries for the period from 1995 to 2012. The study took into account geographical, economic or political factors and factors constituting cultural, communicational and historical types of the so-called "distance" between countries. In order to assess their influence on trade values, an augmented version of the gravity model was employed. It was estimated threefold: as pooled data by OLS, as a random effects model and as a fixed effects model with an additional estimation of time-invariant variables following the method of Cheng and Wall (2005). The results of the research are surprising, as the strongest influence on trade, values were exhibited by variables representing ease of a direct communication and similarity of religious structures. In addition, war and one-year-post-war effect showed a strong and statistically important influence. Thus, the main conclusion is that non-economic factors in the region of the Western Balkans play the most important role in determining trade values between countries in the region.

3.3 A Note on Available Literature

From various studies, it is clear that there is a relationship between financial development, of which financial inclusion is part, and international trade. The literature however is mixed on the direction of causality. This paper leans towards the argument that financial development will lead to increased intra regional trade. One of the main reasons is because the level of international trade among countries in the region is already low and may not be sufficient to generate demand for such services and thus the key variable which studies such as these are exploring to improve. On intra-regional trade, the gravity model stands out as the most widely used with panel data analyses of various types. Further, GDP is a consistent variable used in the literature with other variables seemingly relevant according to the author's arguments. In this paper, we adopt the GDP variable as a control and make use of panel data as most literature has done.

A clear gap in the literature is the missing aspect of financial inclusion levels in the countries under review, especially for African countries. Further, although infrastructure is a clear policy priority in most REC's, developments in ICT has not been extensively studied to assess empirical evidence of its impact on trade. Many times it is implicit due to its assumed impact on economic growth. It is this gap and subsequent policy implications that this study intends to fill.

Chapter 4: Data, Methodology and Empirical Results

4.1 Data and its Sources

The study uses panel data from 17 of the 19 countries in the COMESA region selected based on data availability. Appendix 1 provides a list of the countries. The period of the study is 2004 to 2012, based on availability of financial inclusion indicators most of which started being collected around the year 2004. The data has been sourced from various COMESA publications, World Bank Database, ITU World Telecommunication/ICT Indicators database and the IMF Financial Access Survey for the financial inclusion access⁸ and usage indicators⁹.

4.2 Methodology

The study will use dynamic panel data analysis and will add financial inclusion access and usage indicators to some variables of the gravity model. The model is ideal for data sets with few time period such as this one as explained further later in this subsection.

The panel data regression general formula is as follows:

$$y_{it} = \beta x_{it} + \alpha_i + v_{it}, \dots\dots\dots(1) \quad i = 1 \dots N \text{ (individuals)}, \quad t = 1, \dots, T \text{ (time)}$$

Where: x_{it} is the it -th observation on k explanatory variables, β is the parameter vector, α_i denotes the unobserved individual-specific time-invariant effects, and the residual disturbance term v_{it} has zero mean, constant variance, and is uncorrelated across time and individuals.

The variables are all expressed in log form. The advantage of using the log linear equation is that the estimated coefficients from the model can easily be interpreted as elasticities and this is very vital for policy formulation because it tells us by how much a one percent change in a particular variable will result into a change in intraregional trade in COMESA. Below are the variables and expected sign for each of the explanatory variables:

Explained variable:

- $Comesa_{it}$ is the logarithm of total trade among country i and the rest of COMESA in time period t ,

Explanatory Variables:

Financial Inclusion variables will include access and usage indicators for country i , time period t . The variables that will be used in this study are:

Access Indicators:

- Commercial bank branches per 100,000 adults (+)
- ATM's per 100,000 adults (+)

Usage Indicators:

- Outstanding Loans as a percentage of GDP (+)

The study used loans as opposed to deposits as financial intermediation runs from deposits to lending. In addition, international trade is facilitated by trade credits.

GDP is the control variable for country i , time period t . In this study, we use Real GDP growth rate based on the Gravity model. The coefficient of GDP is expected to be positive, as an increase of national income indicates more imports demand and exports supply.

⁸Access indicators include: Commercial bank branches per 1000 km² and per 100,000 adults; ATMs per 1,000 km² and per 100,000 adults etc
⁹. Usage Indicators include: Number of borrowers from commercial banks per 1000 adults; Outstanding loans from commercial banks (% of GDP); Number of depositors with commercial banks per 1000 adults (or % of adults who are banked) and Outstanding deposits with commercial banks (% of GDP).

Depending on the nature of α_i , two models in (1) can be distinguished as follows:

Random Effect Model (REM): It assumes that α_i are random variables (uncorrelated with v_{it}). In these models, the regressors x_{it} are uncorrelated with individual effects α_i . We can unbiasedly, consistently, and efficiently estimate parameters β . The general model is as below:

$$Y_{it} = \alpha + \beta X_{it} + (u_i + v_{it}) \dots \dots \dots (2)$$

where u_i is a fixed or random effect specific to individual (group) or time period that is not included in the regression, and errors are *independent identically distributed*, $v_{it} \sim (0, \sigma^2)$. The main advantages of random effects model are: like fixed effects, it allows heterogeneity in the cross section, but it avoids the loss of degrees of freedom, which occurs in fixed effects. Nevertheless, the RE estimates are more efficient than the FE estimates, but they are inconsistent (Pastore et al., 2009).

Fixed Effects Model (FEM): Fixed-effects (FE) are used when one is only interested in analyzing the impact of variables that vary over time. It assumes that α_i are individual fixed parameters. The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics. In these models, it is not necessary to assume no correlation between regressors and individual effects. Usually, “fixed effects estimators” are used to estimate the parameters. We can obtain them with an OLS estimation of a transformation of model (1) where individual effects are removed:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it} \dots \dots \dots (3)$$

Where: α_i ($i=1 \dots n$) is the unknown intercept for each entity (n entity-specific intercepts); Y_{it} is the dependent variable where i = country and t = year; X_{it} represents one independent variable; β_1 is the coefficient for X_{it} ; u_{it} is the error term.

These estimators are unbiased and consistent

Ideally this is what we should use for our empirical analysis. However, one problem with a fixed effects model is that variables that do not change over time cannot be estimated directly because they are fixed effects and are therefore removed in estimates at the difference. Since some of our variables in the data do not change significantly over time as discussed below, we relying on the RE models instead of FE model. To help decide scientifically, the Hausman test statistic was applied to check further whether the fixed effects model is more appropriate than the random effects model.

The Hausman test statistic says if the null hypothesis of no correlation between the individual effects and regressors is rejected, then fixed effects model is better than the random effects model. This was not the case however and our initial hypothesis that a random-effects model adequately models the individual-level effects was rejected. However fixed effects model in a short panel such as this one is inconsistent, hence the use of the Generalised Method of Moments (GMM). The GMM model is used to base the conclusions of the models in this study. The study therefore settles for the dynamic panel model.

Dynamic Panel Model: These are panel models with regressors included as lagged dependent variables (4). The general model is as follows:

$$y_{it} = \alpha y_{i(t-1)} + \beta X_{it} + \eta_i + v_{it} \dots \dots \dots (4)$$

Even if coefficients of lagged variables are of little interest, allowing for them may recover consistent estimates of other perimeters (Bond, 2002). The ‘System Generalized Method of Moments (GMM) context, is an estimator designed for situations with: few time periods and many individual units which is thus ideal for this paper. Including $y_{i,t-1}$ is also another way of controlling for unobserved heterogeneity. Arellano and Bond (1991) derived a consistent generalized

method-of-moments (GMM) estimator for this model. Building on the work of Arellano and Bover (1995), Blundell and Bond (1998) developed a system estimator that uses additional moment conditions. This estimator is designed for datasets with many panels and few periods.

4.3 Results

Descriptive Statistics

Descriptive statistics: mean, standard deviations, minimum, maximum observations were used on the initial values of the variables for consistency, and robustness checking of the results. The results from the descriptive statistics showed that average number of commercial banks and ATM's per 100,000 adults for each country vary between a minimum of 1 and a maximum 44 branches; and a minimum of 0 and maximum of 41 ATM's. The average for each country's intraregional trade between that country and the rest of COMESA varies between a minimum of 2% and a maximum 35% of total trade whilst real GDP growth rate was between a minimum of 2% and a maximum of 11% in the period 2004 to 2012 and for the 17 countries in the sample. If a variable does not vary over time, it's within standard deviation will be zero. Commercial bank branches varied the least within the sample period whilst mobile phone penetration varied the most in the period, although both variables had an upward trend. (See appendix 2 for summary table).

Data Quality and various Pre-Post estimation Tests

The panel was strongly balanced as most of the countries had the selected variables available in the time period of 2004 to 2012.

Goodness of Fit: The wald chi² serves as a goodness of fit. This is a test (F) to see whether all the coefficients in the model are different than zero. If the p-value of the Wald chi-square is statistically significant, taken together, the coefficients in the model are statistically significant.

Heteroscedasticity: In the presence of heteroscedasticity, OLS estimates are consistent but their standard errors are not valid. Thus the option 'robust' was added when regressing random and fixed effects to control for heteroskedasticity.

Serial Correlation: Another concern is the problem of serial correlation which causes the standard errors of the coefficients to be smaller than they actually are and higher R-squared. A serial correlation test however, apply to macro panels with long time series (over 20-30 years) and is thus not a problem in panel with very few years. Similarly, cross-sectional dependence or contemporaneous correlation is more of an issue in macro panels with long time series (over 20-30 years) than in micro panels and was thus not an issue with the sample used in this paper.

Heterogeneity: Heterogeneity was controlled by including $y_{i,t-1}$, which is another way of controlling for unobserved heterogeneity. The dynamic panel model or the GMM estimator used assumes that there is no autocorrelation in the idiosyncratic errors and requires the initial condition that the panel-level effects be uncorrelated with the first difference of the first observation of the dependent variable.

Models with Financial Inclusion Indicators, without ICT Developments

In these models, the aim was to see the impact of financial inclusion on intraregional trade in the absence of developments in ICT. Regressions were run on access indicators only (GMM (A)), then usage indicator (GMM (U)) only then on financial inclusion as a whole (GMM (FI)), (Table 1). The access indicator of both ATM's and commercial banks had the wrong signs in both analyses but commercial bank branches were significant in the model with all financial inclusion indicators (i.e. both access and usage indicators). The usage indicator of outstanding

loans was insignificant in the model with usage indicators only but was significant in the model with all financial inclusion indicators. This entails then that although access indicators had the wrong sign because access does not necessarily translate to usage, usage indicators can only significantly affect intraregional trade when access indicators are included in the model. This should make sense as those who use informal financial services may not use formal services due to the availability of the service but rather factors such as costs, and requirements for one to use commercial banks are what deter such traders from formalisation. On the other hand, one can only use a formal financial service when they have access to it thus again, usage can only be significant in the presence of access.

Table 1: Regression with Financial Inclusion Only¹⁰

Variable	GMM(A)	GMM(U)	GMM(FI)
Constant	2.01*** (0.35)	1.32*** (0.51)	-0.13 (0.71)
LOG(ComesaL1)	0.01 (0.09)	0.04 (0.09)	-0.05 (0.09)
LOG(ComesaL2)	0.15* (0.09)	0.18** (0.08)	0.20** (0.08)
LOG(Commercialbanks)	-0.27 (0.28)		-0.87*** (0.33)
LOG(ATM)	-0.14 (0.20)		-0.14 (0.19)
LOG(Loans)		0.27 (0.37)	2.11*** (0.62)
LOG(RealGDP)	0.08 (0.20)	0.07 (0.20)	-0.15 (0.21)
Wald Chi ²	13.00**	5.14	25.02***
No of Observation	106	109	106
No of Groups	17	17	17

From the analyses of the model GMM (FI), the wald chi² suggested that the model is a good fit for the data, thus taken together the financial inclusion indicator coefficients in the model are statistically significant. The results imply that if commercial bank branches per 100,000 adults increased by one percent, we would expect intra-regional trade in COMESA to decrease by 0.87%, ceteris paribus. On the other hand, if loans as a percentage of GDP increased by one percent, intra-regional trade in COMESA would increase by 2.11%, ceteris paribus. The GDP coefficient was insignificant in all three models, and had the wrong sign in the GMM (FI) regression. It was expected that GDP will positively affect trade in the region and the results are contrary to other findings such as Ebaidalla and Yahia (2013). This may be because GDP growth has been on the decline in COMESA in recent years. This needs to be further investigated, however. The second lag on COMESA trade was positive and significant at 5 percentage. This suggests that trade from two period, if increased by 1%, will increase trade in present period by 0.2%, ceteris paribus.

The sign for commercial banks was persistently negative. This may be because access to financial services does not necessarily guarantee use of the services. In this study, we have mentioned that informal firms are usually unregistered and do not possess regulatory requirements to function in the system hence a bank nearby may not mean one will have an account, all things being equal.

¹⁰ Standard errors are reported in parentheses. *, **, *** indicates significance at the 90%, 95%, and 99% level, respectively.

Model with ICT, without Financial Inclusion

Table 2 shows mobile phone subscriptions impact on intra-regional trade. The results suggest that the model does not fit the data well and the p-value on the wald chi² was insignificant at all levels and the results further suggest that mobile phone penetration on its own, may not have an impact on intra-regional trade.

Table 2: Regression results- Impact of ICT without Financial Inclusion¹¹

Variable	GMM(CELLULAR)
Constant	1.72*** (0.40)
LOG(ComesaL1)	0.47 (0.87)
LOG(ComesaL2)	0.17** (0.09)
LOG(Cellular)	-0.06 (0.14)
LOG(RealGDP)	0.08 (0.21)
No of Observation	109
No of Groups	17

The final Model: Financial Inclusion, ICT and Intra Regional Trade in COMESA

Finally, Table 3 shows results from robust pooled panel data model, fixed effects, random effects models as well as the final DPD model on which our conclusions and policy implications are based. The pooled panel data model has some limitation in that it does not consider for heterogeneity of countries, and no country specific effects are estimated, hence assumes that all countries are homogenous in terms of cross-section and time. The pooled OLS estimator ignores the panel structure of the data. The results showed that the commercial bank branches and GDP were significant although the former had the wrong sign.

Table 3 in subsequent columns then presents the results of the fixed effects (FEM) and random effects (REM). Both models suggest that they are not a good fit for the , the FEM suggests that for the COMESA region, as commercial bank branches increase by 1 percent over time, trade decreases by 0.32%, ceteris paribus. All other variables were insignificant. This model, as earlier explained, does not work well with data for which variables are slow changing over time. In this sample since the panel is for 9 years, variables such as number of ATM's and commercial bank branches have very minimal change since these are significant investment decisions for banks to make. In the REM model on the other hand, ICT is once again significant and commercial bank branches once again have a negative relationship with trade.

Finally, we estimate the GMM model of dynamic panel data. Together, the coefficients in the model are statistically significant and the model fits the data well as the wald chi-squared was statistically significant. This was the case even though individually some coefficients were statistically insignificant.

¹¹Standard errors are reported in parentheses. *, **, *** indicates significance at the 90%, 95%, and 99% level, respectively. The table shows the results of (one-step) system GMM estimators.

Table 3: Final model with Pooled, Random, Fixed Effects and Final PDP Model

The dependent Variable is the total trade in COMESA				
Variable	Pooled	FEM	REM	GMM
Constant	1.87*** (0.52)	1.02 (0.83)	1.15 (0.83)	-1.18 (0.81)
LOG(ComesaL1)				-0.07 (0.09)
LOG(ComesaL2)				0.19*** (0.09)
LOG(Cellularphone)	0.23 (0.25)	0.28 (0.32)	0.44* (0.25)	0.91*** (0.32)
LOG(Commercialbanks)	-1.09*** (0.33)	-0.32* (0.18)	-0.63** (0.32)	-0.84*** (0.33)
LOG(ATM)	0.05 (0.21)	-0.05 (0.28)	-0.15 (0.21)	-0.83*** (0.31)
LOG(Loans)	0.08 (0.36)	0.70 (0.72)	0.53 (0.66)	2.12*** (0.62)
LOG(RealGDP)	0.50** (0.26)	0.07 (0.26)	0.10 (0.22)	-0.04 (0.21)
Wald Chi ²		0.93	5.74	32.47***
R2	0.15 ¹²	0.02	0.08	
No of Observation	133	133	133	106
No of Groups		17	17	17
No of Instruments				40

In the final GMM model, all the coefficients of variables were significant excluding that of real GDP. The coefficients on Loans and mobile phone penetration had the correct signs indicated the two variables are very important in increasing intra-regional trade in COMESA. Ceteris paribus, the model suggests a 1% increase in loans as a percentage of GDP in member countries, will increase intra-regional trade in COMESA by 2.12%. That is increased usage of formal financial services; ceteris paribus will boost intraregional trade in COMESA. This may be validated since in most cases we expect credit to lead to investment as serve as capital for new entrepreneurial endeavours as opposed to consumption.

In addition, a 1 % increase in mobile phone subscriptions will increase intraregional trade in COMESA by 0.91%, ceteris paribus. It is noteworthy that the coefficient on cellular mobile phone subscriptions increases and has the correct sign, when financial inclusion is included in the model. This suggests that developments in ICT will have a positive impact on trade through

¹² Adjusted R-squared

financial financial inclusion. Besides that, developments in ICT also make more convenient and cheaper other costs that may not be associated with financial services i.e. communication.

It is also worth mentioning that without the mobile phone subscription variable, the coefficient on the usage indicator of financial inclusion: outstanding loans was still significant but a bit less. From the results, a 1 percent increase predicting a 2.11% rise in trade against 2.12% with ICT in the picture. This may imply that as long as we have increased usage in formal financial services, as long as more and more informal trade is formalised whether through mobile payments or otherwise, intraregional trade is likely to increase. That is, financial inclusion has a positive impact even in the absence of ICT. However, mobile payments have vast advantages and empirical results suggest the impact exists enough for policy makers to look further into this.

The access indicators of commercial bank branches and ATM's however, both had the wrong signs in all the models. This then suggests that access does not necessarily translate to usage of financial services. The paper articulated that informal traders are outside of the system not only due to lack of access to finance but to do with necessary requirements required to use formalised banking systems and costs associated thereof. Financial inclusion policy therefore is beyond making services available but also making services affordable and relevant to users.

Chapter 5: Conclusions, Policy Implications and Weaknesses of the Study

The study used panel data of 17 of the 19 countries in the COMESA region to assess the possible positive effects of financial inclusion – both access and usage – in COMESA countries on intraregional trade for the period 2004 to 2012. The study further assessed developments in ICT as a means through which financial inclusion in the region can improve. Consequently, intra-regional trade was expected to improve with improvements in both financial inclusion and ICT. One major reason is that financial inclusion is likely to lead to formalization of those in the informal sector. The paper employed dynamic panel model to assess the relationship and found that both the increase in usage of formal financial system and increased mobile phone penetration (as a proxy for ICT development) had positive effect on intra-regional trade in COMESA. ICT on its own was not enough to impact intra-regional trade but financial inclusion was significant with or without ICT but slightly higher in the presence of ICT.

The paper recommends therefore that governments in the COMESA region further promote policies that improve usage of formal financial systems especially for SME's. With initiatives such as REPSS, it may prove futile if half the trade is informal. One way COMESA may do so is to incorporate financial cooperatives within the TFTA subsequent negotiations as a way of formalising payment systems among the informal traders. Further, central banks, commercial banks, microfinance corporations and mobile phone companies can come together to devise a policy that protects the supplier of the services, at the same time serve the excluded population who are mostly in rural areas, illiterate and considered “undeserved” or too costly for commercial banks to reach. Developments in ICT affect intraregional trade and economic development mainly through financial inclusion and it should thus be a clear policy priority among others.

Data on financial inclusion let alone informal trade is still very scanty and gaps exists within the countries for the former, and is hardly available for the latter. Nevertheless further research may be using levels of exclusion from external finance, using exports or imports alone as opposed to total trade and assessing direction of causality between financial inclusion and intraregional trade, possibly for individual countries. This notwithstanding, this paper still provides direction for policy makers in the area.

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Appendices

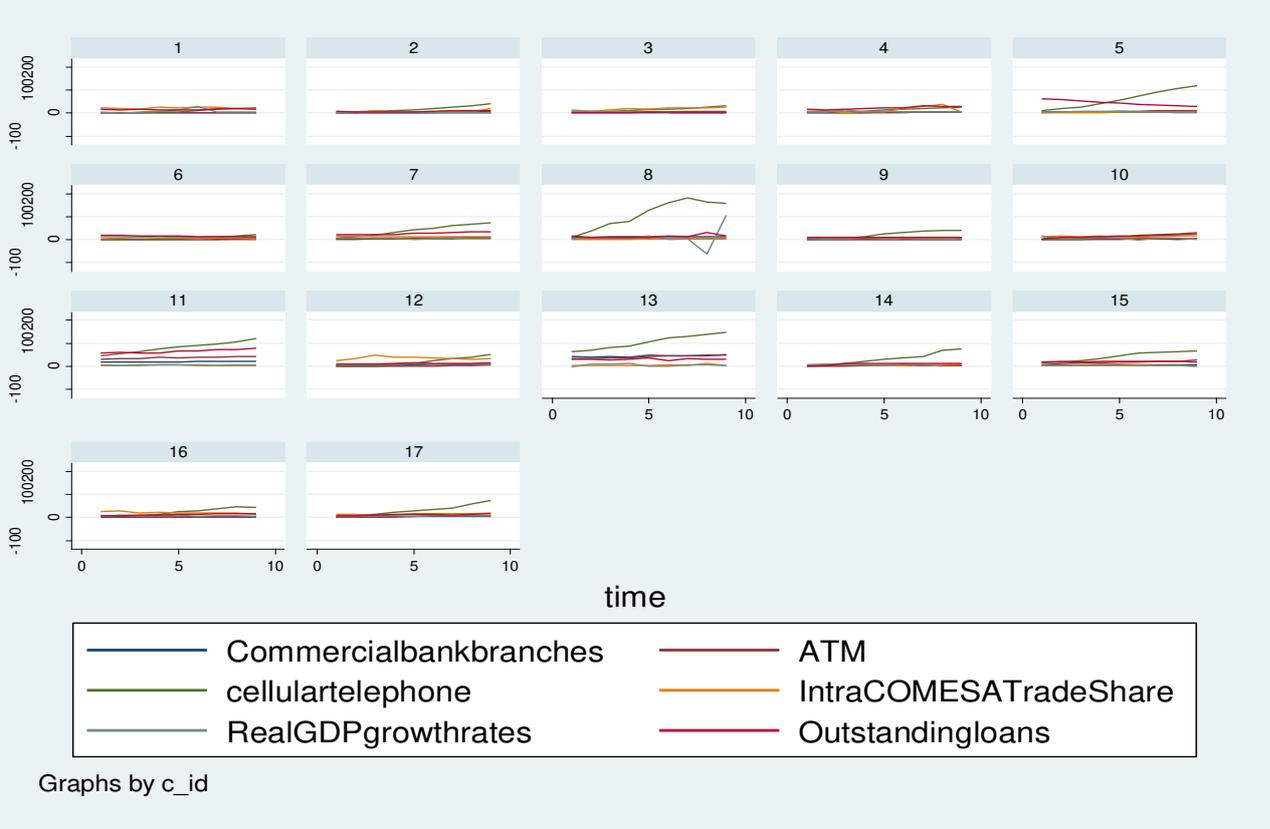
Appendix 1: List of COMESA countries in the study

1	Burundi
2	Comoros
3	Congo, Dem. Rep. of
4	Congo, Republic of
5	Djibouti
6	Egypt
7	Kenya
8	Libya
9	Madagascar
10	Malawi
11	Mauritius
12	Rwanda
13	Seychelles
14	Sudan
15	Swaziland
16	Uganda
17	Zambia

Appendix 2: Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
Outstanding Loans%GDP	overall	19.29	15.46	0.97	76.86	N = 153
	between		15.13	3.15	64.40	n = 17
	within		4.71	5.48	37.62	T = 9
Commercial Bank Branches/ 100000 adults	overall	6.52	10.45	0.39	48.00	N = 153
	between		10.67	0.53	43.89	n = 17
	within		1.13	2.48	10.63	T = 9
atm machines/ 100000 adults	overall	7.86	12.54	0	50.91	N = 148
	between		12.47	0.15	40.77	n = 17
	within		2.62	-2.10	18.01	T-bar = 8.70588
Cellular phone subscription	overall	37.57	39.36	0.21	180.45	N = 153
	between		32.28	6.28	108.58	n = 17
	within		23.71	-61.93	109.44	T = 9
IntraCOMESA Trade/Total trade	overall	11.13	9.54	0	48	N = 153
	between		8.84	2	35.11	n = 17
	within		4.11	-0.76	35.24	T = 9
Real GDP	overall	5.73	10.49	-61.26	104.49	N = 152
	between		2.54	1.55	11.05	n = 17
	within		10.19	-65.31	100.44	T = 8.94118

Appendix 3: Graphs of Variables by Country¹³



¹³1-17 represent the countries as numbered in Appendix 1