



What drives cross-border bank expansion? Answers from Kenya

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Abstract

This paper investigates the drivers of bank foreign expansion in East Africa. Our results support the view that institutional quality is vital at the planning phase of banks' going-abroad decision but its importance is muted once the decision has been taken. Second, relatively competitive markets and weak market power at home seem to "push" banks abroad. Third, banks seek to exploit the benefits of their relative efficiency through regional expansion. Fourth, relatively higher foreign country inflation is a deterrent to banks expansion abroad. Finally, desire for greater earnings, economic integration, and follow-the-client hypothesis do not explain banks' foreign expansion decisions.

Key words: East Africa, Foreign bank expansion, Internationalization theories, Poisson regression

JEL Classification: F23, F65, G15, G21

1 Introduction

East African countries are gradually aligning their financial sector regulatory practices with many of the Basel Accords' recommendations. In Kenya, for instance, notable recent regulatory changes include the Finance Act 2008, which placed a minimum core capital requirement of Kenyan Shillings (KES) 1 billion (approximately USD 12.5 million) on banks, and the new prudential and risk management guidelines issued by the Central Bank of Kenya to enable banks better manage cross-border risks and withstand emerging macroeconomic shocks.¹

In Rwanda, the Bank of Rwanda issued several prudential regulations between 2009 and 2011 to govern the country's financial sector. Among them

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¹The two sets of guidelines were issued under section 33(4) of Kenya's Banking Act. The Prudential Guidelines address an array of issues including corporate governance, risk classification of assets and provisioning, capital adequacy, foreign exposure limits and money laundering among others; the Risk Management Guidelines cover various kinds of bank risks such as operational, liquidity, market, compliance, technology and others.

are capital adequacy regulations, issued in 2010, which require all banks to maintain at least Rwandese Francs 5 billion (USD 7.9 million) in capital. Additionally, there is Regulation No. 10/2009, which sets out the parameters for liquidity management: it requires banks to maintain their capital adequacy (or solvability) ratios at a minimum of 10% (Johnson, Ticas, Kiai & Taylor, 2009). However, Sanya, Mitchell & Kantengwa (2012) has found these regulations inadequate in addressing liquidity concerns in Rwanda's financial sector.

Uganda, following their Financial Institutions Act (2004), introduced several regulatory measures in 2005 covering, among others, liquidity, credit reference, insider lending, ownership control and corporate governance. The statutory instruments supplement No. 31 of November 2010 imposes a minimum capital requirement on all financial institutions of Uganda Shillings 25 billion (USD 9.4 million). The regulations give Bank of Uganda the mandate to supervise and discipline all local and foreign financial institutions licensed under the Act (Bategeka & Okumu, 2010). Since 2005, Bank of Uganda conducts on-site examinations of all commercial banks using a risk-based methodology that emphasizes prompt corrective actions on any identified shortfalls in the implementation of regulatory requirements.²

In Tanzania, the Banking and Financial Institutions Act of 1991 was revised, in 2006, to enable full compliance with Basel II (Bank of Tanzania, 2008). Buoyed by the new legislation, the government, in 2008, reviewed most of the existing, and issued additional, prudential regulations that cover licensing, credit concentration, currency exposure limits, capital adequacy, risky assets and liquidity management, and provide guidelines for prompt corrective action. The minimum capital requirement was fixed at Tanzania Shillings 15 billion (USD 9.2 million) in 2010.

A possible consequence of financial sector reforms is a shift in business paradigm from the conservative safe-assets (Treasury securities) focus to a more aggressive model in which private-sector credit becomes an important part of bank asset portfolios. Indeed, credit to the private sector as a fraction of the GDP rose over the 2002-2010 period from 25 to 33% in Kenya, 6 to 16% in Tanzania, 8 to 16% in Uganda and by an average of 20% in Rwanda and Burundi over the period 2005-2010 (Sanya and Gaertner, 2012). In spite of their many successes in streamlining the financial system, reducing information asymmetry and averting bank failures, reform measures, such as liberalization and regulatory changes, may make the banking industry operating environment more challenging (Brownbridge and Harvey, 1998) and may threaten the survival of some banks in the short run.

Such threats create the need for innovation, and aggressive business practices, to attract new, and retain existing, customers. Indeed, as Table 1 shows, several commercial banks domiciled in Kenya, have recently extended their portfolios across Kenyan borders. Indeed, eleven banks had foreign operations by the end of 2012, all of which were within the East African region (Central Bank

²Additional information at the Bank of Uganda website: <http://www.bou.or.ug/bou/supervision/overview.html>

of Kenya, 2012b). The banks' foreign subsidiaries had a total of 282 branches as of December 2012, up from 223 in December 2011. Of the regional branches, 125 were in Uganda, 70 in Tanzania, 51 in Rwanda, 31 in South Sudan and 5 in Burundi. The foreign outlets had a total of 4780 employees; total assets valued at about KES 266.5 billion (USD 3.10 billion), of which KES 125.5 billion (USD 1.46 billion) were customers' loans; total deposits amounted to KES 202.6 billion (USD 2.36 billion). Foreign subsidiaries and branches contributed about 9.8% of Kenyan banks' total assets between 2007 and 2011.

Table 2 reports stylized facts on the commercial banking sector, as of December 2012, in the East African countries for which data are available.³ Whereas Kenyan banks have engaged in an aggressive expansion drive into other East African countries, the table shows that banks incorporated in other East African countries have not made serious forays into foreign markets, including Kenya. For instance, we do not have data suggesting that Uganda's banks have foreign operations; Rwanda and Tanzania each have only one bank with foreign operations. Importantly, the share of total assets owned by foreign banks is very high for all the four countries, with Uganda leading the pack at 73.7%. Considering that Kenya's financial markets, institutional and legal systems are more advanced than those of neighboring countries (World Economic Forum, 2013), the recent aggressive expansion of Kenyan banks to the rest of East Africa raises interesting questions: What motivates the decision as to whether or not to expand regionally? Does the expansion by Kenyan banks to perceived less sophisticated markets indicate that their local operations have reached "optimal" levels leaving internationalization as the next logical move? Does it suggest an attempt to generate additional deposits, to enable greater credit provisioning for profit?

The facts in Table 2 provide some anecdotal evidence on the regionalization motives of Kenyan banks that form the basis for this inquiry. For instance, the cost-to-income ratios show that Kenyan banks were more efficient than banks in Rwanda and Tanzania but just as efficient as Ugandan banks. The 5-bank concentration ratios, broadly speaking, indicate the possibility that banks operating in Kenya are faced with greater competition than their counterparts in East African, and, consistently, the penetration levels appear to suggest that target markets in Kenya are closer to maturity than markets in the rest of the region. Further, domestic credit to the private sector, as a proportion of GDP, is highest for Kenya, implying that, as the economies grow, other regional credit markets in the region would have more untapped business opportunities than Kenya's. Thus, one may conjecture that Kenyan banks, burdened by greater competition at home, seek to leverage their relatively better efficiency in an effort to profit from the relatively untapped, and potentially growing, regional markets. The return on equity figures show that Kenyan banks were more profitable in 2012 than their regional counterparts, suggesting that immediate profitability may not be a strong motive for Kenyan banks expansionary drive. A detailed empirical investigation is necessary to test these conjectures and to

³We cannot obtain adequate data for all variables of interest for Burundi and South Sudan, both of which are East African Community (EAC) member countries. For this reason, the two countries are left out of this study.

improve our understanding of the regionalization phenomenon in East Africa.

Concurrent to the intra-regional banks expansion, banks that are foreign to East Africa have also increased their presence in the region, usually entering through the Kenyan market. Table 2 shows that the proportion of total banking assets owned by foreign banks in Kenya is over 30% indicating a high foreign bank presence. This raises a further question as to why Kenyan banks seek to grow into other countries when, apparently, there still remains untapped potential at home which foreign banks find appealing to exploit. Indeed, statistics show that a majority of Kenya's adult population is still unreached by financial services (Beck et al., 2010; FSD, 2013): as of 2013, 25.4% of adult Kenyans were excluded from any form of financial services and only about 32.7% of adults had access to formal prudential financial services. The finding of Ěihák and Podpiera (2005) that international banks are generally more efficient and more active in lending than domestic banks in East Africa, raises further questions: Are Kenyan banks being "pushed" out by competitive pressures exerted by the more efficient foreign banks or being "pulled" into regional markets by the allure of better profit and growth opportunities? Are Kenyan banks more efficient than their counterparts in the region's debt markets and seek to profit from their relative efficiency advantage? As Table 1 shows, foreign expansion activities of East African banks are a relatively recent phenomenon; it has attracted no empirical investigations. Our paper seeks to pioneer the understanding of the drivers of foreign expansion of the region's banks.

A major contribution of this paper is that it has, for the first time in the literature, drawn parallels between the planning and the implementation phases of banks foreign expansion decisions. In this regard, our results support the view that institutional quality is important at the planning phase even though its importance is muted at the implementation phase of banks' foreign expansion decisions. Second, results suggest that banks *consider* going abroad due to competitive pressures currently exerted by their stronger, more efficient competitors as well as by their domestic competitors having expanded abroad. Other key findings include: first, economic integration measures recently adopted by East African governments do not explain banks foreign expansion decisions. Second, the desire for greater earnings does not seem to motivate banks regionalization activities; rather, banks with relatively weaker market power seem to be expanding abroad as a means to survive competition from their stronger peers. Third, relatively higher inflation in the foreign country is a deterrent to Kenyan banks foreign expansion activities. Fifth, deeper financial markets at home present fewer opportunities for Kenyan banks to serve the domestic market hence "pushing" them into the foreign markets. Sixth, Kenyan banks' seek to exploit the benefits of their relative efficiency through regional expansion. Finally, contemporaneous legal-political developments and follow-the-client hypothesis cannot explain banks' foreign expansion drive.

1.1 *Related Literature*

Internationalization of banks has been explained theoretically. First, the *trade theory* (Aliber, 1976), explains it through the comparative advantage hypothesis: different countries subject banks to different operating environments which determine the efficiency with which they produce their products. Less efficient banks are less likely to acquire necessary capital and maintain their market shares, which might be lost to more efficient (foreign) banks. Second, the *industrial organization theory* argues that the spread differential may explain the nature of competition and market structure in the banking industry (Aliber, 1976). Large spread differentials often obtain in countries with high bank concentration ratios: such countries' banks enjoy higher profits and are more able to raise capital for (foreign) expansion. Third, the *international investment hypothesis* ascribes the rise in multinationalization of banks to imperfections in international financial markets (Grubel, 1977). Imperfections may be introduced by state-induced distortions, such as regulations (Buch, 2003), or market-related distortions, such as imperfect market structures and market failures (Cho, 1986).

Fourth is the *eclectic theory* of internationalization. Dunning (1980, 1988) argues that a firm's level of involvement in multinational activities is determined by a combination of its ownership-specific, location-specific and internalization advantages. Ownership-specific advantages take the form of possession of intangible assets or of the advantages of common governance which are, for a period of time, exclusive to the possessing firm (Dunning, 1988). If ownership advantages exist, it is wise for the firm to use them itself, through an extension of its value-added chains or adding of new ones, rather than sell or lease them (Dunning, 1980, 1988). The benefits reaped in this manner are the internalization advantages, more likely to be available in industries that use proprietary information extensively than to those that do not (Casson, 1979). Location-specific advantages, accrue from differences in countries endowments, and may be in the form of different national regulatory frameworks, effective interest rate differentials, differential economic situations, and general socio-economic factors (Cho, 1986). Banks can reap location advantages by operating at the better endowed location or, if already there, using it to their advantage in the less endowed location.

Empirical studies that have examined these theories find several factors relevant to bank internationalization, including, the level of domestic country trade overseas, exchange rate changes (Goldberg and Saunders, 1980), regulations of the destination markets (Buch, 2003; Herrero and Pería, 2007), information costs (de Paula and Alves Jr., 2007), population, per capita income, levels of domestic deposits (Goldberg and Johnson, 1990), size of the bank, effective lending rate differentials, size of host banking market (Cho, 1986), size of the home country, level of home country FDI (Fisher and Molyneux, 1996), expected growth and degree of openness and diversification potential of host market, and efficiency of the subject bank (Focarelli and Pozzolo, 1999). Banks also expand into foreign markets to serve their domestic clients that have internationalized (Dahl and Shrieves, 1999; Konopielko, 1999), or are induced by high degree

of integration between the destination country and the home country, concentration of banks, profit opportunities and institutional characteristics of home and host countries (Focarelli and Pozzolo, 2005; Schoemaker and van Laecke, 2007) and to take advantage of their superior customer screening technology (Althammer and Haselmann, 2011).

Claessens and Van Horen (2008) find that, for banks which are used to working in countries with strong [weak] institutions, a relatively high [low] institutional quality in the host country positively impacts cross-border entry. Hryckiewicz and Kowalewski (2010) find that expected economic expansion, legal, cultural and geographical proximity to the host country play a key role in attracting foreign banks to emerging markets. However, unlike the literature from developed markets which largely supports “follow-the-client” hypothesis, they find that foreign bank entry may precede foreign entry by nonfinancial firms. Importantly, they find that foreign banks appeared to prefer entering less risky emerging markets, during the financial crisis, through acquisitions rather than branches. These findings are interesting in the East African context, where Kenyan banks venture into neighboring countries with relatively weak institutional quality, and, where direct investment is the preferred mode of foreign entry.

Although similar in several respects to many of the foregoing empirical studies, our study differs markedly from those in the extant literature because it examines foreign expansion decisions of banks domiciled in a less-developed country to other less-developed countries; the literature has focused more on developed markets cross-border banking activities and practices. We could not trace any empirical studies in Africa of the motives for bank expansion abroad in the literature. However, a review by Lukonga and Chung (2010) suggests that the expansion abroad, particularly by South African and Nigerian banks, could have been driven by the need to finance an expanding corporate clientele, liberalization, increase in required minimum capital, the emerging ideology of becoming global players, and limited opportunities in domestic markets. Our study seeks to empirically examine whether these factors, and others, actually explain foreign expansion of Kenyan banks into other East African countries.

The remainder of this paper proceeds as follows: Section 2 discusses our choice of factors; Section 3 presents the data and the baseline empirical model; Section 4 presents and discusses findings from the baseline analysis and robustness tests; Section 5 concludes.

2 Factors explaining cross-border bank expansion

The literature review suggests several possible determinants of cross-border activities of banks. Below, we recap the key factors and specify the variables used to capture them in this study.

2.1 *Home country factors*

Foreign direct investment. Many studies suggest that “follow-the-client” motive informs banks’ foreign activities (Goldberg and Saunders, 1980; Konopielko, 1999). Follow-the-client refers to the tendency of banks to expand into foreign countries to service the needs of their domestic clients doing business abroad. The economic variable typically used to capture this tendency is net FDI of non-financial firms in host countries. We are unable to obtain either a sectoral breakdown or a country-specific breakdown of Kenya’s outbound FDI. Therefore, we use national outward stock of aggregate FDI. FDI data, obtained from United Nations Conference on Trade and Development (UNCTAD) database in millions of US dollars, is converted into logarithmic form for our analysis. Since larger outgoing FDI potentially provides banks greater foreign business, a positive coefficient is expected.

Depth of the domestic banking system. Focarelli and Pozzolo (2005) argue that deeper domestic banking markets expand business opportunities which enable banks to offer more innovative products to fully exploit profit opportunities locally rather than expand abroad. In this case, depth of the domestic banking market is negatively related to internationalization. However, deeper banking systems also provide banks with a steady income at home, and enable them to finance their foreign activities (Schoenmaker and van Laecke, 2007): this implies a positive relationship between depth of the domestic banking system and internationalization. Thus, the sign of the depth coefficient must be explained contextually. Two of the most prominently used proxies for the depth of financial markets are equity market capitalization and credit to the private sector as a proportion of GDP (Buch, 2003; Schoenmaker and van Laecke, 2007). Because stock markets in the East African region are fairly young or non-existent, we measure financial market depth as credit to the private sector as a proportion of GDP.

Domestic market competition. When a firm is a monopoly, it has absolute market power and can set prices at levels that maximize its profits. As firms enter the industry and competition sets in, the market as a whole sets prices and the once monopolistic firm gradually loses market power and becomes a price-taker. Therefore, a high number of firms in an industry limits the scope for expansion and growth in market shares (Schoenmaker and van Laecke, 2007) and may push firms to seek growth in other markets. We use the Lerner index to measure market power. Increases in the Lerner index imply declines in competition with a value of unity denoting monopoly and a value of zero denoting perfect competition.

Figure 1 displays the trend in the Lerner index for Kenya’s banking industry over the study period: market power generally increased between 2002 and 2006; declined between 2006 and 2009 and went on an upward trajectory again after 2009. Overall, a mild increasing trend is observed. This may be consistent with a situation in which few large banks (perhaps foreign) dominate the banking market, as demonstrated by the relatively high 5-bank concentration ratio of 59.3% in Table 2. If banks in a market with this characteristic are expanding

abroad, it may suggest that smaller, less efficient (perhaps local) banks are being “muzzled” out by their stronger (perhaps foreign) competitors. However, the mild increment in the Lerner Index might also indicate that Kenyan banking industry’s competitiveness increased gradually over time, implying that average competitive Kenyan banks are seeking more “elbow-room” abroad to carve out a niche market. Since the number of Kenyan banks going abroad has generally increased during this period, a positive sign is expected.

2.2 *Destination/host country factors*

Foreign market opportunities. Availability of profit opportunities may attract banks into a country. The literature has linked profit opportunities to a number of indicators including country risk (Fisher and Molyneux, 1996), income per capita (Goldberg and Johnson 1990), total income (Buch, 2003) and size of the banking sector (Grosse and Goldberg, 1991). However, none of these studies provide any empirical evidence linking international bank activity to any of these variables. The size, and level of development, of a country also determines available opportunities in her markets. We use the difference in economic growth rate (proxied by GDP), to measure the size of the foreign economy relative to size of the domestic economy to proxy foreign market opportunities. If the sign of this variable, over time, is predominantly negative, the implication is that the domestic market offers better profit opportunities than foreign markets and the estimated coefficient should be negative. Conversely, the coefficient estimate should be positive if the variable has a tendency to be positive over time.

Foreign trade. Foreign trade creates a demand for banking services. The nature of international trade is such that at least two banks are involved, at least one representing each trader, to facilitate both financing and payments. Banks may want to take advantage of this situation by having some of their activities in the foreign country so as to be able to handle both sides of the transaction. We measure foreign trade as the proportion of bilateral imports and exports between Kenya and each of the host countries to total trade (imports and exports) between Kenya and the world. Increases in trade between countries are expected, other things constant, to increase the demand for financial services and hence to attract domestic banks into foreign countries.⁴ A trend in bilateral trade between Kenya and the three host countries is presented in Figure 2. The figure shows that bilateral trade between Kenya and Uganda has been declining while Kenya’s trade with Tanzania and Rwanda has been steady over time. In absolute terms, however, Kenya’s trade with Uganda appears to dominate Kenya’s foreign trade in the region. This is interesting because there are more Kenyan banks and branches in Uganda than in each of the other countries (Table 1). This observation seems to suggest that economic integration efforts recently pursued by East African governments might not be important in explaining

⁴Bilateral trade, like geographical distance, is typically regarded as a proxy for information costs. Countries are known to trade more with countries with which they share culture because exchange of information is easier, faster and less costly. Frequently, countries with similar cultures are close to each other geographically.

cross-border expansion of banks in the region.

Host country regulatory quality and rule of law. According to Levine (1998), foreign banks feel more secure about expanding into countries where enforcement of contracts is easier; this underscores the importance of the rule of law and regulatory quality as key determinants of cross-border bank expansion. We obtain regulatory quality and rule of law indices from the World Bank's World Governance Indices (WGI). The rule of law index measures perceptions of the quality of contract enforcement, property rights, the police, and the courts, and the likelihood of crime while the regulatory quality index measures perceptions of the ability of the government to formulate and implement sound policies that promote private sector development. Both indexes provide the country's score in units of a standard normal distribution, ranging from -2.5 to $+2.5$.

Since the perception of good regulatory quality and rule of law are attractive to foreign businesses, a positive coefficient sign is expected if the indices show an increasing trend and a negative coefficient sign should capture a decreasing trend in the indices. Figure 3 displays trends in the two indexes for each of the three host countries. The figure shows a general improvement in investors' perceptions of rule of law in the three countries but mixed perceptions of governments' ability to promote regulations that foster private sector development. In this situation, a positive coefficient sign is expected for rule of law while the coefficient for regulatory quality should depend on whether the joint effect of Tanzania and Uganda dominate Rwanda in the panel.

Foreign inflation. The rate of inflation has been used in previous studies (e.g., Haselmann, 2006) to control for economic stability. Inflationary pressures tend to have a negative impact on the growth of loan demand so that a high inflationary environment is a deterrent to foreign bank entry. We use the GDP deflator as the inflation proxy. The GDP deflator is preferred because, unlike the standard price indices, it is based on a basket of goods that is allowed to change over time in response to people's consumption and investment preferences as prices change and hence captures price, and economic stability, better. The trend in inflation differentials (i.e., host countries' GDP deflator minus Kenya's GDP deflator) between Kenya and the host countries are shown in Figure 4. The figure shows that that Kenya's rates of inflation was on average less than the rates on inflation in the host countries (positive differences), indicating greater price stability in Kenya. We expect a negative relationship between foreign inflation (the inflation differential) and foreign bank expansion.

Relative foreign banks efficiency. The internalization advantages hypothesis of eclectic theory suggests that more efficient banks would take advantage of their better efficiency by expanding business beyond their current market. The cost-to-income ratio has traditionally been the favorite indicator of efficiency among empirical analysts. A high cost-to-income ratio, on average, indicates less efficient banking operations in a given country. However, Focarelli and Pozzolo (2005) observe that a high cost-to-income ratio might also be indicative of the presence of highly skilled workers, which leads to high labor costs. Thus, in addition to this ratio, we also proxy efficiency with the overhead-to-assets ratio, which excludes labor costs. To construct the efficiency variables, we first

convert the efficiency indicators into their logarithmic forms and then obtain the differences (host country minus Kenya) between the host countries and Kenya to obtain the relative efficiency of host country banks. Time trends of the resulting variables are depicted in Figure 5.

The figure shows that Rwandan banks are less efficient than Kenyan banks (positive differences) while Tanzanian banks are generally more efficient than Kenyan banks (negative differences); Ugandan banks were more efficient than Kenyan banks in the early years (until 2006) but less efficient in the later years. Over time, other than Rwanda for which a definite trend is difficult to discern for the cost-to-income ratio, there appears to be an upward trend for both variables, indicating that efficiency levels are, on the average, tilting in favor of Kenyan banks relative to their host country counterparts. Positive coefficient estimates are therefore expected for the efficiency variables.

2.3 *Relationship factors*

Economic integration. Countries within the Eastern Africa region have made vital strides towards economic integration through the East African Community (EAC). The EAC was formed in November 1999 when the heads of state of Kenya, Tanzania and Uganda signed a treaty to that effect. The treaty came into force in July 2000 upon its ratification.⁵ Subsequently, Rwanda, Burundi and Southern Sudan were admitted into the community. In order to realize benefits of a large market, the EAC established a customs union in March 2004 and a common market in November 2009. In practice, the extent of integration is typically observed in bilateral trade of countries. In addition to the trade variable, already discussed, we also use a geographical distance variable as an integration proxy. We measure distance as log of the land distance between Nairobi (Kenya's capital) and the host countries' capitals. We expect the distance variable to have a negative coefficient.

Foreign exchange rates. A depreciating foreign currency tends to make foreign assets less expensive relative to domestic assets and might encourage cross-border bank expansion. Because we cannot obtain bilateral exchange rates directly, we use local currency/SDR exchange rates from IMF's International Financial Statistics to develop cross rates of exchange between the East African currencies. We define the exchange rate as number of units of the host country currency per unit of the Kenyan Shilling (KES) so that increases represent depreciating host country currencies. There is no clear trend in the exchange rate series for all three host countries.

⁵Information accessed from the East African Community website: http://www.eac.int/index.php?option=com_content&view=article&id=44&Itemid=54

3 Methodology

3.1 Empirical strategy

Central Bank of Kenya (2012a) reports that eleven Kenyan banks operate across East Africa: All of the eleven banks have operations in Rwanda, Tanzania and Uganda and one and two respectively operate(s) in Burundi and Southern Sudan. Because of data paucity for Burundi and South Sudan, we examine the nexus between the number of Kenyan banks entering the first three East African countries (dependent variable) and the explanatory variables defined in the foregoing section.

Our dependent variable (y), which can only take non-negative integer values, is a count variable. For this kind of data, linear models are inappropriate because some estimators may predict negative values of y (Maddala, 1985). If the values of y were strictly positive, one could perform the natural log transformation, $\ln(y)$, and use a linear model. However, in many count data applications, y often equals zero for a sizable proportion of the population (in our case $y = 0$ at least once). In such cases, it is better to model the estimation problem indirectly and to “choose functional forms that ensure positivity for any combination of values of regressors (x) and parameter estimates ($\bar{\beta}$)” (Wooldridge, 2002: 645). The Poisson regression model is favorite for count data. Features of the Poisson model which make it the most appropriate for count data dependent variables are: first, if the data follows a Poisson distribution, then the conditional maximum likelihood estimators are fully efficient; second, the Poisson quasi-maximum likelihood (QML) estimator is fully robust to distributional misspecification – it maintains certain efficiency properties even when the data generating process is not truly Poisson (Wooldridge, 2002).

Therefore, we model the problem as a Poisson distribution of the form:

$$P(Y_{it} = y) = \frac{e^{-\lambda_{it}} \times \lambda_{it}^{y_{it}}}{y_{it}!} \quad (1)$$

where i is the index of host countries, t represents time in years, and y is the number of banks entering into host country i from Kenya at time; λ is the mean of y . The practice is to fit the mean of the distribution in equation (1) as a log-linear function of the explanatory variables (Wooldridge, 2002; Hryckiewicz and Kowalewski, 2010):

$$\ln \lambda_{it} = \beta_0 + \beta_1 H_t + \beta_2 R_{it} + \beta_3 D_{it} + \varepsilon_{it} \quad (2)$$

where H_t is the vector of variables specific to the home country (Kenya) at time t ; R_{it} is the vector of variables speaking to the relationship between Kenya and destination country i

at time t ; D_{it} is the vector of factors specific to destination country i ; and ε_{it} is noise. The strength of logarithmic modeling stems from the observation that the effect of predictors is often multiplicative in count data: for instance, if the population size increases by two, the mean would be twice as large. We

employ the QML estimation. We check the robustness of the Poisson model through several diagnostic tests as well as by fitting the data using alternative distributions (Section 4.2).

3.2 *Data*

We obtain FDI data from UNCTAD; trade data from the IMF’s Direction of Trade statistics; GDP, domestic credit, inflation rates, rule of law, regulatory quality and Lerner indices are from the World Bank databases. The number of foreign subsidiaries of Kenyan banks is obtained from the Central Bank of Kenya. Banks’ monetary investments in subsidiaries are from Bankscope. Observations of all variables are in annual frequency. Although many East African countries liberalized their markets in the mid-90s, cross-border banking in the region only began after 2000. Our study covers 2002-2012.

Summary statistics are presented in Table 3. The averages provide interesting reading. First, the table shows that Kenya’s outgoing foreign direct investment (FDI) averaged only about USD 197 million (exp. 5.283) per year, or approximately 0.7% of GDP [which averaged USD 25,156 million (World Bank data)] over the period. Second, Kenya’s credit to the private sector is only about 29% (exp. 3.375) of GDP (DEP), indicating that a large segment of the population probably still remains unreached by formal financial services. The GDP growth rate differential is, on average, positive, indicating that economies in the East African region were expanding at a faster rate than Kenya’s. Another important observation is that Kenyan banks appear more efficient, on average, than their counterparts in the region (the means of both the cost-to-income (CTI) and over-head-to-assets (OTA) differentials are positive), a preliminary indicator that internalization advantages may be central in driving bank expansion. However, the Lerner (LER) index (0.314 on average) is closer to zero than unity, suggesting that banks are probably being “pushed” to expand regionally by competitive pressures in the domestic market.

Table 3 also presents the correlation matrix for the study’s explanatory variables. Save for a few isolated cases (for instance FDI and DEP at 0.892 and TRA and EXR at 0.884), correlation coefficients are fairly low in general. However, the few highly correlated variables might cause multicollinearity problems in our estimations. Econometric theory suggests that multicollinearity can be reduced by eliminating one or more highly-correlated variables, or by combining two or more variables into a single matrix, or through ridge regression, or through the principal components method.

However, these treatments are not without setbacks. In ridge regression for instance, one adds a constant to the variances of the explanatory variables before solving the normal equations; while the procedure may help to reduce the mean squared error, it produces biased estimators and is not invariant to units of measurement of explanatory variables as well as to linear transformation of variables (Maddala, 1992). The principal components method, which employs a linear transformation of regressors, has also been faulted for generating variables that are not economically meaningful (Maddala, 1992) and hence estimators

that are not easily amenable to policy interpretation. Dropping or combining variables also often causes omission of information which may result in biased coefficient estimates (Greene, 2000).

To deal with potential multicollinearity problems, we use variables elimination technique: we test for collinearity after every estimation and omit variables with high Variance Inflation factors and estimate again with the remaining variables. We do this until we find no evidence of collinearity. However, we report all estimations to demonstrate that eliminating variables does not result in material biasing effects that may affect the robustness of our findings.

4 Empirical Results

4.1 *Results of baseline tests*

Empirical estimation outputs are in Table 4. The table provides results for six equations, three each with one bank efficiency measure. Equations (1) present results with the entire set of explanatory variables; following post-estimation multicollinearity test, we omit the variable with the highest variance inflation factor – distance – and estimate equations (2). We perform the multicollinearity test again and omit foreign exchange rate. The results reported in equations (3) are absolutely free of multicollinearity. Except for a few exceptions, highlighted in the following discussion, results of the three equations are qualitatively similar indicating that omission/inclusion of the variables does not result in serious biases. Importantly, it is clear that the reduction in the McFadden R-square, following the omission of these variables, is very small, implying that the marginal contribution to the model’s explanatory power of omitted variables is weak. The omitted variables simply replicate other variables’ information content: for instance, “distance” can be easily replaced by “trade” because they both speak to information cost.

We begin our analysis with the controversial debate as to whether or not banks follow their customers abroad. We contribute to this debate through two regressors. First is the domestic country (Kenya) outward FDI. For each equation (except equation 1b), this variable is positive and significant. These results lend themselves to the inference that follow-the-client abroad is a potential motive for the aggressive regional expansion witnessed recently among Kenyan banks. However, the FDI variable, as defined, has some shortcomings. First, FDI is defined as the total foreign direct investment outflows to *all* countries. Second, a more appropriate measure would have been the FDI outflows of non-financial institutions; however, we were unable to obtain a sectoral breakdown of FDI flows. Interpreting the FDI output in the context of “follow-the-client” must, therefore, be done with caution. In a broad sense, therefore, we may just surmise that an increment in Kenya’s foreign investment outflows, in general, includes an increment in foreign direct investments of commercial banks.

Given the tentative FDI evidence, we also use the foreign trade variable as the second test of follow-the-client hypothesis. From the World Trade Organiza-

tion breakdown, we observe that Kenya is one of the largest exporters to each of the three East African countries and one of the largest importers from Uganda and Tanzania, although not from Rwanda. These observations may be explained by Kenya's more diverse economy and by geographical distance (Kenya shares a common border with Tanzania and Uganda but not with Rwanda). Estimated coefficients are negative (and insignificant) with exchange rates in the equation but positive when exchange rates are omitted. The coefficient is only different from zero in one of the regressions, indicating that follow-the-client hypothesis has no robust support in the East African banking arena. In this regard, our results support those of Hryckiewicz and Kowalewski (2010) who also report that follow-the-client motive is not very important in developing economies.

As we argued earlier, the foreign trade variable can also be interpreted from the economic integration viewpoint. The results appear to suggest that economic integration, a policy pursued rather aggressively in recent years by East African governments, does not play an important role in explaining banks' cross-border expansion decisions. In support of this inference is the distance variable whose estimated coefficients are not statistically significant. We interpret these results in the context of the IMF (2009) study which tests for capital markets integration of East African economies and finds results suggestive of the view that the markets are not properly integrated. That is, measures adopted by the EAC governments, such as the adoption of the EAC common markets area, appear not to have promoted economic integration in the region. IMF (2009) ascribes the lack of proper integration in the East African region to policy divergences as well as institutional and structural weaknesses.

An important variable informing bank's cross-border expansion decisions is depth of the domestic financial market. Our coefficient estimates are all negative and highly statistically significant. In the words of Goldberg and Johnson (1990), this finding suggests that there are fewer opportunities for Kenyan banks to serve the domestic market when the levels of domestic banking activity are high. Consequently, deeper home markets force banks to establish subsidiaries abroad. Similarly, the inflation differential, as expected, reports negative and very significant coefficients. We draw from this result the inference that high inflation may send the signal of potential macroeconomic instability and reduced demand for financial services in host countries, hence discouraging banks from expanding across borders.

Market power, proxied by the Lerner index, has positive coefficients, which are significant in some regressions, especially those in which the multicollinearity effect have been completely eradicated. This is weak evidence in favor of the interpretation that competitive pressures in Kenya's banking market might be responsible for banks outward-looking expansionary decisions. We examine the crucial role of this variable in informing future bank expansion decisions in Section 4.3. Efficiency indicators, however, report interesting findings: whilst the cost-to-income ratios are all insignificant, the overheads-to-assets ratios are all positive and significant. As we explained earlier, the former ratio may not be a good efficiency proxy because it includes labor costs which may reflect high labor costs in a country or employment of highly skilled (and hence more ex-

pensive) labor. Thus, our preferred efficiency indicator is the overhead-to-assets ratio, which excludes labor costs. The results suggest that Kenyan banks' relatively more efficient operations place them at an advantage, over their regional counterparts, which they seek to exploit through cross-border expansion.

The question of whether the profit motive is an important driver of foreign bank expansion is next. We use differences in GDP growth rates between host countries and Kenya to capture opportunities for growth and profit: higher income may elicit higher demand for financial services. None of our coefficient estimates is significant. The desire to realize greater profits does not seem to motivate banks regionalization decisions. Another important finding from this study is that banks do not seem to mind the contemporaneous developments in the rule of law in the host country. Also, perceptions about the host country's commitment to making business friendly regulations appear only marginally important. Thus, institutional quality and issues around contract enforcement and property rights are not important in explaining banks foreign expansion decisions. This may be because the rule of law is generally perceived to be weak even in the home country, or because capital commitments already made cannot be reversed in the short term merely because of waning perceptions of, for example, contract enforcement. We return to this issue in section 4.3.

Diagnostic statistics show that the model is appropriate for the data and has a good fit (see the log-likelihood statistics). The hypothesis that observations are over-dispersed, which may make the Poisson model inappropriate, is rejected, as per the over-dispersion tests results. Further, we cannot reject the hypothesis that the error terms are normally distributed.

4.2 *Robustness tests*

4.2.1 *Alternative model specification*

Our first robustness check involves fitting the ordered probit model on the data. For each efficiency measure, we present only one equation – the one for which there is no multicollinearity. Results are presented in Table 5. Equations (1) and (2) of Table 5 are comparable with those in equation (3a) and equation (3b), respectively, of Table 4. The results show that variables that were significant with Poisson estimation remain significant while those that were not different from zero remain so. There is one exception, though: the domestic market power variable is not significant in equation (2) of Table 5 (unlike the comparable result in equation (3b) of Table 4). However, this is consistent with the observation in Table 4 that the variable is significant in some equations but not in others – and because of which we inferred that market power is only weakly important in informing Kenyan banks' foreign expansion decisions.

4.2.2 *Assets of foreign subsidiaries*

In our second robustness check, we test the ability of the hypothesized factors to explain the amount of money invested by Kenyan banks abroad. Since data on

foreign direct investments of Kenyan banks are not directly available, we proxy investment by netting total assets in unconsolidated balance sheets from total assets in consolidated balance sheets. Consolidated statements, obtained from Bankscope, include banks' local subsidiaries. However, except for two banks which also own local subsidiaries, the rest of the banks only have foreign subsidiaries. Data obtained through this procedure therefore reasonably represent the foreign asset holdings of Kenyan banks. However, we use these data with caution because assets determined in this manner include both stock and flows; the flows, in turn, include new capital to maintain existing subsidiaries as well as new capital to open new subsidiaries. Using these assets as the dependent variable (y), and controlling for country specific influences, we estimate equation (3), through the fixed effects regression:

$$y_{it} = \beta_0 + \beta_1 H_t + \beta_2 R_{it} + \beta_3 D_{it} + \varepsilon_{it} \quad (3)$$

where, as before, H_t is the vector of variables specific to the home country (Kenya) at time t ; R_{it} is the vector of variables speaking to the relationship between Kenya and destination country i at time t ; D_{it} is the vector of factors specific to destination country i ; and ε_{it} is noise. Results are shown in Table 6. We report results for the full model [equation (1)] and the model for which multicollinearity has been eliminated [equation (2)]. But for isolated cases, there is striking similarity in variable significance between Table 4 and Table 6, a clear signal that our results are robust to different proxies of foreign bank presence and different estimation methods.

The results indicate, consistent with Poisson regression findings, that domestic FDI outflows are positively and significantly related to bank investment abroad. Similarly, the domestic financial market depth coefficients are strongly significant, upholding our earlier finding. However, the coefficient signs for this variable are all positive (they were negative with Poisson regression). Since the dependent variable used here (investment in foreign subsidiaries) partially captures capital flows (both for existing and new business), we interpret the positive coefficient in the context of Schoenmaker and van Laecke (2007) who argue that deeper banking systems provide banks with a steady income at home, and enable them to *finance* their foreign activities. Inflation is negatively related to investments in foreign subsidiaries, confirming that Kenyan banks are wary of potential economic instability in host countries. However, inflation is only significant when exchange rates and distance are omitted from the model, suggesting that the inflation and exchange rates might provide similar signals to bank decision makers.

Overhead-to-assets ratio still performs better than cost-to-income ratio as an efficiency proxy: generally, results suggest that banks will expand with a view to using their more superior cost management to outcompete less efficient banks in host countries. A key finding that cuts across our alternative specifications is that contemporaneous governance issues are not related to banks foreign activities. This might be suggestive of indifference among bank managers of developments in judicial-political environment once a decision has been

taken to institute operations in a foreign country. This interpretation is broadly consistent with the argument of Claessens and Van Horen (2008) that banks operating in low [high] institutional quality environments are drawn to similar operating environments.

4.3 *Predicting banks' foreign expansion decisions*

We now try to understand which of the explanatory variables may predict future bank entry into foreign markets. For instance, high foreign income levels today might elicit greater need for banking services and bring on board population segments hitherto unbanked and might, therefore, inform a bank's decision to expand into the (foreign) country in future. To get insights into this issue, we run our baseline Poisson regression with explanatory variables lagged one period, as in equation 4:

$$\ln \lambda_{it} = \beta_0 + \beta_1 H_{t-1} + \beta_2 R_{i,t-1} + \beta_3 D_{i,t-1} + \varepsilon_{it} \quad (4)$$

where H_t is the vector of variables specific to the home country (Kenya) at time t ; R_{it} is the vector of variables speaking to the relationship between Kenya and destination country i

at time t ; D_{it} is the vector of factors specific to destination country i ; and ε_{it} is noise. Results are presented in Table 7. The results show that three important variables inform banks' future foreign expansion decisions. First, the stock of domestic outward FDI is positively related to future decisions to set up shop abroad. Now, since the FDI variable includes stock of banks' foreign assets, this finding suggests that banks are likely to expand abroad if (some of) their domestic competitors already have a foreign interest – akin to the small-banks-follow-large-banks hypothesis of Barron and Valev (2000). The second important factor is bank domestic power. Recall that the Lerner index depicted a situation of gradually increasing market power in the domestic market with time (Figure 1).

Following our interpretation in Section 2, we infer that the bulk of banks *considering* going abroad are those for which the increasing market power (and strong-bank concentration) is unfavorable – these are likely to be medium-size domestic banks receiving the “short end of the competition stick” from larger foreign-domiciled conglomerates. Finally, foreign regulatory quality appears to have a weak-to-mild effect in informing banks future foreign expansion – again, we emphasize that the foreign legal-and-regulatory environment proxy for institutional quality whose importance is more manifested in banks' foreign expansion *planning* processes than it is reflected in the *implementation* phase of the decision.

5 Conclusions

The fast-changing business environment in East Africa has seen many commercial banks getting aggressive, with some moving across geographical borders to

grow their revenues. Prior to this study, it has not been clear exactly what was motivating these banks to seek foreign markets. Our empirical strategy uses Poisson regression with Kenya as the source country and three East African countries of Rwanda, Tanzania and Uganda as host countries. The eclectic theory of internationalization of firms provides the analytical framework.

Our results suggest that follow-the-client hypothesis is relatively muted in the East African banking arena. Second, we find that various measures recently adopted by the governments in East Africa, such as the adoption of the EAC common markets area, appear not to have promoted economic integration in the region and do not explain banks foreign expansion activities. Third, the desire for greater earnings does not seem to motivate banks regionalization decisions; rather, there is weak evidence that banks, with relatively weaker market power seem to be expanding abroad as a means to survive the competitive pressures exerted by relatively larger, perhaps more efficient banks in the domestic market. Fourth, relatively higher inflation in the foreign country is a deterrent to Kenyan banks' foreign expansion activities. Fifth, deeper financial markets at home present fewer opportunities for Kenyan banks to serve the domestic market hence "pushing" them into the foreign markets. Based on the arguably superior efficiency proxy, the overhead-to-assets ratio, we find that Kenyan banks' relatively more efficient operations place them at an advantage over their regional counterparts, which advantage they seek to exploit through cross-border expansion. Finally, we find that contemporaneous legal-political developments do not explain regional expansion decisions of Kenyan banks.

We also run predictive regressions, which help us separate the *planning* and *implementation* phases of foreign investment decisions of commercial banks. The results support the view that foreign institutional quality (governance and the legal framework) is important at the planning phase even though its importance is muted at the implementation phase of foreign capital investment decisions of banks. Second, we find that banks might consider expanding abroad if their domestic competitors have expanded into foreign countries. Third, our findings also lend themselves to the interpretation that banks *consider* going abroad due to competitive pressure exerted by their stronger, perhaps more efficient competitors.

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Table 1: Foreign operations of Kenyan banks

Panel A: Kenyan banks entering foreign markets											
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total number	0	0	1	1	2	3	3	2	1	3	2
Total investment ^a (KES million)	2586	2282	5914	6356	8543	19868	48679	74030	110016	155709	221382

Panel B: Kenyan banks' foreign operations											
Country	Number of branches		Total deposits (% of total ^b)		Total assets (% of total ^b)		Profit before tax (% of total ^b)		Number of employees		
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	
Burundi	4	5	0.06	0.09	0.10	0.26	0.06	(0.04)	45	97	
Rwanda	27	51	1.00	1.76	1.17	2.91	0.13	0.46	601	1088	
Uganda	113	125	2.51	3.01	3.17	5.28	0.61	0.60	1608	1684	
Tanzania	56	70	3.94	3.93	4.35	7.29	0.87	1.50	1025	1384	
South Sudan	23	31	2.87	3.24	3.08	4.94	1.08	2.27	481	527	
Total	223	282	10.38	12.03	9.84	20.67	2.57	4.80	3760	4780	

Data Source: Central Bank of Kenya and Bankscope

^a Author's estimates from Bankscope data.

^b Includes domestic and foreign items of all commercial banks operating in Kenya.

Table 2: Stylized facts on commercial banks in East Africa, 2011/12

	Kenya	Rwanda	Tanzania	Uganda
Number of licensed commercial banks	44	9	30	25
Number of licensed foreign banks	13	6	22	22
Foreign banks' share of total assets, %	33.4	42.0	48.9	73.7
Number of domestic banks operating abroad	11	1	1	N/A
Number of bank branches	1161	638	397	455
Bank cost to income ratio, %	53.3	69.5	68.2	52.6
5-Bank concentration ratio, %	59.3	91.2	67.2	73.6
Banking sector penetration levels ^a , %	67.0	25.0	30.0	41.0
Banks return on equity, %	30.1	13.2	13.7	22.0
Domestic credit to private sector, % of GDP	36.6	N/A	17.9	16.2

Data Source: World Bank; Central Banks of individual countries

^a The penetration ratio is the proportion of the theoretical total market reached by a service or product. The theoretical total market is the estimate of the total potential customers, in this case, the population of adults in the country.

Table 3: Descriptive statistics

Panel A: Summary statistics												
	INV	FDI	DEP	LER	TRA	GDP	INF	REG	LAW	EXR	CTI	OTA
Mean	9.987	5.283	3.375	0.314	3.101	3.147	1.139	-0.367	-0.487	2.676	0.084	0.034
SD	1.666	0.376	0.148	0.053	1.918	3.084	5.750	0.236	0.190	0.531	0.183	0.259
Kurt	-1.644	-1.787	-0.976	-0.914	-0.412	2.264	0.506	-0.479	0.570	-1.494	-0.015	-0.832
Skew	0.020	-0.035	0.697	-0.346	0.400	1.314	0.696	-0.337	-0.860	-0.298	0.128	0.029
Min	7.733	4.812	3.203	0.220	0.642	-1.481	-7.119	-0.935	-0.929	1.798	-0.280	-0.485
Max	12.308	5.756	3.642	0.395	7.485	12.964	16.489	0.004	-0.123	3.389	0.553	0.492
Panel B: Pair-wise correlations for explanatory variables												
	FDI	DEP	LER	TRA	GDP	INF	REG	LAW	EXR	CTI		
DEP	0.892											
LER	-0.155	-0.196										
TRA	-0.174	-0.113	-0.092									
GDP	-0.155	-0.142	-0.660	-0.040								
INF	-0.129	-0.130	0.247	-0.048	-0.503							
REG	0.286	0.299	-0.061	0.637	-0.075	-0.282						
LAW	0.472	0.425	0.102	0.132	-0.138	-0.249	0.530					
EXR	0.123	0.096	0.071	0.884	-0.216	-0.036	0.587	0.316				
CTI	0.446	0.431	0.128	-0.658	-0.132	0.057	-0.340	-0.241	-0.504			
OTA	0.553	0.414	0.112	-0.346	-0.114	0.053	0.267	0.194	-0.210	0.535		

The table uses annual data for 2002-2012. SD is standard deviation; Kurt is kurtosis; Skew is skewness; Min is minimum observation; Max is maximum observation. Reported statistics are obtained with stacked data. INV is the log of amount (millions of KES) invested by Kenyan commercial banks abroad; FDI is log of domestic (Kenyan) outgoing stock of foreign direct investment; DEP is domestic market depth, measured as credit to the private sector as a proportion of GDP; LER is the domestic Lerner index; TRA is total trade between domestic and foreign economy as a proportion of total foreign trade between domestic economy and world; GDP is difference in annual rate of growth in gross domestic product between foreign and domestic economies; INF is relative foreign inflation, measured as the difference between foreign and domestic GDP deflator; REG is regulatory quality index; LAW is rule of law index; EXR represents bilateral exchange rates; CTI is cost-to-income ratio and OTA is overheads-to-assets ratio.

Table 4: Poisson regression results

	Efficiency: Cost-to-income ratio			Efficiency: Overhead-to-assets ratio		
	Eq. 1a	Eq. 2a	Eq. 3a	Eq. 1b	Eq. 2b	Eq. 3b
Constant	10.774 (14.54)	-5.973** (3.00)	-6.520* (3.62)	-27.011* (14.27)	-4.165** (1.91)	-4.927** (2.29)
Domestic FDI outflows	2.985*** (0.88)	2.409*** (0.78)	3.171** (0.64)	1.098 (0.68)	1.924*** (0.68)	2.573*** (0.58)
Domestic market depth	-2.825** (1.30)	-2.828** (1.37)	-3.607** (1.44)	-1.972** (0.96)	-2.534** (1.07)	-3.121*** (1.09)
Domestic market power	4.973* (2.86)	3.770 (2.83)	6.243*** (2.20)	0.519 (2.31)	1.754 (2.52)	3.803** (1.83)
Foreign trade	-0.295 (0.28)	-0.363 (0.28)	0.010 (0.08)	-0.215 (0.24)	-0.145 (0.28)	0.183** (0.08)
Relative GDP growth	-0.030 (0.06)	-0.007 (0.05)	0.002 (0.05)	-0.045 (0.04)	-0.061 (0.04)	-0.054 (0.04)
Foreign inflation	-0.060*** (0.02)	-0.051*** (0.02)	-0.056*** (0.02)	-0.076*** (0.02)	-0.080*** (0.02)	-0.085*** (0.02)
Foreign regulatory quality	-1.296 (1.21)	-0.166 (0.70)	-0.623 (0.68)	-0.926 (0.96)	-1.853** (0.82)	-2.312*** (0.87)
Foreign rule of law	-0.028 (0.87)	-0.292 (0.74)	-0.143 (0.77)	0.023 (0.83)	0.511 (0.71)	0.610 (0.71)
Exchange rate	-0.213 (1.18)	1.077 (0.78)		2.543*** (0.97)	0.925 (0.77)	
Distance	-2.517 (2.05)			3.180 (1.96)		
Cost-to-income ratio	-1.015 (0.89)	-0.392 (0.76)	-0.339 (0.81)			
Overhead-to-assets ratio				1.917*** (0.49)	1.367*** (0.32)	1.431*** (0.36)
McFadden R-square	0.200	0.196	0.189	0.221	0.216	0.211
Log-likelihood	-39.82	-39.99	-40.35	-38.80	-39.02	-39.27
Over-dispersion test	24.73 [0.00]	25.22 [0.00]	25.18 [0.00]	24.41 [0.00]	24.54 [0.00]	23.79 [0.00]
Residual normality test	0.935 [0.63]	1.30 [0.52]	0.54 [0.76]	3.44 [0.17]	3.86 [0.15]	0.92 [0.63]

This table reports coefficient estimates (robust standard errors in braces) of the panel Poisson regression with the number of subsidiaries being established abroad by Kenyan banks as the dependent variable. ***, ** and * indicate significance at 1%, 5% and 10% levels respectively. In square braces are p-values of diagnostic statistics. The over-dispersion test statistic is distributed as a chi-square with 1 degree of freedom. The residual normality test statistic is distributed as a chi-square with 2 degrees of freedom.

Table 5: Probit regression results

	Equation 1	Equation 2
Domestic FDI outflows	7.914*** (1.87)	7.418*** (2.64)
Domestic market depth	-8.740** (3.95)	-9.636** (4.52)
Domestic market power	15.414** (6.01)	10.565 (7.38)
Foreign trade	0.009 (0.21)	0.713** (0.35)
Relative GDP growth	0.018 (0.12)	-0.179 (0.13)
Foreign inflation	-0.127*** (0.04)	-0.276*** (0.08)
Foreign regulatory quality	-1.358 (1.78)	-7.940** (3.36)
Foreign rule of law	-0.718 (1.62)	1.729 (1.72)
Cost-to-income ratio	-1.493 (1.96)	
Overhead-to-assets ratio		5.856*** (1.97)
Log likelihood	-27.59	-23.24
Proportion “correctly predicted”	0.515	0.636
Likelihood ratio test	35.44 [0.00]	44.14 [0.00]

This table reports coefficient estimates (robust standard errors in braces) of the panel Probit regression with the number of subsidiaries being established abroad by Kenyan banks as the dependent variable. ***, ** and * indicate significance at 1%, 5% and 10% levels, respectively. In square braces are p-values of diagnostic statistics. The likelihood ratio test statistic is distributed as a chi-square with 9 degree of freedom.

Table 6: Fixed effects regression results

	Eq. 1	Eq. 2	Eq. 3	Eq. 4
Constant	-10.280*** (1.08)	-12.678*** (1.36)	-5.302* (2.93)	-14.525*** (1.07)
Domestic FDI outflows	0.130** (0.05)	3.604*** (0.08)	0.473** (0.17)	3.386*** (0.21)
Domestic market depth	3.852*** (0.38)	1.036*** (0.26)	2.373** (0.87)	1.841*** (0.16)
Domestic market power	0.379 (0.33)	0.567 (0.73)	-0.095 (0.74)	0.718 (1.09)
Foreign trade	2.201* (1.20)	0.024 (0.02)	1.586 (1.25)	0.018 (0.02)
Relative GDP growth	0.129** (0.04)	-0.008 (0.02)	0.079 (0.07)	-0.017 (0.02)
Foreign inflation	-0.004 (0.03)	-0.002*** (0.00)	-0.003 (0.03)	-0.011** (0.004)
Foreign regulatory quality	-0.003 (0.004)	0.186 (0.12)	-0.009 (0.01)	-0.166* (0.08)
Foreign rule of law	-0.227 (0.53)	0.220 (0.23)	-0.289 (0.39)	-0.227** (0.10)
Exchange rate	-0.013 (0.32)		-0.528** (0.22)	
Distance	-1.425 (1.10)		-0.966 (1.14)	
Cost-to-income ratio	0.572 (0.80)	0.922* (0.48)		
Overhead-to-assets ratio			1.121** (0.39)	0.720* (0.37)
Adjusted R-square	0.962	0.969	0.968	0.969
Log-likelihood	3.05	2.68	5.50	2.56
Differing group intercepts test	0.41 [0.67]	0.14 [0.86]	1.23 [0.32]	0.40 [0.67]
Residual normality test	2.07 [0.36]	3.07 [0.21]	4.56 [0.10]	1.98 [0.37]

This table reports coefficient estimates (standard errors in braces) of the panel fixed effects regression with the amount invested abroad by Kenyan banks as the dependent variable. ***, ** and * indicate significance at 1%, 5% and 10% levels, respectively. Standard errors are robust to heteroskedasticity and autocorrelation. In square braces are p-values of diagnostic statistics. The differing group intercepts test statistic is an *F*-distribution with (2, 20) and (2, 21) degrees of freedom, respectively for the first and second estimations. The residual normality test statistic is distributed as a chi-square with 2 degrees of freedom.

Table 7: Predictive Poisson regression results

	Efficiency measure: CTI		Efficiency measure: OTA	
	Equation 1	Equation 2	Equation 1	Equation 2
Constant	-13.08*** (2.20)	-12.947*** (2.11)	-12.826*** (2.15)	-12.70*** (2.09)
Domestic FDI outflows	1.554*** (0.38)	1.510*** (0.26)	1.383*** (0.36)	1.340*** (0.24)
Domestic market depth	0.404 (0.53)	0.425 (0.50)	0.582 (0.53)	0.602 (0.50)
Domestic bank market power	12.617*** (1.72)	12.422*** (1.49)	12.432*** (1.64)	12.246*** (1.41)
Foreign trade	0.032 (0.11)	0.011 (0.02)	0.068 (0.11)	0.049* (0.03)
Relative GDP growth	0.010 (0.03)	0.009 (0.03)	0.004 (0.134)	0.003 (0.03)
Foreign inflation	-0.010 (0.01)	-0.010 (0.012)	-0.013 (0.01)	-0.012 (0.01)
Foreign regulatory quality	-0.460* (0.28)	-0.424* (0.25)	-0.758** (0.37)	-0.724** (0.34)
Foreign rule of law	0.116 (0.51)	0.098 (0.53)	0.380 (0.42)	0.363 (0.44)
Exchange rate	-0.062 (0.30)		-0.059 (0.30)	
Cost-to-income ratio	-0.234 (0.33)	-0.233 (0.33)		
Overhead-to-assets ratio			0.239 (0.21)	0.239 (0.20)
McFadden's R-square	0.242	0.242	0.242	0.242
Over-dispersion test	26.92 [0.00]	26.79 [0.00]	26.54 [0.00]	26.50 [0.00]
Log-likelihood	-35.85	-35.85	-35.83	-35.83
Residual normality test	10.93 [0.00]	10.19 [0.01]	8.39 [0.02]	8.33 [0.02]

This table reports coefficient estimates (robust standard errors in braces) of the panel Poisson regression with the number of subsidiaries being established abroad by Kenyan banks as the dependent variable. ***, ** and * indicate significance at 1%, 5% and 10% levels, respectively. In square braces are p-values of diagnostic statistics. The over-dispersion test statistic is distributed as a chi-square with 1 degree of freedom. The residual normality test statistic is distributed as a chi-square with 2 degrees of freedom. CTI is cost-to-income ratio; OTA is overheads-to-assets ratio.

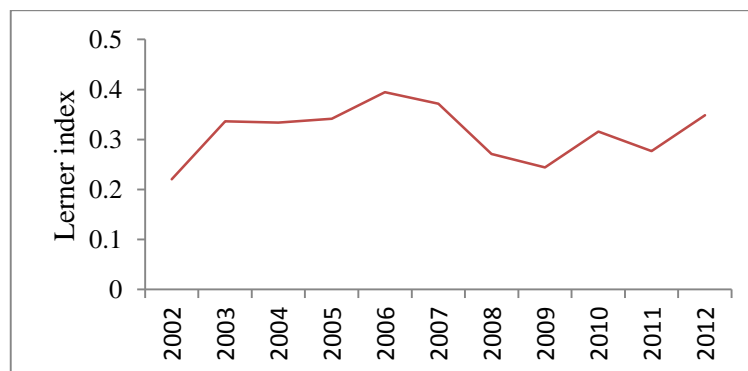
Figure 1: The Lerner index for Kenyan banking industry (Data Source: World Bank)

Figure 2: Bilateral trade between Kenya and other countries (Source: IMF Direction of Trade Statistics)

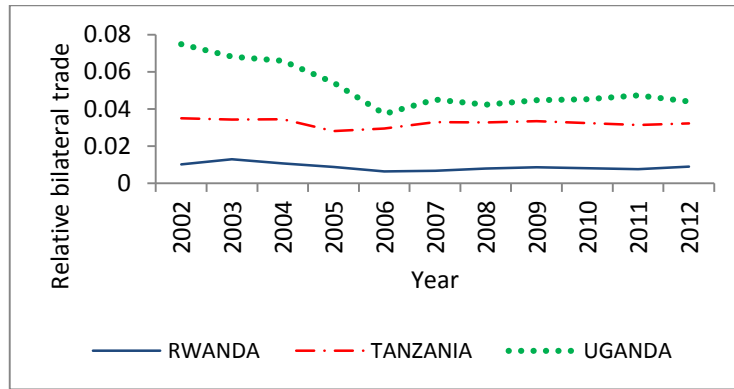


Figure 3: East African countries' Rule of Law and Regulatory Quality indices (Source: World Bank)

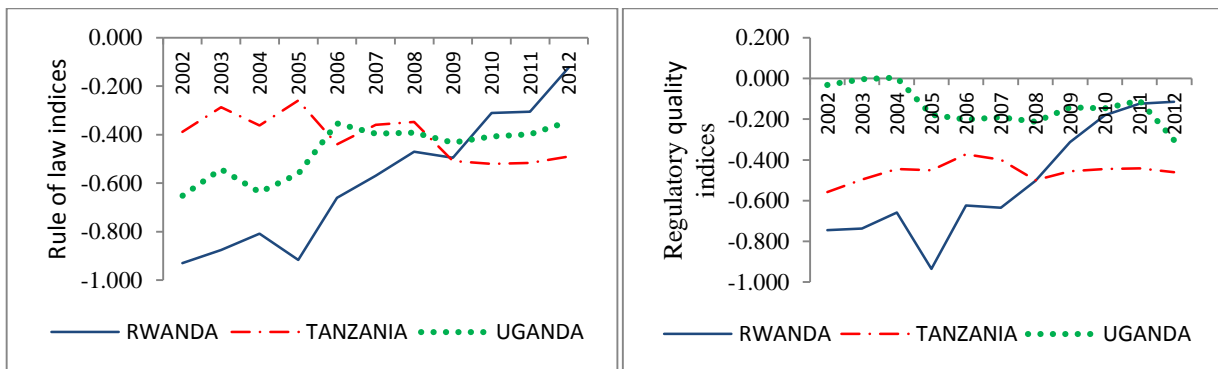


Figure 4: Inflation differentials

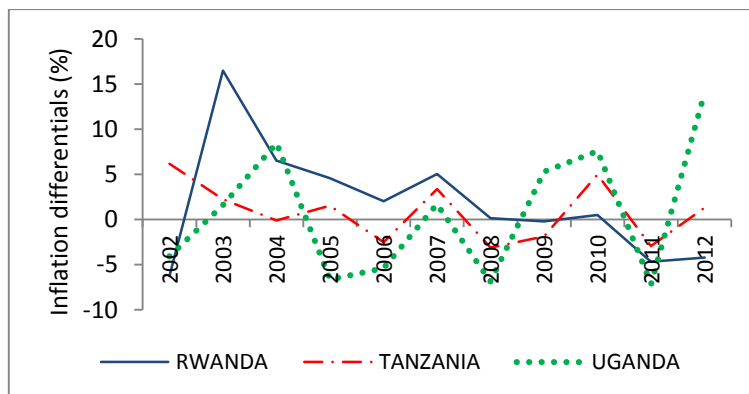


Figure 5: Relative efficiency of host country banks (Data Source: World Bank)

