

# IMF Working Paper

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## Assessing Bank Competition within the East African Community

*Sarah Sanya and Matthew Gaertner*

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African Department

**Competition in the EAC banking system**

**Prepared by Sarah Sanya and Mathew Gaertner<sup>1</sup>**

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**Abstract**

This paper is an empirical analysis of competitiveness in the banking system of four out of the five East African Community (EAC) countries<sup>2</sup>. The results show that the degree of competition is low due to a combination of structural and socio-economic factors. By way of preview, the analysis ranks the countries in terms of banking sector competitiveness in the following order: Kenya, Tanzania, Uganda and Rwanda.

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Author's E-Mail Address: [ssanya@imf.org](mailto:ssanya@imf.org); [mgaertner@imf.org](mailto:mgaertner@imf.org)

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<sup>2</sup> Burundi is not included in depth in the paper given the lack of available data in some areas.

Contents	Page
Abstract .....	1
I. Introduction .....	3
II. Measuring the Degree of Competition in the EAC .....	4
A. Structural Measures of Competition .....	4
B. Empirical Measures of Competition .....	8
Data .....	9
The Lerner Index .....	10
The Panzar and Rosse H-statistic as an Alternative Measure of Competition in the EAC .....	12
III. Determinants of Competition in the EAC Banking System .....	13
Empirical Analysis .....	14
IV. Conclusion and Policy Recommendations .....	19
Tables	
1. Bank Regulation of EAC Countries .....	7
2. Cross-Country Determinants of the Lerner Index .....	15
3. Comparing the Lerner Index in Large vs. Other Banks .....	17
4. Comparing the Lerner Index in Foreign vs. Other Banks .....	18
Figures	
1. EAC: Financial Intermediation .....	5
2. EAC: Indicators of Market Structure and Performance .....	8
3. Kenya and South Africa: Indicators of Liquidity in the Banking System, 2001–2010 .....	10
4. Measures of Competition in Banking Systems around the world .....	16
Appendix	
Structure of the Banking System .....	23
References .....	22

## I. INTRODUCTION

Banking sector reforms introduced at the beginning of the last decade have contributed to a sharp acceleration in credit to the private sector across the EAC in recent years. Countries across the region have successfully implemented measures to liberalize state-controlled banking systems, restructure loss-making institutions, write off nonperforming loans, and improve governance and financial sector supervision (see Appendix). In turn, banks that had previously largely held government securities and foreign assets have steadily shifted their asset allocation toward domestic lending. While this expansion in private sector credit has taken place from a very low initial volume, the rate of growth during this period has been impressive. The annual growth in credit to the private sector during 2002–2010 averaged 28 percent in Uganda, 32 percent in Tanzania, and 15 percent in Kenya. As a result, credit to the private sector as a share of GDP has increased over this period from 8 to 16 percent in Uganda, 6 to 16 percent in Tanzania, and 25 to 33 percent in Kenya (see Figure 1). There has also been acceleration in credit growth in both Rwanda and Burundi as stability has been restored, with credit to the private sector rising by an annual average of 20 percent since 2005.

Nevertheless, the level of financial intermediation in the region is low and access to financial services remains limited. As shown in figure 1, the mobilization of deposits by the banking system and the level of outstanding credit—especially outside the more developed Kenyan market—are both well below the levels in some middle-income emerging market economies. Furthermore, less than a third of the population in Rwanda, Tanzania, and Uganda have access to the formal financial system, compared with nearly two-thirds of the population in South Africa, while more than half of the population in Rwanda and Tanzania has no access to financial services at all. Even in Kenya and Uganda, which compare more favorably to South Africa in terms of the level of financial inclusion, a large share of this reflects the segment of the population that utilize informal financial services.

EAC: Access to Financial Services

	Formal	Informal	Excluded Entirely
Kenya	40%	27%	33%
Rwanda	21%	26%	52%
Tanzania	17%	27%	56%
Uganda	28%	42%	30%
South Africa	64%	10%	26%

Source: FINSCOPE, 2010

The limited access to finance remains a key constraint on growth across the region, limiting the scope for smaller, less well-established firms to finance investment through the formal banking system. How to improve access and increase the level of financial intermediation remains a key policy challenge. One possible explanation for the high level of financial exclusion lies in the lack of competition within the banking system; economic literature typically associates higher levels of bank competition with increased access to a wider range of financial services, at lower cost, with greater efficiency in production and delivery of these services. The number of new entrants into the market in recent years show there are no regulatory barriers per se to competition in the banking system of the EAC countries. However, in most of the countries across the region, the former state-owned banks retain a

very large market share despite steps to reduce regulatory barriers to entry and exit and attract increased participation from foreign banks. The question remains: why are these new participants unable to take advantage of the opportunity presented by the large unbanked segment of the population in each country to compete more effectively with the former state-owned banks that retain a dominant position in each country?

In order to address this question, this paper seeks to take a closer look at the nature and determinants of competition within the EAC banking sector. Our main objective is to empirically estimate the degree of competition in the EAC banking systems. We do this by estimating two nonstructural measures of bank pricing behavior, the Lerner index and the Panzar and Rosse *H-statistic*. The estimates from these behavioral models enable us to go beyond commonly used indicators of performance and structure, allowing a direct comparison of competitive conditions across countries and an identification of factors that determine competition. The results show that the structure of the EAC banking systems can be most accurately characterized as a monopolistic competition, with the degree of competition strongly linked to the level of economic development, the contestability of markets and the quality of institutions.

The rest of the paper is organized as follows: Section II analyses the degree of competition in the banking systems. Section III details the empirical analysis of the determinants of competition in the banking sector. Section IV concludes with policy recommendations to further strengthen competition in the EAC banking systems.

## **II. MEASURING THE DEGREE OF COMPETITION IN THE EAC**

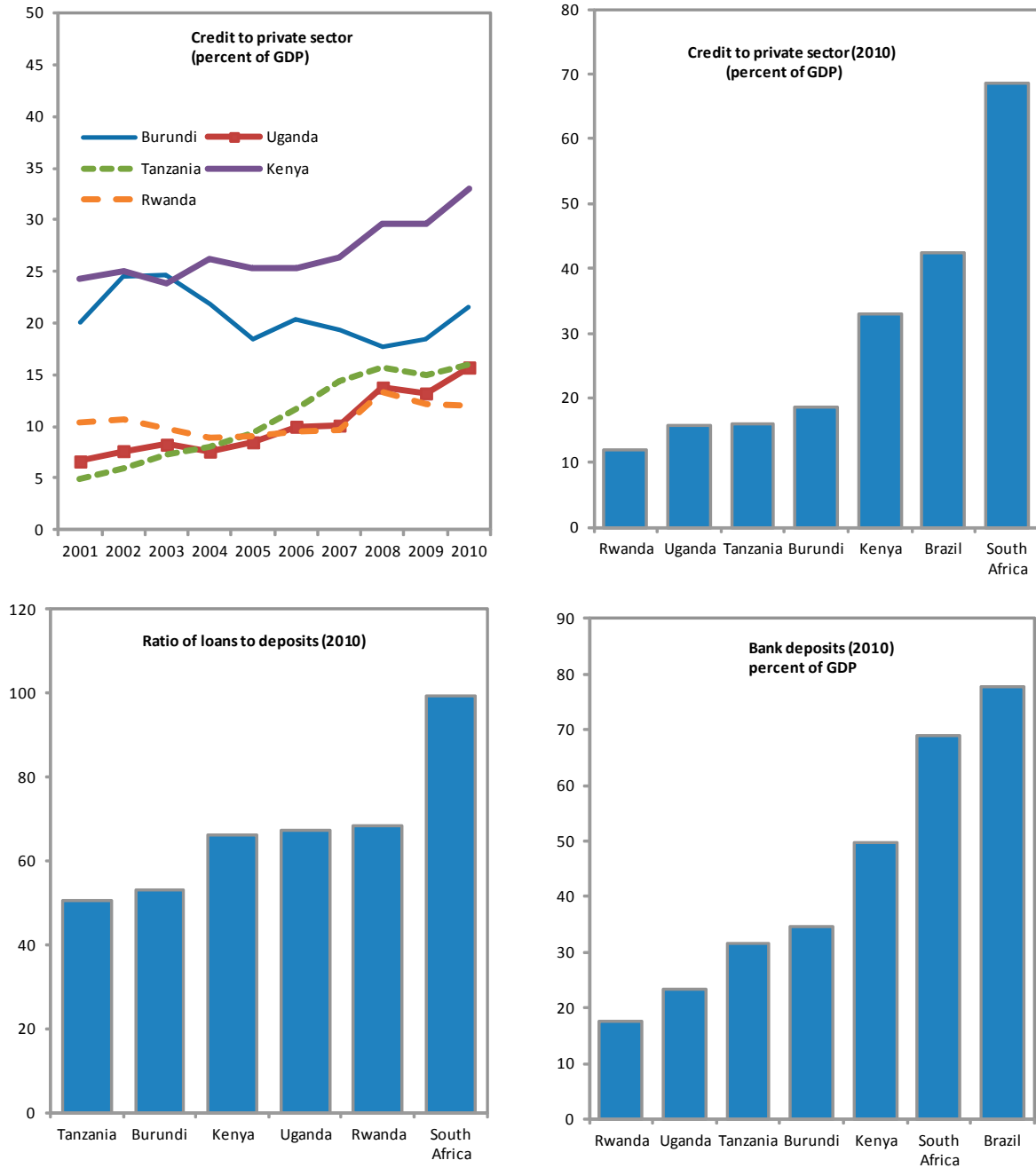
Measures of competition in the banking sector broadly fall under three categories: first, market structure and performance indicators; second, regulatory indicators of formal barriers to entry into the banking system, as well as the extent of restrictions on bank activities; and third, empirical measures of competition that gauge the response of output to changes in input prices. In this paper, we will refer to the first two categories as structural measures of competition and the third as empirical (nonstructural) measures.

### **A. Structural Measures of Competition**

Concentration ratios are perhaps the most frequently used indicator of banking sector competitiveness, with a high share of assets controlled by a small number of banks typically interpreted as indicative of a low level of competition. Bank spreads (the difference between lending and deposit rates) are also often used as indicators of banking efficiency and competition, with higher spreads and margins interpreted as an indication of greater inefficiencies and lack of competition in the banking sector. Measures of bank profitability have also been used (although to a lesser extent) to assess the degree of market power held by individual banks, with highly profitable banks reflecting a lack of competition in the banking system.

Figure 1. EAC: Financial Intermediation

*Financial intermediation has increased significantly in recent years, but remains low relative to comparator countries*



Sources: IFS; and Fund staff estimates.

In practice, there are a number of problems with the use of market structure and regulatory indicators to measure competitiveness which also apply in the context of the EAC.<sup>3</sup> For one, market structure is not exogenous since market structure itself can be affected by firms' performance. Second, interpreting these measures requires some judgment on what should be the optimal structure of the banking system. Figure 2 illustrates the problem in the EAC countries by comparing three frequently used indicators of market structure and performance—the three-bank concentration ratio, interest rate spread, and the return on assets (ROA)—for the EAC countries and the more developed South African banking sector.

Regarding market structure, the concentration ratio—the asset shares held by the three largest banks—in each EAC country compare favorably with South Africa, particularly in the region's three largest markets. This evidence by itself suggests that the level of competition in the banking sector should be even across these countries. However, bank performance indicators tell a different story: banks are more profitable in the EAC than in South Africa as evidenced by the higher spreads and the return on assets (ROA). Lending spreads, in particular, are about 6 to 8 percent higher in the EAC than in South Africa, while banks' return to assets is nearly three times as high, suggesting that the level of competition within the EAC is substantially less than in South Africa. In theory, these attractive rates of return should attract new participants to compete for market share and push down lending spreads; however, this does not appear to be happening. A decline in lending spreads would provide some indication that competition is intensifying within the region.<sup>4</sup>

A review of the regulatory framework can also provide some indication of the level of competition within a country's banking system. Other things being equal, competition should be greater when regulatory barriers to entry and exit is low, encouraging new entrants. The regulatory framework for the EAC region, summarized in Table 1, suggests a relatively open regime with similar conditions of entry and prudential treatment for all types of banks across countries. This would be expected to support a healthy level of competition, especially given the rates of return recorded by existing banks across the region. However, using the regulatory framework of banks to assess competition can be misleading, simply because

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<sup>3</sup> Regarding indicators of market structure, there is the lack of clarity as to whether market structure determines bank behavior (structure-conduct-performance hypothesis); or is the result of bank behavior (efficient structure hypothesis). In the former, (i) Structure influences conduct (e.g., lower concentration leads to more competitive the behavior of firms); and (ii) Conduct influences performance (e.g., more competitive behavior leads to better bank performance). In the latter, structure is not (necessarily) exogenous since market structure itself is affected by firms' conduct and hence by performance.

<sup>4</sup> This is because a bank that raises its prices above marginal cost and begins to earn abnormal profits, will attract potential rivals into the market to take advantage of these profits. This process will continue until profits fall back to the competitive equilibrium. This implies that competitive outcomes are possible even in concentrated or highly profitable systems (Claessens 2009).

**Table 1**  
**Bank Regulation of EAC Countries<sup>1</sup>**

	Burundi	Kenya	Rwanda	Tanzania	Uganda
Supervisor	Bank of the Republic of Burundi	Central Bank Of Kenya	National Bank of Rwanda	Bank of Tanzania	Bank of Uganda
Requirement to operate a bank	License	License	License	License	License
Entry of foreign banks	Permitted	Permitted	Permitted	Permitted except for through branches	Permitted except for through branches
Minimum Capital/ <sup>2</sup>	FBu 10 bil. (US\$ 8.1 mil.)	KShs 0.5 bil. (US\$ 6.2 mil.)	Rwf 5 bil. (US\$ 8.4 mi.)	TShs 6 bil. (US\$ 4.0 mil.)	Ushs 4 bil. (US\$ 1.7 mil.)
For a subsidiary of a foreign bank	same as above	same as above	same as above	same as above	same as above
For a branch of a foreign bank	same as above	same as above	same as above	Not allowed	Not allowed
Required Capital Adequacy Ratio	Solvency Ratio: 8%	Total: 12% Core: 8%	Total: 15% Core: 10%	Total: 12% Core: 10%	Total 12% Core: 8%
Required Liquidity Asset	100% of liabilities with a maturity of over one month	20% of all deposit liabilities, matured, and short-term liabilities	20% of all deposit liabilities	20 percent of demand liabilities	20% of deposit liabilities
Maximum percentage of capital that can be owned by a single owner	20% (can be exceeded subject to an authorization)	25%	No ceiling (subject to permission)	20%	49%
Limit in lending to single of related borrowers	20% of equity	25% of core capital	25% of net worth	25% of core capital	25% of total capital
Securities Activities <sup>3</sup>	Unrestricted	Restricted	Unrestricted	Unrestricted	Restricted
Insurance Activities <sup>3</sup>	Prohibited	Prohibited	Unrestricted	Permitted	Prohibited
Real Estate Activities <sup>3</sup>	Prohibited	Prohibited	Prohibited	Prohibited	Restricted
Shareholdings of nonfinancial firms <sup>3</sup>	Restricted	Permitted	Permitted	Permitted	Permitted
Obligatory external audit by qualified auditors	Yes	Yes	Yes	Yes	Yes
Supervisory power to declare insolvency of a bank	No	Yes	Yes	Yes	Yes
Explicit Deposit Guarantee	No	Yes	No	Yes	Yes

Sources: World Bank; Bank Regulation and Supervision Database; and Central Bank websites.

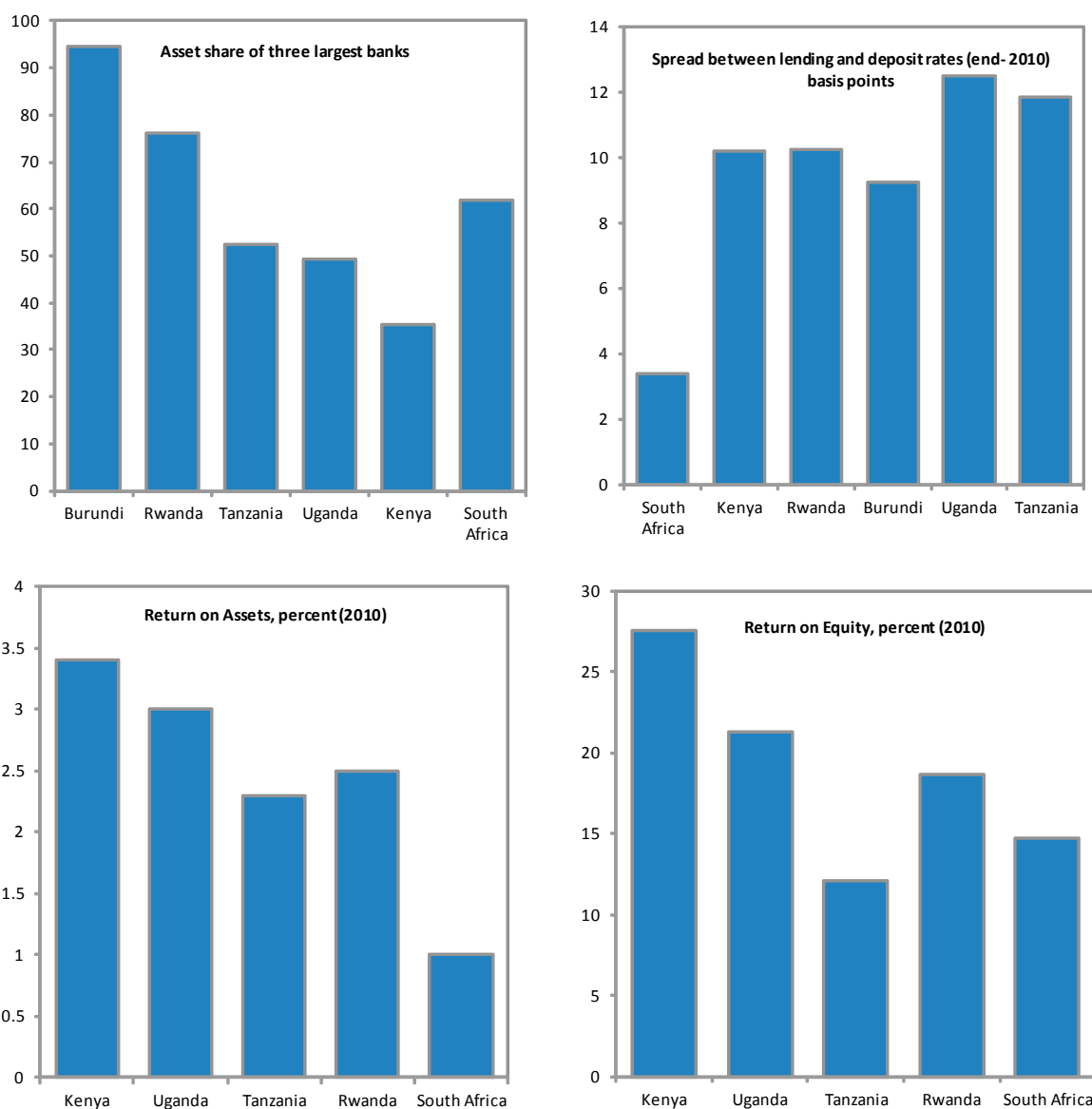
<sup>1</sup> Definitions of technical concepts such as core capital and liquidity differ among the countries.

<sup>2</sup> KShs 1 bil. (US\$ 12.9 mil.) from 2012.

<sup>3</sup> Unrestricted - A full range of activities in the given category can be conducted directly in the bank; Permitted - A full range of activities can be conducted, but all or some must be conducted in subsidiaries; Restricted - Less than a full range of activities can be conducted in the bank or subsidiaries; Prohibited - The activity cannot be conducted in either the bank or subsidiaries.



Figure 2. EAC: Indicators of Market Structure and Performance



•Sources: IFS; and Fund staff estimates.

other (informal) barriers—such as population size and volatile macroeconomic conditions—can also be important determinants of competitive pressures in the banking system even when regulatory barriers have been eliminated (Bikker and Spierdijk, 2009).

### B. Empirical Measures of Competition

By estimating bank-pricing behavior, nonstructural measures such as the Lerner index and the Panzar Rosse H-statistic are better able to gauge market contestability. These formal empirical tests for competition have been applied to banking systems in individual countries

((Schaeck et al. (2009), Mathews et al. (2007), and Berger et al. (2009). Nevertheless, evidence from these more sophisticated models of bank behavior is scarce for the EAC region. The international evidence on competitiveness presented in studies such as Claessen and Laeven (2004) and Ariss (2010) include very few SSA countries, and only Kenya from the EAC sub-region.

We estimate both the Lerner index and the H-statistic although the Lerner index is our preferred indicator of competition in the banking sector for two main reasons: First, it is the only measure of competition computed at bank level, thus giving more degrees of freedom in the regression analysis of the determinants of competition. Second, unlike the *H-statistic*, the accuracy of the Lerner index does not depend on equilibrium in the banking system.<sup>5</sup> The *H-statistic* is nonetheless still useful when we compare the degree of competition in the EAC as an aggregated unit with other countries.

## Data

We retrieve bank-level consolidated financial data for the years 2001–2008 from the Bankscope database provided by Fitch-IBCA. We apply a number of filtering rules to eliminate nonrepresentative data. For example, we exclude banks with missing key variables from the sample. We are also careful to drop banks as opposed to bank-year observations in order to sustain and benefit from the panel dimension of the data. This reduced our final sample to 65 banks operating in Kenya (29), Tanzania (17), Rwanda (7), and Uganda (12). However, the banks in the final sample still represent over 75 percent of total assets in the banking system of each country.

Table 2 provides a summary of the characteristics of banks sampled across countries. With the exception of bank size (total assets in US\$) there is a noticeable similarity in bank characteristics across the EAC countries. The banking systems across the countries appear to have similar cost revenue and profit structures. Figure 3 indicates a high preference for liquidity in banks in EAC countries, as evidenced by the somewhat low ratio of net loans to assets (on average between 40 and 60 percent), and reflected in the comparatively low level of financial intermediation. The Kenyan banking system with the highest ratio of loans to total assets has a higher ratio of liquid assets and correspondingly lower loans to total assets when compared with South Africa. Surprisingly this preference for liquidity has not impaired on the profitability of banks in EAC countries even after adjusting for risks as evidenced by the risk-adjusted return on assets. Some of the causes for liquidity preference is discussed in more detail in the next section. The cost structure of banks, personnel costs, financing costs, and the cost of fixed capital are broadly comparable across the four countries.

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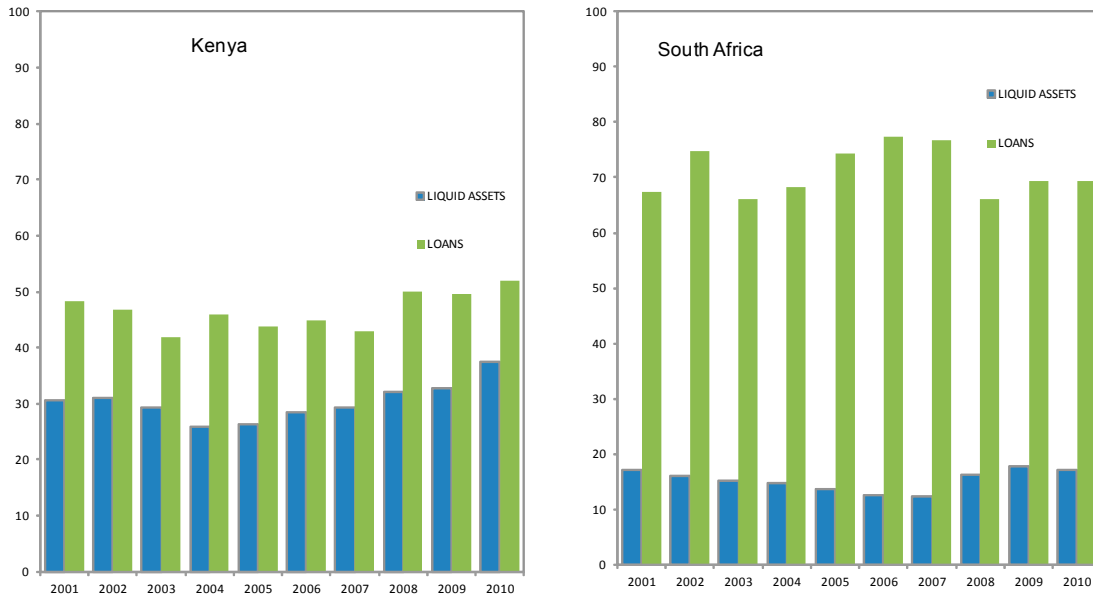
<sup>5</sup> The empirical test for equilibrium is rejected for Rwanda.

Table 2

Summary Statistics (averaged over all banks during the period 2000–2007)

	Kenya	Rwanda	Tanzania	Uganda
Net loans to total asset	0.56	0.51	0.46	0.43
Total deposits to total liabilities	0.92	0.93	0.78	0.63
Total equity capital to total asset	0.15	0.14	0.12	0.14
Total revenue to assets	0.12	0.12	0.12	0.14
Cost of labor (personel costs/total assets)	0.03	0.03	0.02	0.03
Finance (interest expense/ total deposit+money market funding)	0.04	0.03	0.03	0.03
Fixed capital (Other operating and administrative expenses/ total assets)	0.03	0.04	0.05	0.03
Return on assets (risk adjusted) (roa/std deviation of roa)	2.60	2.86	2.78	3.53
Return on equity (risk adjusted) (roe/std deviation of roe)	2.48	1.74	3.30	2.42
No of commercial banks	29	7	17	12
<i>Memorandum item:</i>				
Total assets (US\$ million)	282.79	76.15	269.96	152.45
<i>Banks in the sample represents over 90 percent of total assets in the banking system</i>				

Sources: Bankscope; and Authors Own Calculation.

Figure 3. Kenya and South Africa: Indicators of Liquidity in the Banking system, 2001–2010  
(Liquid Assets and Loans, percentage of total assets)

Sources: IFS; and Fund staff estimates.

## The Lerner Index

The Lerner index of market power captures pricing power by measuring a bank's ability to set price above its marginal cost. In a perfectly competitive system, the price a bank charges for its services should be equal to its marginal cost and therefore, such a bank will have no market power. The greater the deviation, the less competitive the banking system is interpreted to be. By construction, the index ranges from a high of 1 to a low of 0, with higher numbers implying greater market power. The Lerner index is calculated as:

$$Lerner_{it} = (P_{it} - MC_{it})/P_{it} \quad (1)$$

The subscript  $i$  denotes bank  $i$ , and the subscript  $t$  denotes year  $t$ . Price  $P_{it}$  is the ratio of total revenues (interest and noninterest income) to total assets for bank  $i$  at time  $t$ , and  $MC_{it}$  is the marginal cost for bank  $i$  at time  $t$ .

To derive marginal cost MC, the translog cost function (Equation 2) for each country is estimated in order to extract the elasticity of total cost to the price of the bank's main inputs.

$$\ln Cost_{it} = \beta_0 + \beta_1 \ln Q_{it} + \frac{\beta_2}{2} \ln Q_{it}^2 + \sum_{k=1}^3 \gamma_{kt} \ln W_{k,it} + \sum_{k=1}^3 \phi_k \ln Q_{it} \ln W_{k,it} + \sum_{k=1}^3 \sum_{j=1}^3 \ln W_{k,it} \ln W_{j,it} + \varepsilon_{it} \quad (2)$$

$Cost_{it}$  is the total operating cost plus interest expenses for bank  $i$  at time  $t$ .  $Q_{it}$ , total assets is a proxy for the banks output.  $W_{k,it}$  is the price of a bank's three main inputs( labor, funds, and fixed capital). Input prices for labor, funds, and fixed capital are calculated as the ratios of personnel expenses to total assets, interest expenses to total deposits, and other operating and administrative expenses to total asset respectively. Year fixed effects are also introduced with robust standard errors by bank.

Marginal cost is then computed as:

$$MC_{it} = \frac{cost_{it}}{Q_{it}} [\beta_1 + \beta_2 \ln Q_{it} + \sum_{k=1}^3 \phi_k \ln W_{k,it}] \quad (3)$$

The estimated Lerner index ranks the EAC countries in terms of competitiveness in the following manner; Kenya, Tanzania,

Uganda, and Rwanda. The average value of the Lerner Index for the EAC countries is between 29 and 36 percent, implying that banks price between 29 and 36 percent above marginal costs. However, the results show competition has not improved over time in Rwanda, Tanzania, and in Uganda.

	Lerner Index Over Time		
	2001	2008	Period average
<b>Kenya</b>	0.29	0.28	0.29
<b>Rwanda</b>	0.36	0.41	0.37
<b>Tanzania</b>	0.34	0.37	0.32
<b>Uganda</b>	0.39	0.36	0.36

The Lerner index- the difference between price and marginal cost (Lerner index) seem to have increased over time in these countries. Higher values of the index imply less competition.

Finally, the Lerner index is averaged over time for each bank  $i$  for inclusion in the regression in Section 3.

## The Panzar and Rosse H-statistic as an Alternative Measure of Competition in the EAC

The H-statistic measures the degree of competition as the extent to which a change in factor input prices is reflected in revenues earned by a specific bank in equilibrium. Under perfect competition, an increase in input prices raises both marginal costs and total revenues by the same amount as the rise in costs. Under a monopoly, an increase in input prices will increase marginal costs, reduce equilibrium output and consequently reduce total revenues (Claessens 2009). The H-statistic is estimated from a reduced form bank revenue equation as the sum of the elasticity of the total revenue of the banks with respect to the bank's input prices. The H-statistic varies between 0 and 1, with less than 0 being monopoly, less than 1 being monopolistic competition and 1 being perfect competition.

### The interpretation of the H-statistic

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if  $H \leq 0$  Monopoly

if  $H = 1$  Perfect competition or natural monopoly  
in a perfectly contestable market

$0 < H < 1$  Monopolistic competition

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Similar to several cross-country studies such as Claessens and Laeven (2004) and Bikker et al. (2007), we use the following reduced form log-linear revenue equation which is a variation of the Panzar and Rosse (1987) methodology:

$$\ln(P_{it}) = \alpha + \beta_1 \ln(W_{1,it}) + \beta_2 \ln(W_{2,it}) + \beta_3 \ln(W_{3,it}) + \gamma_1 \ln(Y_{1,it}) + \gamma_2 \ln(Y_{2,it}) + \gamma_3 \ln(Y_{3,it}) + \delta D + \varepsilon_{it} \quad (4)$$

We include three variables to control for bank portfolio characteristics. Specifically,  $Y_{1,it}$  the ratio of equity to total assets controls for the possibility that banks with lower capital (higher bank risk potential) face higher input costs, in particular, the cost of funds ( $W_{1,it}$ ).  $Y_{2,it}$  the ratio of net loans to total assets is a proxy for the banks' portfolio mix or credit exposure and  $Y_{3,it}$  the logarithm of total assets for bank size. This is because larger banks benefiting from economies of scale may face lower costs of production and vice versa.  $D$  is a vector of year dummies for the years 2001–2008 that controls for year specific effects. We estimate Equation (4) using three methods: bank-specific fixed effect regressions, the generalized least square (GLS) regressions, and the GLS adjusted for panel heteroskedasticity. The H-statistic equals  $\beta_1 + \beta_2 + \beta_3$ . In what follows we refer to the H-statistic as the average of the H-statistic estimates from the three models across countries.

The H-statistic for the EAC countries, varies between 0.24 (Rwanda) and 0.60 (Kenya), implies a monopolistic competition is what best describes the degree of competition in the EAC. A monopolistic competition (MC) is between the two extremes of a monopoly and perfect competition. This type of market structure is different from a pure monopoly in that there are no regulatory barriers to entry. However, some banks still exert monopoly power on product pricing, particularly since economies of scale enjoyed by the dominant players—to some extent—serve as an implicit barrier to entry.<sup>6</sup>

H-statistic in the EAC (2001–2008)	
Kenya	0.60
Rwanda	0.24
Tanzania	0.56
Uganda	0.55
EAC	0.61

Source: Authors calculation using bankscope data and the methodology outlined in section 2. In Rwanda the test of long-run market equilibrium is rejected.

N.B: Interpretation of the h-stat: if  $H \leq 0$  Monopoly if  $H = 1$  Perfect competition or natural monopoly in a contestable market.  $0 < H < 1$  Monopolistic competition.

### III. DETERMINANTS OF COMPETITION IN THE EAC BANKING SYSTEM

In this section, we regress the Lerner index (the preferred measure of competitiveness) on a number of country characteristics in the model below using weighted least squares regressions with heteroskedasticity robust standard errors and controls for year-specific effects:

$$L_i = \alpha + \beta B_{i,t} + \varepsilon_{i,t} \quad (5)$$

Where  $L_i$  is the average Lerner index for bank  $i$  over the sample period.  $B_i$  the vector of explanatory variables falls into five categories: market structure, contestability, level of economic development and the quality of the institutional framework, bank specific conditions and the liquidity preference of banks. To account for variations in the structure of the banking system, we use the asset concentration ratios in the largest 3 banks and population—a proxy for market size. For contestability of the respective markets, we include a variable that measures the proportion of banks that are foreign owned in each country and the index of banking freedom from the Heritage foundation's database. By construction, the banking freedom index measures the degree of regulatory restrictions, government involvement in financial markets through owning shares in banks, as well as the extent of financial and capital market development. A higher value of the index represents greater bank freedom. Per capita income, inflation, and the property rights enforcement indicator are included in all regressions as a measure for variations in the level of economic development and the quality of institutions. We use the 91-day Treasury bill, the main instrument of open market operations in the EAC countries, as a proxy for the liquidity preference of banks. We acknowledge that monetary policy is not intended to target competition in the banking

<sup>6</sup> Monopolistic competitions may also involve some tactical collusion between the dominant banks in the system that results in these banks having a similar output and pricing patterns, although this should not be confused with explicit and mostly illegal collusive agreements.

system. However, the reliance on treasury bills as the main instrument of open market operations in the EAC can affect bank competition if it impacts the liquidity preference of banks. We also control for variations in bank specific characteristics such as bank size (total assets), performance (risk-adjusted return on assets) and lending (ratio of loans to assets) in each set of regressions. Other studies in the literature have used most of these measures while undertaking similar analysis.

### Empirical Analysis

All regressions include the three variables that measure economic and institutional development. The results in table 3 are presented in columns depending on the categories of additional independent variables used. The regression results show some natural and regulatory-induced barriers to competition exist in the EAC. Our results consistently link socio-economic factors such as the level of economic development and population size to the degree of competition.

Our results show the level of economic and institutional development matter for banking sector competitiveness. Specifically, banks are less competitive in an environment of higher inflation, perhaps due to the fact that interest rates become an unreliable benchmark to price financial services. Furthermore, the positive relationship between GDP per capita and competition is as expected. Overall economic



growth combines a number of aspects—efficiency of the financial system, access to financial services, availability of credit to the private sector, and systemic stability.

In addition, we find that the index of property rights enforcement—a proxy for institutional development— increases competition in the banking system. The statutory protection and enforcement of property rights is lowest in Burundi compared to other EAC countries. However, all EAC countries have much lower property right protection compared to the more developed South African banking system. The positive association between all indicators of economic and institution development and competition persist in all regressions.

**Table 3**  
**Cross-Country Determinants of the Lerner Index**

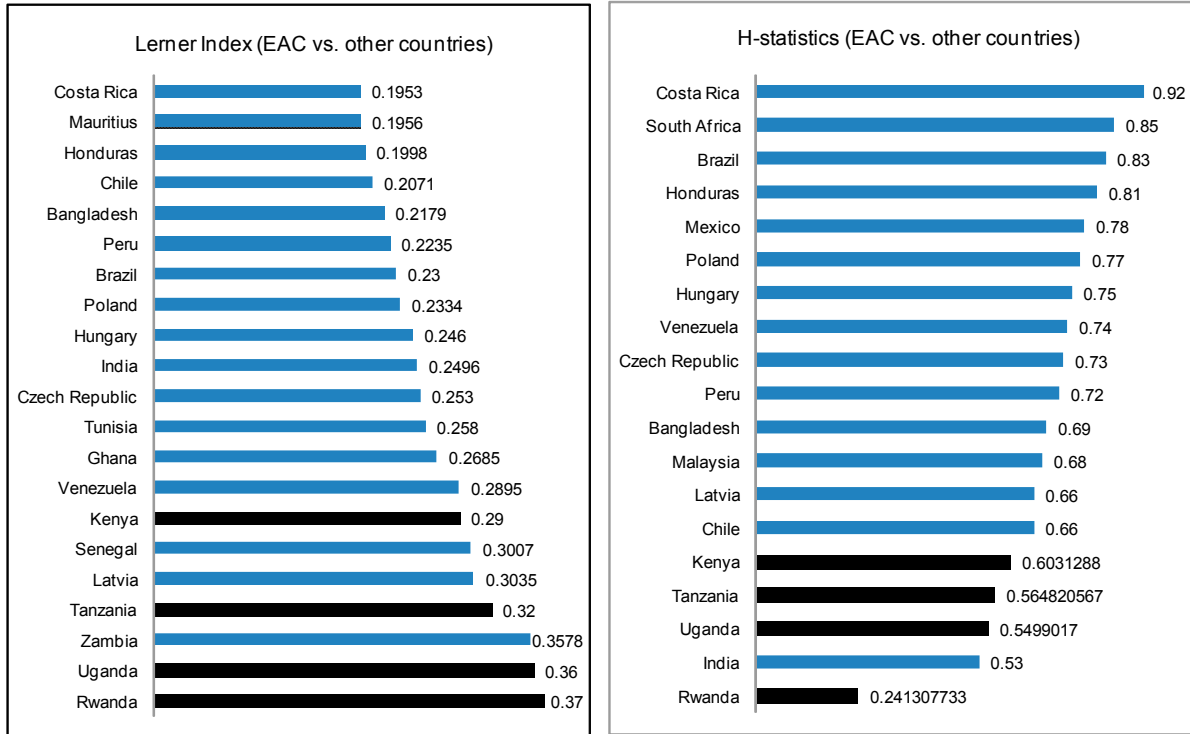
	Market Structure	Contestability	Bank condition	Liquidity preference
Per capita GDP	-0.053*** (0.008)	-0.083*** (0.004)	-0.167*** (0.001)	-0.152*** (0.006)
Inflation	-0.020*** (0.002)	0.007*** (0.002)	0.019*** (0.003)	0.024*** (0.003)
Property Rights	-0.113*** (0.011)	-0.168*** (0.004)	-0.225*** (0.008)	-0.213*** (0.007)
Concentration	0.146*** (0.012)			
Population (market size)	-0.014*** (0.005)			
Foreign Banks		0.342*** (0.010)		
Banking freedom		-0.017*** (0.006)		
Bank size			0.000 (0.000)	
Loan size (ratio of loans to assets)			-0.027** (0.012)	
Performance (risk adjusted ROA)			0.001** (0.000)	
T-bill rate (91 days)				0.015*** (0.003)
Number of Banks	65	65	64	65
Number of observations	501	501	379	501

Results from the regression model explain the determinants of bank competition in the EAC countries. Heteroskedasticity adjusted standard errors are in parentheses. \*, \*\*, \*\*\* represents significance at the 10, 5 and 1% significance levels respectively. The degree of bank competition is proxied by the Lerner index which is the difference between price and marginal cost with higher values indicating a higher degree of market power and lower competitiveness. *Per Capita GDP*, *Inflation*, and *Property Rights* account for differences in the level of economic development and the macroeconomic conditions across countries. *Concentration* is the share of assets of the three largest banks in the total banking system assets. *Population* is a proxy for market size. *Foreign Banks* is the proportion of banks that are foreign owned as identified by Bankscope. *Bank freedom* measures the degree of regulatory restrictions and government involvement in the banking system. Higher values of the *Banking freedom* index represent greater freedom. *Bank size* is the natural logarithm of total assets, *Loan size* is the ratio of loans to assets and accounts for variations in the portfolio mix of banks. The *risk adjusted ROA* is the banks average return on assets divided by the standard deviation of the ROA. The *91 day t-bill rate* is the period average of the monthly rates.

Broadly speaking, banks in the EAC appear less competitive than in countries with a higher level of financial and economic development (see Figure 4). *H-statistic* in these countries tends to be upwards of 0.7 and the Lerner index below 0.25.



Figure 4. Measures of competition in Banking Systems around the World  
(lower ranking on charts reflects less competitive banking systems)



Source: Authors calculation for EAC countries for using bankscope data during the period 2001–2008. Estimates of Lerner index for other countries is taken from Ariss (2010) using bankscope data for the period 1999–2005. Estimates of H-statistic is taken from Claessens and Laeven (2004) using bankscope data for the period 1994–2001.

Regarding bank specific indicators, we find higher bank lending (loan-to-asset ratio) increases competition as banks compete to offer the best rates to the most creditworthy clients. Boyd et al. (2009) report a similar result in their study of banking systems around the world. The high profitability of EAC banks against a backdrop of lending to a small segment of the population is damaging to competition. This result underscores the need to improve the availability of credit information and the enforcement of contracts in order for banks to start lending to smaller businesses and households. The measure of bank size although positive is not significant; suggesting that the dominance of large banks may reduce the degree of competition in the EAC countries. Table 4 below shows that large banks in the EAC countries on average are less competitive (higher Lerner index). This higher margin between price and marginal costs also reflects the higher profits these banks earn.

Table 4: Comparing the Lerner Index in Large vs. Other Banks.

		Ratio of Loan to Total Asset	Ratio of Liquid to Total Asset	Performance (risk- adjusted ROA)	Lerner Index
Kenya	Top 3 largest banks	0.60	0.29	3.27	0.34
	Other Banks	0.55	0.34	2.58	0.29
Rwanda	Top 3 largest banks	0.50	0.30	4.91	0.45
	Other Banks	0.52	0.37	1.35	0.28
Tanzania	Top 3 largest banks	0.30	0.60	6.44	0.38
	Other Banks	0.47	0.41	1.99	0.32
Uganda	Top 3 largest banks	0.52	0.37	2.89	0.42
	Other Banks	0.40	0.42	3.82	0.34

Sources: Bankscope; and authors' definition.

We find that both market structure and other market contestability indicators affect the degree of competition. There is a positive and statistically significant relationship between the measure of concentration (3-bank concentration ratio) and the Lerner index—suggesting that concentration reduces competition in the EAC banking systems. The average three-bank concentration ratio in the EAC is 61 percent although this masks significant differences between countries like Kenya with less than 40 percent and Burundi with ratio over 90 percent. If at all, bank concentration measures competition then competitive pressures are clearly uneven across countries which may affect results in a pooled sample of this nature. However, one should note that the absence of well-developed institutions and economic freedoms makes it likely that banks in concentrated systems will be more collusive resulting in higher interest margins. This result is similar to what is reported in Demirgüç-Kunt, Laeven, and Levine (2004) in the less developed countries in their sample. We also find that the size of the market (population) influences competition since banks are willing to take smaller profit margins if spread over a higher volume of transactions to gain market power. Also, financial systems in large countries are less likely to suffer from diseconomies of scale at the infrastructure or regulatory level.

Regarding the indicators of market contestability, we find the presence of foreign banks in the EAC is not associated with greater competition in the host country's banking system. Foreign-owned banks have a strong presence in the EAC controlling more than half the total assets of the banking sectors in Uganda, Rwanda, and Tanzania (79 percent, 54 percent, and 51 percent, respectively). In Kenya and Burundi, these ratios are 45 percent and 41 percent, respectively. The impact of this on market segmentation is obvious. This dominant position makes it difficult for local banks to compete with foreign banks that typically have access to lower cost financing and more superior technology from parent banks in home countries.

Table 5 shows foreign-owned banks in the EAC are less competitive, particularly in Kenya and Uganda where the foreign banks tend to be large. Foreign banks in the EAC typically have also higher liquidity ratios (and, accordingly, lower shares of loans) in their portfolios than local banks.

Table 5: Comparing the Lerner Index in Foreign vs. Other Banks.

		Ratio of Loan to Total Asset	Ratio of Liquid to Total Asset	Performance (risk- adjusted ROA)	Lerner Index
Kenya	Foreign banks	0.54	0.34	4.40	0.32
	Other Banks	0.57	0.33	1.76	0.28
Rwanda	Foreign banks	0.50	0.39	0.28	0.28
	Other Banks	0.51	0.32	4.62	0.40
Tanzania	Foreign banks	0.40	0.50	3.63	0.32
	Other Banks	0.51	0.33	1.47	0.40
Uganda	Foreign banks	0.45	0.40	4.64	0.38
	Other Banks	0.41	0.41	4.30	0.35

Sources: Bankscope; and authors' calculation.

Bankscope defines a foreign bank as a bank that is at least 51 percent owned by a foreign entity. According to this definition, all the Ugandan banks in the sample would be foreign-owned according. Therefore, for the case of Uganda alone we modify the threshold and define a foreign bank to be a bank that is 100 percent owned by a foreign entity.

The negative impact of foreign bank presence on competition is echoed in the literature particularly in developing countries where these banks concentrate on large corporations, leaving out SMEs and credit worthy individuals. For example, World Bank (2007) states that the presence of foreign banks has not led to a substantial improvement in access to financial services in African countries although foreign bank presence is beneficial along various other dimensions such as increasing cross-border capital flows and risk diversification. Poghosyan (2010) shows foreign bank presence does not improve competition in emerging economies, while, Jeon et al. (2011) were only able to find a positive influence of foreign bank presence and competition in less concentrated financial systems.

We also show that banking systems with government interference on banking activities are less competitive. This suggests that there is still room to further reduce the dominance of state-owned banks in the EAC countries. In Kenya, Rwanda and Burundi the government controls majority shareholdings in the largest bank although this is less the case for Tanzania and Uganda.

Finally, our results suggest a negative relationship between the liquidity preference of banks, as measured by the t-bill rates, and competition in the EAC banking system. We do not interpret this as an indictment on the conduct of monetary policy but rather an unintended consequence of high t-bill rates, on both lending rates and the liquidity preference of banks which subsequently affects competition amongst banks. This result—in line with Beck and Hesse (2009) in their study of the determinants of interest rate spreads in Uganda and Khemraj's (2010) study of the determinants of bank liquidity in a sample of countries that also include Tanzania and Uganda—underscore the need for a more diverse range of policy instruments used by the EAC monetary authorities.

#### IV. CONCLUSION AND POLICY RECOMMENDATIONS

Competition in the banking sector is extremely important given the pivotal role that banks play in the provision of credit, the transmission of monetary policy and the maintenance of systemic stability. Nonetheless, research on banking sector competitiveness includes very few SSA countries and only Kenya from the EAC sub-region.

Against this backdrop, we estimate two price-setting (nonstructural) measures of the degree of competitiveness in the banking systems within the EAC—the Lerner index and H-statistic. We also identify factors that determine competitiveness in the EAC banking sector, and suggest policy recommendations to shape the design of competition policies.

The Lerner index and the H-statistic ranks the countries in terms of the degree of banking system competitiveness in the following order: Kenya, Tanzania, Uganda, and Rwanda. Furthermore, the H-statistic show the banking system in the EAC as an aggregated unit can be categorized as monopolistic competition. This implies that although there are no formal regulatory barriers to entry as in a monopoly, there are structural impediments that enable some banks to continue to enjoy a degree of monopoly power. Broadly speaking, banks in the EAC are less competitive than other countries with a higher level of financial and economic development.

Regarding the determinants of competition, empirical results from panel data regressions indicate the following:

- Higher levels of economic and institutional development increase banking sector competitiveness.
- Greater market concentration reduces competition.
- Banks in larger markets (proxy by population) are more competitive perhaps, because of the economies of scale in transactions.
- Stronger market contestability—lower degree of state intervention in the financial sector through ownership of financial institutions, as opposed to greater foreign ownership of banks—matters for competition in the host country.

- Increased lending to the private sector fosters competition, while high bank profitability has the opposite effect.

To further strengthen bank competition and increase access to financial services, policy makers will need to aggressively pursue reforms aimed at eliminating the structural barriers to contestable banking systems in the region. Specific policies would strengthen the protection of property rights as inefficient property registration and enforcement systems serve to increase lending risk and raise the cost of borrowing. In addition, other policies would aim to:

- Modernize the legal infrastructure, particularly the laws governing collateral, foreclosure and bankruptcy, to allow borrowers to pledge relevant assets as security for credit. Contractual enforcement procedures are extremely difficult to navigate in the EAC countries, while the administration of company and insolvency laws is costly, inefficient, and subject to abuse.
- Provide accessible financial infrastructure such as credit bureaus and payment systems to support the safe expansion of retail credit. The development of these services is critical to increasing competition in the loan market. A number of countries in the region have already started the process of payment system modernization.
- Adopt comprehensive microfinance policies that safely increase access to financial services for lower-income households and SME's. A more inclusive financial system will increase the demand for bank credit and minimize the cost of financial transactions. The mobile-banking revolution and the introduction of agency banking is an example of a microfinance initiative that is already accelerating financial deepening. Mobile-banking has advanced particularly rapidly in Kenya, but is also quickly gaining popularity in the other EAC countries.<sup>7</sup>
- In addition, bank regulations should continue to promote contestable markets by leveling the playing field across the different types of banks and the products they offer. One way of doing this is to address market segmentation due to large state and foreign bank presence by privatizing the few remaining government owned banks in favor of domestic participation.

Following the period surveyed in this paper, the EAC countries have made significant progress toward regional integration that can mitigate, at least in part, diseconomies from small scale of financial markets in the EAC and deepen competition within and across

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<sup>7</sup> Launched in 2007, *M-Pesa* (*Pesa* is Swahili for money) is an innovative payment service that enable customers to transfer money quickly and cheaply within Kenya via mobile phone without the need to have a bank account.

national boundaries<sup>8</sup> By establishing a common market, the EAC countries expect to promote cross border liberalization of flows, expand the credit industry, and consequently increase investment and economic growth. The common market officially launched in June 2010, is awaiting full implementation by end 2015.<sup>9</sup>

The prioritization of the critical mass of policy reforms discussed above at the national level is essential at this juncture in support of economic integration and progress toward the establishment of the monetary union as envisaged by the EAC countries. Only when domestic markets become better regulated, and more efficient as a result of increased competition would it be easier to reap the benefits from integration. In addition, more competitive banking systems will help to ensure efficient policy transmission in a monetary union since bank lending is more likely to respond to changes in monetary policy if banks do not possess market power in the loan market.

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<sup>8</sup> Kenya, Tanzania, and Uganda agreed on establishing the East African Community in 1999 with an aim of deepening cooperation among member states, including establishment of a customs union, common market, monetary union and ultimately political federation of East African States (More precisely, they agreed on “re”establishing the East African Community, as the organization previously existed from 1967 to 1977 and collapsed due to intraregional discord). Burundi and Rwanda later joined the community in 2007.

<sup>9</sup> Financial markets are integrated when the law of one price holds; that is, when securities with identical cash flows command the same price, firms or household should be able to access finance on the same terms within and across national boundaries

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## **Appendix: Structure of the Banking System**

### **Kenya:**

The commercial banking industry in Kenya is the fourth largest in the region behind South Africa, Nigeria, and Mauritius. The banking sector includes 43 commercial banks, including 12 foreign banks. Cross-border linkages are an important feature; seven Kenyan banks have established 14 subsidiaries in neighboring countries.

### **Tanzania:**

The banking system in Tanzania has grown significantly since 2003, but remains relatively small and dominated by a top tier of larger domestic legacy and foreign banks. There are 33 commercial banks in Tanzania, including 16 foreign banks. Government ownership is limited to four smaller fully-owned banks and minority stakes in the three largest domestic banks. The top tier mainly caters to a small group of large corporate, which often represent up to 70 percent of banks' loan portfolios.

### **Uganda:**

The sector has expanded significantly since a moratorium on licensing new banks was lifted in 2005. Eight new banks have been licensed since 2005, bringing the total to 22 commercial banks, including 14 foreign banks, operating in Uganda. In addition, the total network of bank branches has more than tripled over that time to 390.

### **Rwanda:**

There are 12 commercial banks operating in Rwanda, including three foreign banks.

### **Burundi:**

There are seven commercial banks and two financial establishments in Burundi with total assets representing 54 percent of GDP. Privately owned banks account for 73 percent of assets and 80 percent of deposits; the government remains the majority shareholder in two banks, and in two financial establishments specializing in housing and development