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## The impact of foreign bank entry on domestic banking in a developing country: the Kenyan perspective

### Abstract

Using 19 banks level data from 2001 to 2009, the authors examine the penetration of foreign banks into Kenya and the impact on domestic banking operations. The authors find that the entry of foreign banks impacts the profitability of domestic banks negatively, but at the same time improves the efficiency of domestic banking including the reduction of lending rates. The result also shows that the entry of foreign banks' entry improves credit access to all firms. Although, policy makers may encourage entry of foreign banks, one concern is this group of banks engages in cream-skimming behavior in the sense they tend to lend mostly to big and international corporations. This research also shows that the entry of foreign banks has a direct positive relationship with Tier 1 capital which enhances financial stability.

**Keywords:** banking, profitability, competition, developing economies.

**JEL Classification:** C42, G21, G32.

### Introduction

In recent years, banking systems especially in developing economies have experienced severe transformation under the pressure of financial liberalization, increased openness to international capital flows, financial and technological innovations. However, the most notable has been the penetration of foreign banks (Gelos and Roldos, 2004). The challenge over the foreign bank penetration into the developing markets has given rise to a growing body of knowledge, for example, empirical studies have shown that foreign bank entry increases the efficiency of domestic banks, improve credit availability for all categories of firms (Clarke et al., 2001) but also increase firm investment volatility (Morgan and Strahan, 2003). Jennifer et al. (2002) noted that foreign banks in emerging markets are thought to improve generally bank soundness particularly when the foreign parent bank originated from a well regulated financial system and are themselves healthy. Levine (1996) added that foreign banks enhance the country's access to the international market therefore enhancing liquidity in the market.

However, studies focussed on less developed economies indicate a negative impact on the entry of foreign banks on the domestic market. For example, Mian (2006) shows that in Pakistan, foreign banks lend less to customers unable to provide information required for lending and less effective in recovering defaulted loans than domestic banks. Detragiache et al. (2006) finds that a larger foreign bank presence is associated with less credit to the private sector and slower credit growth in low income countries, but not in other countries. This is interpreted as evidence of a model in which foreign banks are better than domestic banks at screening large, transparent borrowers and not so good at assessing more opaque borrowers. This interpreta-

tion is in line with Mian's evidence that opaque borrowers may in fact be disadvantaged by the entry of foreign banks. In view of the diverse impact of foreign bank entry to domestic banking, the objectives of this study are to evaluate the effect of foreign bank entry on Kenyan domestic banking in terms of profitability, access to credit, lending rates and domestic bank efficiency.

The proportion of foreign banks in Kenya has risen from 24% in 1999 to 35% in 2009. This growth may be attributed to the implementation of financial liberalization policies by the Central Bank of Kenya (CBK). These policies allow foreign banks to set up branches and domestic banks to become (at least partly) foreign-owned. The fast growth of operations of foreign banks has raised questions about the consequences of their presence in domestic banking markets. This gap in knowledge calls for an inquiry for which this study intends to fill. Therefore, the objectives of this work are:

- ◆ To examine the impact of foreign banks' entry on domestic banking.
- ◆ To evaluate how the entry of foreign impacts access to credit.

The rest of the paper is as follows. Section 1 examines the relationship between bank performance and presence of foreign banks; section 2 is on empirical evidence of behavior of foreign and domestic banks; section 3 presents data on foreign banks presence and domestic bank performance. Section 5 presents empirical estimation; section 6 is on the result and the final section concludes the paper.

### 1. Domestic bank performance and presence of foreign banks

A number of empirical researchers have documented the importance of foreign banks in a country (Stiglitz, 1994; Levine, 1996; Berger and Hannan, 1998; Poghosyan and Poghosyan, 2010; and Jeon et al., 2011). The authors note that firstly foreign banks are likely to introduce the latest and most efficient banking tech-

nology that domestic banks may copy. Secondly, there is likely to be a reduction of interest rate as a result of competition brought by foreign banks. Thirdly foreign banks may lead to positive spill-over effects, that is, the foreign banks may introduce new financial services which could stimulate domestic banks and hence improve efficiency and financial intermediations.

In addition, foreign owned banks could help to improve the management of domestic banks, especially if foreign banks directly participate in the management of a domestic bank, for example in the case of a joint-venture or a takeover. This may increase the quality of human capital in the domestic banking system in a number of ways. To begin with, in case foreign banks import high-skilled bank managers to work in their foreign branches, local employees/bankers there will transfer knowledge and skills to the local managers. Moreover, foreign banks may invest in training of local employees. Increasing the quality of available human capital for the domestic banking system may contribute to more efficient domestic banking practices, which may help to reduce costs.

As regards to banking regulation foreign banks may also lead to improvements of bank regulation and supervision. This is because foreign banks may demand improved systems of regulation and supervision from the regulatory authorities in the recipient countries. This may contribute to improving the quality of the banking operations of domestic banks. All these may contribute to more efficient domestic banking practices, which may help to reduce costs. Likewise, foreign bank presence may lead to a reduced influence of the government on the domestic financial sector, which may reduce the importance of financial repression policies, such as interest rate controls and directed credit policies.

## 2. Empirical evidence of behavior of foreign and domestic banks

Denizer (2000) analyzed the effects foreign bank presence on domestic banks in Turkey. He noted the entry of foreign banks lead to a decrease of net interest rate margins and returns on assets. However, on the flip side domestic banks noted increased overhead expenses. This is despite the fact that foreign banks controlled a market share between 3.5 and 5 percent during the period 1970 and 1997. The findings could support the idea that foreign banks exert competitive pressure on the domestic banks.

Barajas et al. (2000) analyzed the Colombian banking system and using individual bank accounting data for the 1985-1998 period. The study shows that foreign bank presence generally increases competition in the domestic banking system as evidenced by reduced intermediations spreads. On the other side of the coin, they observed deterioration of loan quality on domes-

tic banks as a result of foreign banks entry. In order to catch up with foreign banks, domestic banks experienced increased overheads because the need to upgrade the operations with advanced technologies.

Using a large data set containing individual bank accounting information of domestic banks in 80 countries for the period of 1988-1995, Claessens et al. (2001) they show that increased presence of foreign banks is associated with reductions of profitability, non-interest income and overall expenses of domestic banks. Apparently, the competitive pressure of foreign banks leads to positive efficiency effects at domestic banks. Moreover, they find that these efficiency effects occur as soon as foreign banks enter the market; they do not seem to depend on the market share of foreign banks. Their conclusion is that foreign bank presence enhances efficiency and improves the functioning of domestic banks.

Jennifer et al. (2002) analyzed whether the entry of foreign banks in Latin America led to sound domestic banks between 1995 and 2000. Their result shows that local banks acquired by foreign shareholders fared only marginally better than those that remained domestic. That is foreign owned showed more robust loan growth, a more aggressive response to asset quality and greater ability to absorb losses.

Sawada (2010) provides a theoretical framework in which technology gap matters in the sense that, up to a critical bound, the larger the initial technology gap between the foreign and home firms, the more the home companies spends to gain spillovers. Past that boundary, the domestic firms decrease spending. From a divergent perspective, linking motivation and impact of foreign firms, Driffield and Love (2007) allow ex ante classification of foreign direct investment (FDI) motivations to be tested for their ex post effects. Unlike previous literature which infers motivation from the effects of foreign investment, they show that, while the UK gains substantially from inward FDI motivated by a strong technology-based ownership advantage, inward FDI motivated by technology sourcing (technology access or assessing) or efficiency seeking (such as lower labour cost) leads to no productivity spillovers.

Ayyagari and Kosov (2010) analyzed the impact of FDI on domestic firms in the Czech Republic. They found that larger foreign presence stimulates the entry of domestic firms to the same industry, indicating the existence of positive horizontal spillovers from FDI. They also noted evidence of significant vertical entry spillovers-FDI in the downstream (upstream) industries initiate entry in upstream (downstream) sectors. They further show that service sectors experience significant entry spillovers which cannot be found in manufacturing industries.

Jeon, et al. (2011) analyzed whether the entry of foreign banks increased competition in Asia and Latin America between 1997 and 2008 using panel data. They found the entry of foreign banks enhanced banking competition to the domestic banks. This is more pronounced when a stronger and less risky foreign bank enters the market.

### 3. The structure of Kenyan banking system

Kenya's banking sector has for many years been credited for its size and diversification. Private Credit

to GDP – a standard indicator of financial development compared to for Sub-Saharan Africa countries as shown in Table 1 below. In addition, the quality of lending and provision of other financial services has significantly improved with the introduction of M-Pesa<sup>1</sup>. Unlike most other countries in the region, Kenya has a variety of financial institutions and markets – banks, insurance companies, stock and bond markets – that provide an array of financial products. The current global financial crisis has underlined the need for further and deeper reforms including financial liberation.

Table 1. Domestic credit to private (2001-2009)

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Kenya	25.2	25.9	24.6	26.8	25.94	26	27	30.3	31.5
Uganda	7.1	7.9	8.4	8.1	8.6	10.1	10.2	13.9	13.3
Tanzania	5.4	6.8	8.1	9.2	10.2	12.7	14.9	16.1	15.3
Ghana	11.9	12.1	12.5	13.2	15.5	11.1	14.5	15.9	15.5
Nigeria	15.2	13.0	13.8	13.1	13.2	13.2	25.3	33.9	38.6
Libya	23.5	17.8	14.0	10.3	7.7	6.6	6.0	6.8	10.9
South Africa	142.6	115.0	118.9	128.6	138.7	157.1	162.0	145.8	147.8
United Kingdom	134.4	138.3	143.1	150.8	159.6	170.8	187.3	210.3	213.7
United States	176.7	167.6	183.3	191.1	195.5	205.4	213.4	191.2	203.8
Zimbabwe	34.6	104.5	57.7	18.5	16.3	46.5			

Source: World Bank (2011), compiled by the authors.

In Kenya, the Central Bank (CBK) is responsible for the regulation and supervision of banks. Over the past decades, there have been numerous revisions to the Banking Act, Central Bank of Kenya Act and prudential guidelines aimed at strengthening CBK's supervisory role. The Banking Act has been reviewed over time to give more legal powers to the regulatory authority and to broaden the responsibilities and coverage of institutions. The first comprehensive review was made in 1985 following the rapid growth of Non bank Financial Institutions (NBFI) that was mainly attributed to weaknesses in the regulatory framework. In 1998, the Central Bank enhanced capital requirement to avoid a repeat of banking crisis experienced in the mid 1980s and early 1990s by increasing the minimum capital from Ksh 250 million to 350 millions. Also in the year 2000, the Central Bank adopted the Basel I standard recommendation on capital adequacy although the accord was mainly geared for developed countries. Other countries were welcomed to adjust the requirement accordingly and this led to the introduction of additional capital adequacy ratios of 8% of core capital and 12% of total capital to risk weighted assets (CBK, 2009). As a result of the 2008 financial crisis, Central Bank changed its banking Act and required banks to have a minimum of Ksh 1 billion as core capital (Tier 1 capital) by the end of June 2012. Such changes, including a shift in micro-economic if significant can lead to forecasting errors

and unreliability of the model if not adjusted accordingly to reflect the changes. In determining structural break, the regression equation takes the form:

$$Y_t = \beta_1 + \beta_2 X_{2t} + \beta_3 X_{3t} + \varepsilon_t + \mu_t, \quad (1)$$

where  $X_s$  are the independent variables, i.e. the profitability, the cost income ratio, the Tier 1 capital and  $Y$  is the dependent variable percentage of foreign banks.  $\varepsilon$  is the error term and  $\mu$  are the unobserved variables that may impact domestic banks other than foreign financial institutions. The regression embodies the implicit assumption that the parameters  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  are constant for the entire sample regardless of any shock or change. This assumption is tested as shown in Table 2 using a Chow test which splits the data into sub-periods and estimate the models and identify whether a single regression or two separate regressions fits the data set. The  $F$  statistic is less than  $F$  critical, hence fails to reject the null hypothesis that no breaks. Therefore, there is no evidence of significant parameter instability despite changes in banking regulations and tax reforms.

The log likelihood ratio static is based on the comparison of restricted and unrestricted maximum of the log likelihood function. The LR test static has asymptotic  $\lambda^2$  distribution with a degree of freedom equal to  $(m - 1) * (k + 1)$  under the null hypothesis of

<sup>1</sup> M-Pesa is a mobile transfer of money between the registered users.



no structural break. Here  $m$  is the number of subsamples and  $k$  is the number of independent variables (i.e  $m = 2$  and  $k = 9$ ). The computed value for LR test static is 50.99 which exceeds 16.92 for 5% level of significance and 21.67 for the 1% level of significance. The reported probability is

the marginal significance level of  $\lambda^2$  test. It supports this result in that rejecting the null hypothesis would be wrong less than 0% of the time. The Durbin Watson reported shows that there is no serial correlation within the variables under consideration.

Table 2. Chow forecast test: forecast from 120 to 167

F-statistic	1.726454	Prob. F (19,15)	0.1436
Log likelihood ratio	50.99735	Prob. Chi-square (19)	0.0001
R-squared	0.834753	Mean dependent var	0.312400
Adjusted R-squared	0.735606	S.D. dependent var	0.032311
S.E. of regression	0.016614	Akaike info criterion	-5.067958
Sum squared resid	0.004140	Schwarz criterion	-4.580407
Log likelihood	73.34947	Hannan-Quinn criter	-4.932732
F-statistic	8.419275	Durbin-Watson stat	1.984595
Prob (F-statistic)	0.000193		

#### 4. Empirical methodology framework

To assess the impact of foreign banks presence on bank performance, while controlling for macro and institutional environment, following Claessens et al. (2001), we estimate the regression using the following form.

$$y_{st} = \phi_0 + \phi_1 B_{s,t-1} + \phi_2 Z_t + \phi_3 M_t + \varepsilon_{it}, \quad (2)$$

where  $s$  indexes bank and  $t$  denotes year;  $s$  are the parameters to be estimated. The dependent variable  $y$  is assumed to be a function of bank-level controls  $B$  lagged one period to avoid endogeneity problem, time varying banking industry specific variables  $Z$  including the measure of foreign bank penetration and macroeconomic controls  $M$  such as real gross domestic product growth.

In order to be able to investigate the effects of foreign bank on the performance of domestic banks we need a measure of foreign bank presence. We use the ratio of the number of foreign banks to the total number of banks in Kenya ( $FBNUM$ ). We focus on 19 domestic commercial banks excluding public banks. These data are available for the 2001-2009 period.

Next, we construct variables reflecting domestic bank performance. We choose variables measuring income, profits and costs of domestic banks. Firstly, we use a variable reflecting income of banks. That is net interest rate margin to total assets ( $NMARGIN$ ). Secondly, we have one variable to indicate how profitable the banks are: before tax profits to total assets ( $PROF$ ). Thirdly, we use two variables reflecting the costs of banks: total overhead costs to total income ( $CIR$ ) and loan loss provisioning to total gross loans ( $LLRR$ ). These variables are directly taken from the bank's income statement.

We are also interested to find how the entry of foreign banks impacts not only increase in the bank branch

network as shown in Appendixes A and C but also on the growth of the economy in terms of real gross domestic product growth reflected by the change in private credit to GDP. We are interested in changes in these variables over time and between banks: such changes may, among other things, be explained by changes in foreign bank presence through competition and/or efficiency effects. To construct these variables we use individual bank financial data from ORBIS database. This database contains information on balance sheets and income statements of banks.

#### 5. Empirical estimation

In previous work, Demircuc-Kunt and Huizinga (1997) investigate how a variety of bank variables, including ownership, affect banks' net interest income and profitability. As a different issue, this section investigates how foreign bank entry affects the operation of domestic banks. Specifically, we investigate how foreign bank entry affects each of the five variables in the accounting equation (2), including bank profitability.

To start, we will estimate the following equation at level using pooled ordinary least square as our method of estimation. The pooled ordinary least square assumes that there are no group or individual effects between banks across the industry. Using Akaike Information Criteria (AIC), we test the use of fixed effect which assumes that there are differences across the banks. The AIC value for the pooled OLS is smaller than that of the fixed effect model. We estimated these cross-sectional fixed effects across the banks and found that they are not significant either individually and as a group using the following equation:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it}. \quad (3)$$

Notice that the subscript  $i$  on the intercept term suggests that the intercepts of the 19 domestic banks

may be different which could be as a result of special features of each company such as managerial style or management philosophy. In order to assess how the entry impacts profitability of domestic banks, we estimate this using:

$$\Delta I_{it} = \alpha_0 + \beta \Delta FS_t + \beta_i \Delta B_{it} + \beta_i \Delta X_t + \varepsilon_{it}, \quad (4)$$

where  $I_{it}$  is the dependent variable (i.e. profitability) for a domestic bank  $i$  at time  $t$ ;  $FS_t$  is the share of foreign banks in Kenya at time  $t$ ;  $B_{it}$  are bank variables for domestic bank  $i$  at time  $t$ ;  $X_t$  are country variables at  $t$ ;  $\alpha_0$  is a constant;  $\varepsilon_{it}$  is an error term and  $\beta$ s are the coefficients.

In examining the dynamic relationships between two (or more) variables, the causality may be mutual rather than simply unidirectional. This situation often occurs among macroeconomic variables. We used vector autoregression modeling as an attempt to deal with this situation. We captured the simultaneity using the following specification:

$$Y(t) = \alpha_1 + \beta_1 w(t) + y_1 y(t-1) + y_2 \times (t-1) + x(t) + e_y(t). \quad (5)$$

The endogenous variable  $y(t)$  depends upon the contemporaneous value of the other endogenous variable  $w(t)$ , i.e. they are contemporaneously correlated, and depends as well on lagged values of itself,  $y(t-1)$ ,

and lagged values of the other dependent variable,  $w(t-1)$ . In addition,  $y(t)$  depends upon an exogenous variable,  $x(t)$ .

We also tested that there is no concern of multicollinearity between the variables. Multicollinearity is harmful when all the influences of the determinants of dependent variable cannot be disentangled. Other than using variance inflation factor (VIF), we considered if high  $R^2$  is but few significant  $t$  ratios. That is pseudo  $R^2$  is in excess of 0.8, the  $F$  test will reject the hypothesis that partial slope coefficient is simultaneously equal to zero.

## 6. Results

As shown in Appendix A, Kenya's banking system has seen a significant improvement in asset quality over the past years, mostly due to loan write-offs and recapitalization of government-owned banks, has mostly well capitalized and liquid banks and, overall, the system is resilient to shocks. Interest rate spreads have decreased over the past years, a phenomenon mostly accounted for by foreign banks and the reduction in overhead costs they experienced. The study found that there has been an increase of foreign banks in Kenya as shown in the Table 3 below. That is from 2001 to 2009, there was an increase of foreign banks by 35%.

Table 3. Percentage of foreign banks: 2001-2009

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Percentage of foreign banks	26	26	28	28	30	30	29	35	35

Source: Authors' compilation from Central Bank of Kenya.

As shown in Table 4, on average 30% of the banks in Kenya are foreign owned. The mean profitability of domestic banks in Kenya within the period of study was 28%. Likewise, we find that 16% of loans are not forthcoming, the lending rate is on average 14% and 6% is allocated as loan loss reserves.

Table 5 shows the association of the variables under study. We find that the entry of foreign banks in Kenya reduces the profitability of domestic banks, which is consistent with Claessens et al. (2001) and Lensink and Hermes (2004). Also, there is a positive association of percentage of foreign banks with loan loss reserve ratio, net interest margin, inflation and private credit to GDP. The positive relationship between private credit to GDP and foreign banks ownership could be as a result of foreign banks ability to facilitate access to foreign capital for domestic project. Also the positive association between the loan loss reserve ratio and entry of foreign bank could be attributed to increased competition. In the same manner, we find the entry of foreign banks forces domestic banks increase their Tier 1 capital. On the other hand,

the entry of foreign banks enables domestic banks to cut costs as they assimilate any superior technique and practice of foreign banks. This is because there is a negative association between the foreign banks ratio and cost income ratio. In addition, the entry of foreign banks is good news for the borrowers because as a result, domestic banks cut their lending rates.

Turning to control variables, we see that private credit to GDP and inflation are positively related to profitability. These findings are consistent with the belief that high inflation and financial resources provided to the private sector enhances the profitability of the banks.

We estimate the regression equation (1) assuming that the foreign bank entry is exogenous to the contemporaneous change in domestic banking variables. This is correct if the entry of foreign banks is determined by entry incentive at a specific period (Amel and Liang, 1997). The result indicates that the profitability of domestic banks is significantly affected by entry of foreign banks in an inverse way. This implies that the more foreign banks in a country, the less profitable

domestic banks are because of increased competition. In the same manner, an increase in non-performing loans and cost income ratio impacts the profitability of the domestic banks. Likewise, we find that increase in Tier 1 capital reduces the profitability of the bank, significant at 10%.

The table shows that low cost (i.e. cost income ratio) attracts foreign banks, but also it may be inferred that lower costs could be an indicator of how competitive the banking environment is. Also, although not significant, we find that, high net interest margin and lending rates are associated with greater foreign bank's presence although not very significant. Significant at 5% both inflation and private credit to GDP positively influence the entry of foreign banks. As expected, we can see as well that the profitability of domestic banks is highly significant in attracting foreign banks.

## Conclusion

The existing literature posits that the entry of foreign banks can make domestic banking more competitive and hence improve their (domestic banks) efficiency. This paper has provided evidence that larger foreign owned banks in Kenya reduce the profitability and overall expenses of domestic banks. On a positive side

the entry of foreign banks enhances the efficiency of domestic banks as competition intensifies. In addition, the entry of foreign banks exerts pressure on domestic banks to increase their Tier 1 capital. These findings suggest that foreign banks improve the functioning of the banking industry. There are also positive implications of foreign banks to customers and the general economy. That is the lending rate decreases and there is an increase in the financial credit and services provided as foreign banks set foot in Kenya. In this research, we excluded banks that have both foreign and domestic ownership. The inclusion of such groups of banks could mirror in the transfer of knowledge and expertise to the local industry. Likewise, political stability could be a factor that foreign banks may consider also in entering a host country.

The findings of this research depict that the government should encourage the entry of foreign banks not only because it encourages efficiency in domestic but also enables competition, which leads to the reduction of lending rates and increase in private credit to the GDP. Therefore, this work contribute to a growing body of knowledge as regards to why banks are seen to go multinational, concern of nations allowing foreign entry and beneficial effects of foreign owned banks.

Table 4. Descriptive statistics

	<i>PROF</i>	<i>FORE</i>	<i>INFLATION</i>	<i>LENDRATE</i>	<i>LLRR</i>	<i>NIM</i>	<i>NPL</i>	<i>PRCRE</i>	<i>TIER1</i>
Mean	0.279	0.301	0.138	0.140	0.063	0.077	0.155	0.276	0.203
Median	0.330	0.300	0.098	0.136	0.039	0.069	0.106	0.270	0.190
Maximum	0.622	0.350	0.260	0.185	0.355	0.163	0.349	0.315	0.649
Minimum	0.034	0.260	0.040	0.125	0.010	0.045	0.063	0.246	0.110
Std. dev.	0.175	0.032	0.076	0.0149	0.072	0.027	0.098	0.021	0.104
Observations	410	410	410	410	410	410	410	410	410

Table 5. Correlation of the variables

	<i>FORE</i>	<i>PROF</i>	<i>NIM</i>	<i>LLRR</i>	<i>CIR</i>	<i>TIER1</i>	<i>LENDRATE</i>	<i>PRCRE</i>	<i>INFLATION</i>	<i>NPL</i>
<i>FORE</i>	1									
<i>PROF</i>	-0.209	1								
<i>NIM</i>	0.088	0.135	1							
<i>LLRR</i>	0.065	-0.268	0.401	1						
<i>CIR</i>	-0.048	-0.176	-0.030	0.006	1					
<i>TIER1</i>	0.144	-0.004	0.431	0.390	-0.019	1				
<i>LENDRATE</i>	-0.196	0.071	0.049	-0.154	-0.118	-0.045	1			
<i>PRCRE</i>	0.596	0.099	0.011	-0.184	-0.113	0.141	-0.139	1		
<i>INFLATION</i>	0.662	0.051	0.077	0.160	-0.070	0.204	-0.188	0.295	1	
<i>NPL</i>	-0.564	-0.027	-0.097	-0.129	0.136	-0.144	0.233	-0.527	-0.318	1

*FORE* is the number of foreign banks/total number of banks, *PROF* is the profitability of domestic banks, *NIM* is the net interest margin, *LLRR* is loan loss reserve ratio, *CIR* is the cost income ratio, *TIER1* is the regulatory capital Tier 1, *LENDRATE* is the average lending rate, *PRCRE* is the private credit to GDP, *INFLATION* is the inflation across the years of observation and *NPL* is the percentage of non-performing loans of domestic banks.

The regression is estimated by pooled least square across 19 domestic banks in Kenya for the period of 2001-2009. Column (1) dependent variable is one period change in profitability defined as net profit divided total income. In column (2) it is one period change in net interest income/total income. In column (3) is the change in the loan loss reserve ratio, which is loan loss reserves/gross loans. In column (4) is the

change in non-performing loans defined as non-performing loans/gross loans and column (4) is the change in number of foreign banks defined as the total

number of foreign banks/total number of banks. All independent variables are at level. Heteroscedasticity-corrected standard errors are given in parenthesis.

Table 6. Change in domestic banks and foreign banks entry

	$\Delta$ in PROF	$\Delta$ in NIM	$\Delta$ in LLRR	$\Delta$ in NPL	$\Delta$ in FORE	VIF
C	1.222** (0.108)	0.189** (0.019)	0.494** (0.053)	0.077** (0.016)	0.191** (0.022)	
NIM	0.662** (0.244)	-	0.925*** (0.118)	-0.027 (0.012)	0.023 (0.005)	2.031
LLRR	0.359 (0.266)	-0.198*** (0.042)	-	-0.385* (0.188)	-0.036* (0.019)	1.99
CIR	-0.954*** (0.049)	-0.100** (0.042)	-0.076** (0.029)	-0.151** (0.049)	-0.002 (0.001)	4.01
TIER1	-0.081* (0.054)	0.098*** (0.008)	0.163** (0.023)	0.076* (0.042)	-0.002 (0.001)	1.39
LENDRATE	0.344* (0.288)	-0.031 (0.006)	-0.357* (0.153)	0.948*** (0.260)	0.035 (0.063)	1.08
PRCRE	0.166 (0.326)	-0.102 (0.052)	-0.118** (0.012)	0.659*** (0.228)	0.406** (0.054)	2.66
INFLATION	0.551*** (0.101)	0.063*** (0.016)	0.230* (0.042)	0.371*** (0.071)	0.239*** (0.013)	1.09
NPL	-0.216** (0.066)	-0.028** (0.011)	-0.176*** (0.026)	-	-0.086** (0.011)	2.33
FORE	-0.262*** (0.016)	-0.055 (0.047)	-0.213* (0.116)	-0.494*** (0.0187)	-	2.79
PROF		-0.09*** (0.007)	-0.160** (0.021)	-0.229*** (0.038)	0.044*** (0.009)	1.47
Adj. R <sup>2</sup>	57	59	64	48	69	1.47
Durbin Watson	1.98	1.87	1.96	2.02	2.01	
No of obs.	1400	1400	1400	1400	1400	

Source: \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1% levels, respectively.

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## Appendix A

Table 1. Financial soundness indicators (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Regulatory capital to risk weighted assets	17.5	17.1	17.4	17.2	16.6	16.4	16.5	18	18.4	19.5
Non-performing loans net of provision of total capital	37.2	39.4	39.6	34.9	29.3	25.6	21.3	10.9	8.4	7.9
Return on assets	0.5	1.6	1	2.3	2.1	2.4	2.8	3.0	2.9	2.9
Return on equity	4.9	15.7	10.9	23.2	22	25	28.6	27.5	28.6	24.8

Source: Central Bank of Kenya (2000-2009), compiled by the authors.

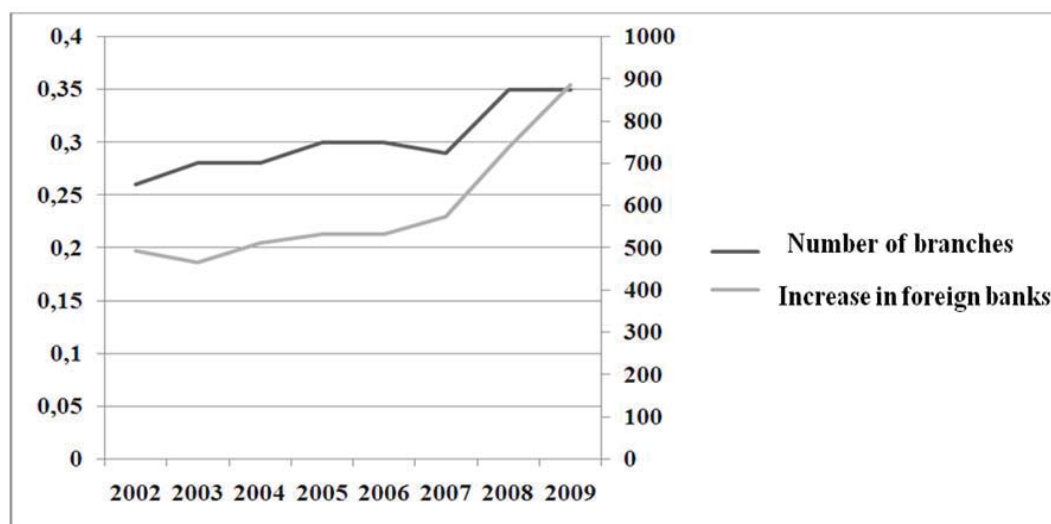
## Appendix B

Table 2. Branch network of banking industry (2000-2009)

Region	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Central	65	69	69	69	71	71	80	78	100	106
Coast	71	69	70	69	72	72	75	93	111	126
Eastern	31	35	34	36	39	39	36	61	75	90
Nairobi	179	192	166	204	212	214	229	293	353	395
N. Eastern	4	4	4	4	4	4	4	6	10	15
Nyanza	39	40	38	40	40	40	41	52	62	69
R. Valley	61	67	67	71	75	75	82	128	137	156
Western	16	18	18	19	19	19	18	29	39	39
<b>Total</b>	<b>465</b>	<b>494</b>	<b>466</b>	<b>512</b>	<b>532</b>	<b>534</b>	<b>575</b>	<b>740</b>	<b>887</b>	<b>996</b>

Source: Central Bank of Kenya (2000-2009), compiled by the authors.

## Appendix C



Source: Based on data compiled from Central Bank (2002-2009). The left axis shows percentage of foreign banks and right axis shows bank branch network.

Fig. 1. Relationship between increase in bank branch network and increase in foreign banks