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1 August 2011

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MPRA Paper No. 32897, posted 19 Aug 2011 08:17 UTC

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¹ The work on this paper was supported by an individual grant, number R09-5741 from the Economics Education and Research Consortium, Inc. (EERC). The author thanks sincerely all panels of experts and participants of the December and July 2010 EERC workshops in Lvov and Kiev for valuable comments and suggestions. Especially, we are heavily indebted to Valentyn Zelenyuk, David G. Tarr and Roy Gardner for detailed discussion, comments, and guidance.

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Abstract

Using data from 2004 – 2008, we investigate the effect of foreign ownership on banks efficiency and financial performance. The data is a balanced panel consisting of 16 banks and 640 observations. In random effect regression, to investigate the influence of foreign ownership type banks', we use the efficiency measures ROA (return on asset) and ROE (return on equity). Applying stochastic frontier analysis, we estimate banks cost efficiency. The efficiency analysis reveals that banks with foreign strategic ownership or international financial institutions involvement (EBRD or IFC) are more cost efficient than their domestic counterparts. The study also found that foreign strategic ownership positively affects the return on equity but negatively affects the banks' return on assets. Investigation of how efficiently foreign majority owned banks are using their inputs showed that banks with foreign majority ownership are significantly less cost efficient than those with foreign strategic ownership. We find that foreign majority ownership has ambiguous effects on financial performance — it increases the return on assets but decreases the return on equity. This research highlights the importance for bank performance of a large strategic shareholder who takes a controlling interest in the bank.

JEL No. G21, G32, G34, L25

Keywords: Foreign Ownership, Banking, Cost Efficiency, Stochastic Frontier Analysis.

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Introduction

The entry of foreign investments (institutional and private) into the Georgian banking sector is a subject of public interest. The main drive for our research was the fact that despite the attitude that foreign investments might have a significant role in the development of the Georgian banking system there is no study that explicitly explores the impact of foreign investments in the Georgian banking system. This paper investigates the effect of foreign investments on Georgian banks' efficiency using monthly data from December 2004 till March 2008 of 16 leading banks in the country; these banks jointly hold 98% of banking sector asset.

Even though a significant impact from the foreign ownership on the banking sector is beyond any doubt, the full significance direction of this effect is unclear. In their previous research Clarke, Cull and Martinez Peria (2001) and Robert Lensink et. al. (2008) argue that the presence of foreign banks or foreign ownership of domestic banks decreases availability of credit access to smaller lenders and, moreover, negatively affects the profitability and cost efficiency of the banks.

At the same time, some empirical papers (Weill Laurent (2003), John p. Bonin et. al (2005), Stijn Claessens and Harry Huizinga (2001)) show that foreign banks are more efficient and more profitable than domestic ones. Also, the authors show that foreign entry may hurt the domestic banks. For example: Claessens and Huizinga (2000) used an 80-country sample of developing and developed countries between 1988-1995 and found out that domestic banks profitability and expenses reduced after foreign banks seemingly put competitive pressure on the whole industry.

Given the ambiguity of the effect foreign capital has on the banking sector, I find it important to investigate the phenomenon in Georgia. I will attempt to do so using monthly data from 2004 – 2008, which is available from the National Bank of Georgia and the official websites of commercial banks operating in Georgia.

Background

The formation of the Georgian banking system began after the disintegration of the Soviet Union, starting from 1991 when an appropriate legal framework and a normative base were built. After the privatization in 1992, five state banks³ (Eximbank, Savings Bank, Agromretsvbank, Mretsvmshenbank and Binsotsbank) started to operate. Simultaneously, the National Bank of Georgia (NBG) was established.

The transformation of the Georgian financial system has occurred under the conditions of severe economic and political crisis. In 1991-1994 financial and political destabilization and complications in domestic political sphere heavily affected the Georgian economy.

After 1992 NBG implemented an accessional liberal monetary policy. Additionally, weak requirements for licensing commercial banks and administrative norms (the level of minimal capital requirement for commercial banks in 1994 was approximately USD 500⁴) gave incentives to register a large number of banking institutions in the country. If in 1991 only 5 state banks were operating, by the end of 1993 the number of commercial banks increased to 179 units and in 1994, there were 226 banks functioning in the country⁵. What followed was the emergence of financial pyramids along with the transitory currency, this led to the hyperinflation and the collapse of the system. In 1995, along with the introduction of the new currency; (Georgian-Lari), Georgia launched reform in the banking sector. The reform was based on the recommendation of the International Monetary Fund and was implemented with the technical assistance from international financial organizations. The objectives of the reform were to raise the level of financial stability, improve safety and soundness of the banking system, implement modern bank supervision policy and practice, introduce International Accounting Standards, upgrade the qualifications of banking personnel and improve the financial sustainability of commercial banks. The reform also envisaged the development of a new legislative basis for the banking system.

³ Kovanadze I., Georgian Commercial Banks Functional Problems today, Tbilisi state university, 2001.

⁴ Kovanadze I., Georgian Commercial Banks Functional Problems today, Tbilisi state university, 2001.

⁵ Georgian Banking System Development Strategy for 2006-2009, www.nbg.gov.ge.

Banking activities in Georgia are regulated by the Law of Georgia on the Activity of Commercial Banks adopted in 1996, which defines commercial banking activities, criteria for licensing, bank management, prudential standards, etc. The only compulsory legal status of banks is a joint stock company.

Requirements for capital commercial banks are in line with the standards of the Basel Committee on Banking Supervision and corresponding EU directives. The level of minimum capital for the commercial banks is set by the National Bank of Georgia at USD 12 million for newly founded commercial banks and branches of the foreign bank. It should be noted that Georgia doesn't impose any restrictions on the outflow of the capital.

Inflow of foreign capital into Georgian banking system is an important factor for the development of the banking sector. Entry of the foreign capital can be considered as involvement of advanced technologies and new financial products. Foreign capital can improve the corporate management culture in credit organizations, develop lender competition and improve banking activities.

On the other hand, to bring foreign investments to the banking sector of Georgia, it is important to improve the quality of corporate management, as well as to guarantee complete and effective understanding of the principles of the international standards of the financial accounting.

Buying a big bank involves huge investments. Furthermore it requires additional expenses, which are linked to the reconstruction (financial, technical and administrative) of the purchased bank. Foreign bank strategies do not require purchasing large banks; rather they are choosing small, but dynamically growing banks, which have the same style, goals and vision as the investing bank.

There are three main problems that foreign investors face during entry into the Georgian market:

First, Georgia has a small market, a small scale economy and limited of financial market resources.

Second, the Georgian financial market needs support from international financial institutions. For example, since “Bank Republic” was purchased by “Societe Generale”, “Bank Republic” can easily collaborate and make deals with foreign partners, because it is a member of an international banking group. Such type of banks can easily refinance their expenses, with the help of the international financial organizations, such as IFC (International Financial Corporation) and EBRD.

Georgian banks, which are operating independently, have difficulty in attracting foreign funds and financial institutions; because of the domestic, political and economic risks.

Third, the Georgian banking system is merging in the world standards more rapidly than are other Georgian economic sectors. From one hand this inequality is a problem but from the other hand this is an incentive, because developed banking system can pull up other segments of the economy. This is significant process because if other segments of the economy do not develop, then the progress of the banking sector will stop at a relatively low level.

Foreign financial institutions and large banks are still coming, because investing in Georgia is strategically justified. Georgia is at the start of a long development process. Banks that invest now (before there will be tough competition) might earn high return in near future. Also, foreign investors do not consider Georgia as the only country where they can make investments; they are looking to forwards establishing themselves in the Caucasus region.

The Georgian banking sector is represented by 22 banking institutions, out of which 2 are subsidiaries of Azerbaijan and Turkish banks. During the recent years, despite the reduction in the number of banks, the banking sector dynamically grew and its growth rates significantly exceeded the growth rates in the other sectors of the economy.

As a result of the rapid development of the Georgian banking sector, the interest of foreign investors towards Georgian banks significantly increased. Foreign investments are present in the 12 Georgian commercial banks (Table 2), which comprise 86.9% of total banking sector assets. Foreigners have more than 50% capital of these banks’. Non-residents control 73.5% of the

overall banking sector assets. For now, the share of the assets owned by the subsidiaries of 2 foreign banks in the total banking sector assets are less than 1%. It should be stressed that one of the resident bank stocks are traded on the London Stock Exchange. Accordingly, foreign investors are able to purchase this bank's stocks in a simple and efficient way. The increase of the foreign capital participation in the Georgian banking system would increase the availability of new resources and would develop new banking products.

Literature Review

Banks by establishing subsidiaries and branches or buying established foreign banks expand their operations internationally. The presence of foreign banks and investors in domestic markets raises two issues:

1. The effect of this presence on domestic banking systems;
2. The competitive inequalities and differences in performance between foreign and domestic banks⁶.

We can argue that by allowing foreign banks and investors to enter the domestic market generally stress a number of economic benefits: transfer of know-how, especially knowledge of bank management, risk management, information systems and enhance a country's access to international capital markets which can stimulate economic growth. Giannetti and Ongena (2005), based on 60,000 firm-year observations, found that foreign bank existence in a home market may improve accessibility to credit for creditworthy firms. Using data 3,000 firms operating in 35 countries (transition and developing), George et al (2006), based on standard maximum likelihood estimation, found that enterprises face low financing barriers in countries where there

⁶ Ali Awdeh. "Domestic banks' and foreign banks' profitability: Difference and their determinants"
http://www.cass.city.ac.uk/conferences/emg_finance/Papers/Awdeh.pdf (2005)

is a high presence of foreign banks. De Haas and Naaborg (2005), based on the interviews with managers of foreign parent banks, show that in Eastern Europe, foreign bank entry increases competition and improves lending technologies, which cause an increase in the lending portfolio to small and medium-sized enterprises and retail markets. Clarke, Cull and Martinez Peria (2001) argue that increased foreign investment in a developing country's banking system might reduce access to credit, particularly for small and medium-sized enterprises (SMEs), as foreign banks find it more difficult to lend money to less transparent SMEs enterprises. In the same study the authors argue that foreign banks allocate greater share of their lending portfolios to commercial and industrial loans, thus neglecting consumer credit.

There are many studies about foreign bank efficiency, compared to domestic banks. These studies are divided into two categories: studies, which are focused on, developed markets and studies focused on transition or developing economies.

The studies on developed countries found out that foreign banks have less or the same efficiency as domestic banks. For example, De Young and Nolle (1996) showed that there is only a small difference in output efficiency between foreign and domestic. Stijn Claessens and Harry Huizinga (2001) showed that foreign banks in developed countries have lower interest margins, profitability and overhead expenses than domestic banks, but the opposite is true about developing countries. The comparative efficiency between foreign and domestic ownership is given in *Table 1*. The table shows that domestic banks have lower efficiency than foreign owned banks in transition and developing countries.

Applying stochastic frontier analyses of 225 banks from 1996 to 2000 of countries in transition, totally 11 (Czech Republic, Hungary, Poland, Slovakia, Bulgaria, Croatia, Romania, Slovenia, Estonia, Latvia and Lithuania), John P. Bonin et al (2005) found out that foreign owned banks are more cost efficient and provide better services than other banks. Laurent Weill (2003) by using a stochastic cost frontier methodology for the Czech Republic and Poland (45 commercial bank), shows that foreign-owned banks are more efficient than domestic owned ones.

On contrary to these findings, using the same estimation method for 105 countries and 2095 commercial banks, Robert Lensink et al. (2008) found out, alternatively that bank efficiency is negatively affected by the foreign ownership and this negative effect is less prominent in countries with good institutional control.

Table 1				
Authors	Country	Period	Technique	Findings
DeYoung and Nolle (1996)	US	1985 - 1990	DFA	In US Foreign owned banks are less profit efficient than domestic owned banks
Bhattacharya et al. (1997)	India	1986 -1991	DEA	Government owned banks are more efficient than foreign and privately owned banks. Also, foreign owned banks are more efficient than privately-owned domestic banks
Isik and Hassan (2002)	Turkey	1988,1992, and 1996		Foreign banks seem to be significantly more efficient than domestic one
Jemric and Vujcic (2002)	Croatia	1995 -2000	DEA	Domestic banks are significantly less efficient than foreign banks
Miller and Parkhe (2002)	12 EU countries Arg., UK, Switz., Australia, US, Japan, Canada, Chile, India	1989 - 1996	SFA	US-owned banks in bank-oriented financial systems are more X-efficient than other foreign owned banks, but less X efficient in capital-market oriented systems
Nikiel and Opiela (2002)	Poland	1997 - 2000	DFA	Foreign banks are less profit efficient and more cost efficient than other banks
Hasan and Marton (2003)	Hungary	1993 - 1997	SFA	Foreign banks and banks with higher foreign ownership involvement are less inefficient
Weill (2003)	Czech Republic and Poland	1997	SFA	Foreign banks are more cost efficient than domestic banks.
Matousek and Taci (2004)	Czech Republic	1993 - 1998	DFA	Foreign banks are more cost efficient than other banks (including early years operated good small banks)
Bonin et al. (2005)	11 European transition nations	1996 - 2000	SFA	Foreign ownership positively affect on banks efficiency and they are more cost-efficient than domestic banks
Fries and Taci (2005)	15 European transition nations	1994 -2001	SFA	Banks with foreign majority ownership are more efficient than domestic owned one
Havrylchuk (2006)	Poland	1997 - 2001	DEA	Foreign banks are more efficient than domestic-owned banks
Lensink et al. (2008)	105 countries	1998 -2003	SFA	Foreign ownership negatively affects on banks efficiency

Depending on policy decisions about the liberalization of bank entry, government gives incentives to foreign banks to enter through FDI, an acquirement or by founding a new foreign bank. However, according to Martinez Peria and Mody (2004), new foreign banks are more profitable and efficient than foreign acquired banks. Lensink and Hermes (2004) claim that motivation of domestic banks to improve diversification, financial service quality and efficiency for keeping market share is caused by the entry of foreign banks.

Foreign banks entry may also cause financial instability. According to Iwon Song (2004) financial instability could occur if foreign banks for risk management purposes suddenly shift money from one market to another. For example: Japanese banks have decreased their loan portfolio in the United States, which was caused by Japanese recession and asset markets' collapse in the early 1990's (Peek and Rosengreen, 1997). So foreign banks may increase lending activities, despite problems in the local economy or they may decrease lending, due to the difficulty in their home country, even if the local economy is continuing to develop. If the home country receives FDI from foreign banks located in one or more countries where businesses are deeply linked, then the home country may face difficulties because of the deviation in the investing countries.

Why do foreign banks and investors enter in the domestic market? Several reasons have been suggested in the literature by, Clarke and Cull (2001), Focarelli and Pozzolo (2000), Kraft (2002), Claessens and Huizinga (2001). As pointed out by Clarke, if the degree of economic integration among countries is strong, then market opportunities, entry restrictions and other regulations affect entry of a foreign bank. The determinants of foreign bank entry and activity levels in Italy were studied by Magri et al (2005). He found out that economic integration, interest spread and profit opportunities have significant positive effects on foreign banks decision to enter Italy.

Also, the high interest margins were the strongest reasons for the foreign banks and investors to enter Croatia (Kraft 2002).

The major reason for the entry of the foreign bank in a country is that the bank follows its customers abroad to support its already existing relationships in a new country⁷. Claessens and Huizinga note that profitable opportunities in host countries drive foreign banks to enter.

Host country regulations also can drive foreign banks entry in a country. Clarke and Cull (2001) noted that the level of economic reforms and political freedom could be an important

⁷ Lensink, Robert, and Jakob De Haan. "Do Reforms in Transition Economies Affect Foreign Banks Entry?" *International Review of Finance*, 3:3/4, 2002: pp 213-232.

consideration for foreign banks to enter Post-Soviet states. Foccarelli and Pozzola (2000) showed that countries that have few restrictions in regulations are attractive for foreign banks.

The studies cited below: Giannetti and Ongena (2005), George R. G. et. al (2006), De Haas and Naaborg (2005), Clarke, Cull and Martinez Peria (2001), De Young and Nolle (1996), Stijn Claessens and Harry, Huizinga (2001), John P. Bonin et. al (2005), Laurent Weill (2003), Lensink and Hermes (2004), Robert Lensink et. al. (2008) and others show that entry of foreign banks reduces or increases barriers of availability of credit for SMEs, also foreign ownership has positive or negative effects on its own banks and domestic ones.

In our study we are going to investigate the performance of the domestic banks as well as the foreign owned ones. Also, we will examine the effects of the foreign ownership on the foreign and domestic banks.

John P. Bonin et al. (2005) distinguished strategic foreign owners (single owners holding shares) from foreign majority owners (having no controlling stake). The distinction is crucial, because a bank having a strategic foreign owner could be more cost efficient and could provide better services than other banks do.

The data and the ownership typology

I use consolidated monthly data from December 2004 till March 2008. The data was taken from National Bank of Georgia (NBG) and the official websites of the leading commercial banks in Georgia. The sample includes 16 commercial banks (5 domestic owned and 11 foreign owned) - total of 640 observations of which I have financial information and ownership structure⁸. The detailed description is given in the Appendix (*Table 3*).

⁸ We use 16 banks instead of 22, because from other 6 banks 5 of them are new one and do not have even half year experience (HSBC Bank – Georgia, Progress Bank, Kor Bank Georgia, Galt&Taggart Bank JCS, JCS Halyk Bank Georgia). What about International bank of Azerbaijan –

Following the theory of John P. Bonin et al. (2005), I have separated ownership into three categories: foreign, majority foreign and domestic ownership. In foreign ownership I mean strategic owner, which is either a single foreign majority owner or controlling stake owner. The banks, in which foreigners hold more than 50% of shares, are included in the other group of ownership i.e. majority foreign owner.

The bank observation in the percentage for three ownership categories shows that approximately 44% of observations in the sample represent banks with foreign owner. Also, 25% of observations are match to banks with foreign majority owner. In addition, 31% of the observation corresponds to the banks with domestic owner and 13% represents the banks having an international institutional investor.

Table 4
Descriptive Statistics

	Overall Sample (640)		Mean by ownership category			Mean for International participation (80)
	Mean	Standard Deviation	Foreign owner* (180)	Foreign majority owner** (160)	Domestic owner (200)	
Return on assets	0.042	0.033	0.042	0.036	0.043	0.033
Return on equity	0.153	0.125	0.148	0.163	0.147	0.217
Net interest margin	0.07	0.069	0.069	0.066	0.074	0.057
Loan to asset ratio	0.569	0.212	0.51	0.613	0.616	0.624
Borrowing to asset ratio	0.122	0.145	0.094	0.157	0.133	0.128
Deposit to asset ratio	0.456	0.229	0.397	0.535	0.477	0.678
Equity to asset ratio	0.392	0.283	0.482	0.273	0.361	0.154
Provision of doubtful loans to gross loan ratio	0.059	0.103	0.062	0.047	0.063	0.061
Noninterest expenditure to asset ratio	0.056	0.107	0.064	0.046	0.053	0.037
Total assets (000s GEL)	246,006.116	408,907.852	166,122.614	543,518.169	119,833.378	635,814.387

* Single foreign majority owner or single controlling owner

** Foreign owners together hold more than 50% of the shares and no one has controlling shares

Foreign and domestic banks as general have organizational and structural difference. Therefore, they may differ by cost structure, scale and scope economies. Foreign and domestic banks differ, because of difference of the market they operate and different management strategies. Also, they have different information about local market (as usually, domestic banks

Georgia JCS, it serves only local Azeri firms and does not give loans and takes deposits and if he does it, it is significantly low amount compare to smallest bank in Georgia.

are more knowledgeable in local market structure, than foreign banks), international experience and regulations.

Other balance sheet characteristics with respect to assets are given in *Table 4*. The loans are 56.9%, borrowings are 12.2%, deposits are 45.6%, equity is 39.2% and non-interest expenditure is 5.6%. The average net interest margin is 7% with variation coefficient less than one. Finally, provision of doubtful loans to gross loan ratio is 5.9%. The standard measure of financial performance ROA – 4.2% and ROE – 15.3% are characterized by less variability than other balance sheet components.

Return on equity model

To measure bank performance, we are using a “return on equity model” (Ali Awdeh 2005 and John P. Bonin et al. 2005). Return on equity (*ROE*) measures the rate of return to banks’ shareholders, or the benefit that the shareholders receive after investing their capital in the bank. In other words *ROE* measures the profit per USD/GEL, which is received on book equity capital. So,

$$ROE = \frac{\text{Net Income}}{\text{Average Book Value of Equity}} \quad (1)$$

another indicator of managerial efficiency is (*ROA*), which shows how the company’s management converts their institutional and/or private sector assets into earnings.

$$ROA = \frac{\text{Net Income}}{\text{Average Book Value of Assets}} \quad (2)$$

The general equation that should explain ROE and ROA looks as follows

$$Y = aX + bZ + u \quad (3)$$

where Y is dependent variable, X and Z are vectors of internal and external variables and u is the error term. The internal variable depends on managerial decisions and external one depends on the area where the bank operates.

Taking into consideration the explanatory variables, for foreign ownership, as mentioned above, “foreign bank” is a bank with more than 50% of its equity under foreign control. As a result, this will take subsidiaries of foreign banks and domestic banks under foreign control. According to John P. Bonin et al. (2005) we have proxy dummies for ownership type (foreign strategic owner, majority foreign owner, domestic owner). As an explanatory variable we use different financial outputs and inputs: total assets to capture scale and scope economies, ratio of total loans to total assets, deposit growth - which represents the growth opportunities. In order to control the effect of reserve requirements on banks’ profitability we are using the ration of liquid assets to total assets. In general, when we think about efficiency of bank management, we are looking at the cost to income ratio and cost to asset ratio. For controlling how credit risk affects bank profitability we are using the provisions for doubtful loans to gross loan ratio. To measure the market power of a bank, it is useful to include the net interest margin as an explanatory variable. Also, we add equity to asset ratio to detect the effect of capital requirements on banks financial performance and inflation as an explanatory variable.

The data, which we are going to investigate, is balanced panel data. To estimate panel data there are three methods: first difference, fixed effect and random effect. Comparing first difference to fixed effect, latest estimator is efficient when the errors (idiosyncratic) are not serially correlated and don’t have heteroskedasticity. Using fixed effect there is no requirement to make assumption about correlation between unobserved effect α_i and explanatory variables because time-constant variables drop out from the analyses.

The random effect is efficient when there is an assumption, that α_i is uncorrelated with explanatory variables. Thus, unobserved effect can be included in the error term, and if during the estimation there will be serial correlation and heteroskedasticity then it can be corrected by using

GLS estimation. After performing the Hausman test the null hypothesis was rejected⁹, therefore for the estimations of the bank's financial performances (ROA and ROE) we are using fixed effect technique¹⁰.

We tested auto correlation and heteroskedasticity, they were detected¹¹ during estimation of ROA and only heteroskedasticity¹² was obtained under estimation of ROE. Also, we checked whether there was a collinearity problem with explanatory variables, which eventually was not detected. One of the major problems in econometrics is an endogeneity. Endogeneity occurs when the independent variable is correlated with the error term in a regression model and leads to biased and inconsistent estimation. We tested for endogeneity in our model and it was not detected. Thus, as we have auto correlation and heteroskedasticity we can correct them using feasible GLS (FGLS) method in Fixed effect estimation.

The effect of ownership on banks performance in Georgia

This section will introduce the effects of foreign ownership on banks' financial performance by using ROA, ROE and efficient measurements. The *Table 4* shows that on average the banks from each group are foreign majority owned banks that are three times larger than foreign and domestic owned ones. What's more, domestic owned banks are relatively smaller than foreign owned banks. In the latter category, the large size is caused by two big banks, in which international financial institutions are represented (*Table 3*).

The differences between financial performances and bank characteristics by ownership typology can be observed on *Table 4*. Looking at the ratios and the assets, bank borrowing is

⁹ Hausman test suggested using fixed effect estimation on 5% significance level

¹⁰ For more detailed information please see Wooldridge J.M. "Introductory Econometrics, A modern Approach" third edition. (2006), pg. 485-501.

¹¹ Under estimation ROA, auto correlation and heteroskedasticity was detected respectively on 5% and 1% significance level

¹² Testing Heteroskedasticity under estimation ROE, the null hypothesis was rejected on 1% significance level

higher for the foreign majority owned banks than for others. Contradictionally, on average, foreign majority and domestic owned banks are gathering and lending more deposits and loans relative to assets than foreign owned banks. Concerning equity, foreign and domestic owned banks have high average equity to asset ratio than foreign majority owned banks and banks with international institutional investor. Our research has come up with a major finding: foreign and domestic owned banks bear the same risk factors (coefficients) and its average risk measurement is about 2% higher than foreign majority owned banks. Finally, non-interest expenditure for all foreign owned banks is higher than other groups of ownership typology.

Looking at banks performance measures, foreign owned banks have an average ROA approximately 1.2 times larger than foreign majority ones. Also, banks with international participation have smaller return on asset than domestic owned banks. Regarding the ROE, foreign majority owned banks have on average higher ROE than foreign owned and domestic owned banks. Banks in which international financial institutions are represented have on average ROE about 1.5 as high as other ownership categories. Finally, on average net interest margin is higher for domestic owned banks than foreign banks. This means that due to the low average interest margin of foreign banks domestic banks supposedly will reduce their interest margin in near future.

If we return to our empirical estimations, from *Table 5* and *6* we can observe that banks' size has negative effect on ROA and positive effect on ROE (see *Table 5* and *Table 6*). The negative sign of size for ROA can be explained by equation (2). However, if we look from shareholders' perspective, then it appears that 'positive sign on size is logical' because the larger the banks is the higher the return on equity becomes. We found out that loan to asset ratio and net interest margin positively affect on ROA and ROE. Positive but not significant sign on risk (Loan loss reserve/Gross loans) variable confirm the fact, that the more risky you are the more return you will get from your activities. The effect of capitalization on the banks' financial performance is different and significant; so any increase in equity negatively effects on ROE and positively on

ROA. Negative sign of inflation shows that high inflation level deteriorates banks' financial performance.

Table 5
Estimation results for the ROA (method: FGLS)
Number of obs. 640

Dependent variable ROA	
Intercept	0.031 (1.61)
Total Assets	-0.0015 (-1.8)*
Deposit Growth	0.001 (1.4)
Total Loans/Total Assets	0.021 (3.22)***
Liquid Assets/Total Assets	0.003 0.42
Loan loss reserve/Gross loans	0.003 (0.97)
Net Interest Margine	0.046 (5.92)***
Total Cot/Total Income	-0.027 (-10.25)***
Total Cost/Total Assets	0.632 (37.46)***
Equity/Total Assets	0.033 (6.01)***
Inflation	-0.0002 (-1.17)
Foreign strategic owner	-0.003 (-1.69)*
Foreign majority owner	0.0004 (0.21)
IFI	-0.001 (-0.98)
Wald Chi2(13) = 2578.05	

* Significant at 0.1 level

** Significant at 0.05 level

*** Significant at 0.01 level

Table 6
Estimation results for the ROE (method: FGLS)
Number of obs. 640

Dependent variable ROE	
Intercept	-0.04 (-0.64)
Total Assets	0.006 (2.05)**
Deposit Growth	-0.0006 (-0.22)
Total Loans/Total Assets	0.093 (6.35)***
Liquid Assets/Total Assets	0.045 (2.45)**
Loan loss reserve/Gross loans	0.02 (0.97)
Net Interest Margine	0.309 (9.01)***
Total Cot/Total Income	-0.069 (-7.46)***
Total Cost/Total Assets	2.101 (23.14)***
Equity/Total Assets	-0.149 (-8.37)***
Inflation	-0.001 (-1.06)
Foreign strategic owner	0.034 (5.12)***
Foreign majority owner	-0.004 (-0.78)
IFI	-0.014 (-1.15)
Wald Chi2(13) = 1829.5	

The most contradictory finding from our return on equity model is that foreign strategic ownership and foreign majority ownership differently and considerably effect on banks financial measurement – ROA (Table 5). We were expecting such result, because some of the banks included in foreign ownership category are continuing their progress, but at the same time there is

no significant movement¹³ in other banks activities. So, overall effect is negative¹⁴. Having the foreign majority owner (*Table 6*) leads to another problem, as several owners call forth average book value of equity to be higher. So, from equation (1) we can see that increase in average book value of equity decreases ROE. On contrary to this finding, the strategic ownership positively and significantly effects on ROE.

We can consider three possibilities that might drive international investment funds (EBRD, IFC) to take ownership stakes in banks in transition economy. First strategy could be their decisions based mainly on financial consideration – to look for the best performed banks and follow high performance rather than trying to make banks more progressive. On the other hand, international financial institutions are involved in transferring technology and know-how to banks. In addition, the participation in ownership of high profile international institutions (or investment funds) may give quality signal that will cause attraction of the better clients and accession to cheaper funds. In Georgia international investment funds are giving cheap sources to banks and require that these sources be allocated in less efficient (profitable) and developed economy sectors. Thus, as invested money (that comes from cheap sources) is allocated in an inefficient way, it causes negative and insignificant effect of international investment funds involvement on ROA and ROE. Our findings show that participation of the international institutional investors negatively effects on banks financial performance under certain circumstances that are given above.

¹³ A bank is defined a not very active when bank do not receives deposits and do not provide active advertising campaign for receiving deposits and giving loans.

¹⁴ We have checked for the effects of foreign ownership on banks that have radically changed their strategies, services and activities and estimation showed that foreign strategic ownership positively affects the banks' financial performance, ROA. (these estimated results are not provided in this paper, but can be presented if it will be requested)

Frontier efficiency approach

It is obvious that under tough competition, companies (banks) have small profit margins and returns. Friest S. and Taci A. (2002) argue that in transition countries where the banking sector is less developed, general financial measures are often higher. Also, in case of Georgia, small banks have higher financial performance measures than big banks. Therefore, in addition to the return on equity model, we are using frontier efficiency approach to measure banks efficiency performance.

The use of efficiency frontier analysis is related to several methodological problems. As there are different techniques to measure efficiency scores (linear programming and econometrics), each technique may produce diverse results. Different analysis yields different results. Using the data of European banks/countries, Resti (1997) showed that there is high rank-order correlation between the parameters estimated by stochastic frontier analyses (SFA) and data envelopment analyses (DEA). However, while using both approaches, as well as the distribution-free approach (DFA) for five European countries (France, Germany, Italy, Spain, Switzerland), Weill (2003) concluded that the estimated parameters are not correlated. Thus, choosing just one technique may influence the efficiency results.

Stochastic frontier analysis and distribution free approach are based on econometric tools, while data envelopment analysis uses linear programming. The main difference between the methods cited above is in decomposition of the residual between inefficiency term and random disturbance. The advantage of SFA is that it allows for random error, which cause improvement in estimation of efficiency scores. SFA has distributional assumptions on separate terms of residual, while DFA relies on intuitive assumptions. DEA overestimates efficiency by assuming that the residual is an inefficient term. Specifying functional form can be considered as disadvantage of parametric technique, because functional form may not fit in the data. An alternative to the parametric stochastic frontier is the deterministic nonparametric approach where no specific parametric assumptions are made on the model. In these nonparametric approaches

the statistical properties rely on assumption, where no noise term is allowed¹⁵. But, this assumption is too strict in many practical situations where we might expect random shock, measurement error, etc.

In the presence of cross-sectional data Byeong U. Park et al (2008) for the context of truncated regression that does not require parametric assumptions, proposed a fairly flexible estimator and showed that estimator performs as well as the fully parametric estimator when the assumptions for the latter hold, but performs much better when they do not¹⁶.

We use the Battese and Coelli (1995) SFA model. The first advantage of this model is that it can be estimated for an unbalanced panel, which increases the amount of observations. A second advantage of Battese and Coelli (1995) model is that it estimates the coefficients of the efficiency variables and the cost frontier simultaneously. Wang and Schmidt (2002) show that a two step approach suffers from the assumption that the efficiency term is independent and identically half normal distributed in the first step, while in the second step the efficiency terms are assumed to be normally distributed and dependent on the explanatory variables.

The cost efficiency model

This model allows us to estimate minimum cost frontier for banks or to state in other words, how efficiently banks are using their inputs to produce outputs (profits, services, investments and other activities). Stochastic frontier analysis is widely used to measure firms efficient performance. This method, with general cost function estimates the minimum cost frontier for entire sample. So, the efficiency can be measured by distance from the estimated frontier.

¹⁵ For further discussion please see Deprins D, Simar L, Tulkens H, (1984)

¹⁶ Park BU, Simar L, Zelenyuk V (2008) local likelihood estimation of the truncated regression and its derivatives: theory and application. *Journal of Econometrics* 146(1):185-198

Suppose in a year t i th banks total cost function is

$$TC_{it} = f(Y_{it}, X_{it}) + \varepsilon_{it} + u_{it} \quad (4)$$

Where Y and X are banks outputs and price of inputs. The error term contains two components, one is assumed to have non-negative distribution and the second is assumed to have symmetric distribution. The non-negative component u_{it} represents the technical inefficiency effect, which causes the bank to operate above the cost frontier. The component with symmetric distribution - ε_{it} represents an idiosyncratic error term. So, ε_{it} may increase or decrease cost from the benchmark. Hence, the frontier itself is stochastic and distance from best practice is represented by inefficiency term u_{it} . In efficiency literature ε_{it} is independently identically distributed with mean 0 and variance equal to σ_ε^2 i.e $N(0, \sigma_\varepsilon^2)$. The u_{it} is independently but not identically distributed according to a truncated normal distribution¹⁷.

As is common in the efficiency literature, we use translog specification of all variables in (4) equation with homogeneity and standard symmetry assumptions. We estimate the following translog function

$$\begin{aligned} \ln TC_{it} = & \beta_0 + \sum_{n=1}^4 \beta_n \ln Y_{n,it} + \sum_{m=1}^2 \alpha_m \ln X_{m,it} + \sum_{h=1}^2 \gamma_h \ln E_{h,it} \\ & + \frac{1}{2} \sum_{n=1}^4 \sum_{k=1}^4 \psi_{nk} \ln Y_{n,it} \ln Y_{k,it} + \frac{1}{2} \sum_{m=1}^2 \sum_{j=1}^2 \omega_{mj} \ln X_{m,it} \ln X_{j,it} \\ & + \frac{1}{2} \sum_{h=1}^2 \sum_{s=1}^2 \lambda_{hs} \ln E_{h,it} \ln E_{s,it} + \sum_{n=1}^4 \sum_{m=1}^2 \theta_{nm} \ln Y_{n,it} \ln X_{m,it} \\ & + \sum_{n=1}^4 \sum_{h=1}^2 \mu_{nh} \ln Y_{n,it} \ln E_{h,it} + \sum_{m=1}^2 \sum_{h=1}^2 \rho_{mh} \ln X_{m,it} \ln E_{h,it} \\ & + \varepsilon_{it} + u_{it} \quad (5) \end{aligned}$$

Output Y includes total interest bearing funds, total loans, total fixed assets and non-interest income. Price of inputs (X) combines price of capital and price of fund. Price of fund is

¹⁷ Coelli T.J. "A Guide to FRONTIER Version 4.1: A Computer Program for Stochastic Frontier Production and Cost Function Estimation" Centre for Efficiency and Productivity Analysis (CEPA) Working Papers, N 7/96

defined as a ratio of banks interest expenses to total interest bearing funds (sum of deposits and other interest bearing funds). Price of capital is defined as non-interest expenses to total fixed assets ratio. Also, for controlling risk performance, ability to absorb losses and loan quality we used as an explanatory variable (E), that includes the ratio of loan loss provision to gross loans and equity capital.

In order to guarantee linear homogeneity we scaled cost and one input price by price of labour. This scaling implies that sum of the estimated coefficients for the price of funds and price of labour is equal to one¹⁸. At the same time, in order to control heteroscedasticity and adjust for scale bias, we scaled cost, output variables and equity capital by the loan loss provision to gross loans¹⁹. We checked whether scaling gives possibility to avoid heteroskedasticity problem in this model; null hypothesis wasn't rejected on 5% significance level.

The technical inefficiency effect, u_{it} , from the stochastic frontier model (5) could be specified in equation (6)

$$u_{it} = \delta Z_{it} + W_{it} \quad (6)$$

where, W_{it} has a truncated normal distribution with $N(\delta Z_{it}, \sigma_u^2)$. The point of truncation is $-\delta Z_{it}$ i.e., $W_{it} \geq \delta Z_{it}$ and $u_{it} > 0$. Therefore, the truncation of inefficiency term depends on banks specific characteristics, so that $u_{it} > 0$. This specific characteristics are associated with banks ownership structure (foreign owner, foreign majority owner and domestic owner), their market power and risk management. Battese and Coelli defined u_{it} as $u_{it} = \exp(-\eta(t-T))u_i$ where eta (η) parameter is the parameter that determines whether inefficiency is time varying or time invariant. If eta (η) is significantly different from zero we have time varying inefficiency and if not then it's indicates time invariant inefficiency. Also, when $\eta > 0$ the degree of inefficiency decreases over time and when $\eta < 0$, the degree of inefficiency increases over time.

Hence we use logarithm function, the efficiency effect will be $\exp(-u_{it})$. The efficiency is always no-negative and when it's equal to 1 we have best efficient result and when it's equal to

¹⁸ Kuenzle, M., "Cost Efficiency in Network Industries: Application of Stochastic Frontier Analysis". Universität Zürich, 2005

¹⁹ . Altunbas Y., Ming-Hua, L., Molyneux, P., Seth R., "Efficiency and risk in Japanese banking". Journal of Banking and Finance 24, (2000): 1605-1628

zero we have inefficiency. So, stochastic frontier analysis measures efficiency relative to frontier of cost function. However, from estimation of cost function only the composite error term $v_{it} = \varepsilon_{it} + u_{it}$ can be observed. But, we are interested in estimation of inefficiency term to calculate efficiency of each bank. So, we are using method of Jondrow et al., (1982) to separate the inefficiency component from the composite error and calculate the conditional expectation of u_{it} given $v_{it} = \varepsilon_{it} + u_{it}$ as a best predictor of u_{it} for each bank.

To estimate the stochastic efficiency frontier, measurements of bank inefficiency and correlates of bank inefficiencies given by Equations (5) and (6), we use the Frontier econometric program developed by Coelli (1999) as incorporated in STATA 10 software.

The SFA can be applied either in a set of annual cross-section estimations or in a single panel estimation. The estimation of panel data allows for the estimated coefficients of the cost function to vary over time (variation that can be caused by changes made in organizations and technologies and developments in the broader economic environment). However, using a set of annual cross-section estimations rather than single panel, estimation sacrifices efficiency because of reduced degrees of freedom and makes the coefficients of a cost function relatively more sensitive to sample outliers in each year²⁰. Therefore, we provide report only on the results from the estimations based on panel data.

The effects of foreign ownership on banks cost efficiency in Georgia

Stochastic frontier approach reports some parameters of the estimated frontiers of standard deviation of the inefficiency component (σ_u), disturbance of the random component (σ_v), standard

²⁰ Fries S., Taci A. "Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries". *Journal of Banking & Finance* 29, (2005): 55–81.

deviation of the composite disturbance (σ) and variance parameter γ^{21} . In order to check whether we need stochastic frontier estimation, we can refer directly to the value of gamma and determine whether it is significantly different from zero. The estimate for the variance parameter, γ , is close to one (0.8752), which shows that the inefficiency effects are likely to be highly significant in the analysis of the value of cost of banks²². Generalized likelihood ratio test showed that null hypotheses (inefficiency effects are absent from the model) is rejected on 1% significance level. In addition, we test whether inefficiency effects are not stochastic ($H_0: \gamma=0$) and it is also rejected on 1% significance level. Estimated parameter η is significantly different from zero ($\eta>0$), so inefficiency decreases over time.

Table 7. Inefficiency score¹

Groups and years	Cost Inefficiency	
	Mean	Standard deviation
2004	21.05	6.65
2005	20.9	6.41
2006	20.62	6.33
2007	20.35	6.25
2008	20.18	6.24
Combined 2004-2008	20.6	6.32
Foreign strategic owner ²	17.74	7.84
Foreign majority owner ³	22.39	4.75
International Financial Institutions involvement	18.31	0.33
Domestic owner ⁴	22.05	4.52
<i>Foreign involvement</i>		
75.01-100%	22.56	4.14
50.01-75%	20.15	2.44
0.01-25%	21.5	0.27
Branches	11.16	9.49
Domestic	22.48	5.66

1. Inefficiency score are calculated by using stochastic frontier estimation and deviations from banks cost frontier are represented by reported scores. Yearly estimates are simply average for the year from the panel data estimation. Foreign involvement numbers are also average of respective groups taken from the sample.

2. Single foreign majority owner or single controlling owner (more than 51%)

3. Foreign owners together hold more than 50% of the shares and no one has controlling shares

4. in this subgroup foreign involvement is less than 25%

²¹ $\sigma =$

²² Battese, G.E., Coelli, T., J., "A model for technical inefficiency effects in a stochastic frontier production function for panel data". Empirical Econometrics 20, (1995): 325-332.

Descriptive statistics for the estimated inefficiency are presented in *Table 7*. Overall, average estimate indicates that cost inefficiency is 20.6%.

Therefore, an average bank should improve its cost category respectively by 20.6% to match its performance with the best practised bank. Georgian-owned banks (institutions with no foreign involvement) reported higher inefficiency (22.05) than foreign strategic owned (17.74) and less in efficiency than foreign majority owned (22.39) banks. As we can see from *Table 7*, banks with international financial institutions involvement are least inefficient than domestic and foreign owned banks (strategic/majority).

We also have investigated foreign institute efficiency performance based on the extent of foreign involvement. The results indicate that the higher the foreign involvement in bank ownership the lower the efficiency is. Banks with at least 75% foreign involvement were the most inefficient group, with a cost inefficiency score of 22.56%. Banks with 50-75% (inefficiency score of 20.15) and 0.01-25% (inefficiency score – 21.5) displayed lower inefficiency scores than the domestic banks (inefficiency score of 22.48). Branches of the foreign banks showed the least inefficiency score (11.16) than the other subgroup categories.

Observing the inefficiency trend over the sample years, we notice an improvement in efficiency (indicated decreasing trend in inefficiency). The average cost inefficiency score was 21.05 in 2004 and this score declined over the years with the lowest score of 20.18 reported in 2008. The overall evidence is that an increase in foreign ownership in the banking markets was associated with improved cost efficiency of banks. However, enhancement of a country's political stability in economic development should not be neglected, because this is the factor that might have contributed to the improvement of the banking environment that could lead to the substantial advancement of the banking sector.

Once we have attained the cost inefficiency scores, we can calculate efficiency for each bank using $\exp(-\text{inefficiency score})$ formula and employ a series of estimates to investigate possible correlation between efficiency score, bank level variables and ownership categories.

Mostly, we are interested in seeing whether the foreign strategic, majority ownership and international financial institutions' involvement significantly affects efficiency scores.

We estimate OLS regression to see the correlation between dependent and explanatory variables:

$$\begin{aligned}
 EF_i = & \beta_0 + \beta_1 LOAN_i + \beta_2 LIQASSET_i + \beta_3 LNASSET_i + \beta_4 EQUITY_i + \beta_5 LLRGL_i + \beta_6 BORL_i \\
 & + \beta_7 DA_i + \beta_8 DGR_i + \beta_9 NIM_i + \beta_{10} PF_i + \beta_{11} ForeignOwner_i + \beta_{12} ForeignMajowner_i \\
 & + \beta_{13} IFI_i + e_i
 \end{aligned}$$

where EF_i is the cost efficiency score, dependent variable $LOAN$ is the total loan to total assets ratio; $LIQASSET$ is the liquid assets to total asset; $LNASSET$ is the logarithm of assets; $EQUITY$ is the equity to total assets; $LLRGL$ is the provision of doubtful loans to total loans; $BORL$ is borrowed (borrowing from international financial institutions and foreign banks) funds to total loan; DA is the deposit to assets; DGR is deposit growth (in percentage); NIM is net interest margin; PF is the price of the fund (total interest expenses to total interest bearing funds ratio); "ForeignOwner" and "ForeignMajowner" respectively are ownership dummy variables and IFI is dummy for international financial institutions involvement. All the explanatory variables are related to the business experience, management decisions, foreign participation and current portfolio structure of each bank.

Results are shown in *Table 8*. Concentration of assets in loans positively and significantly affects cost efficiency. In relation to cost efficiency, liquid assets were found to be reducing inefficiency significantly. As usually, higher non-performing loan reduces cost efficiency. Likewise, lower cost efficiency increases non-performing loans. This idea is also support the hypothesis of bad management, that poor management in the banking institutions results in bad quality loans and therefore, escalates the level of non-performing loans. In our case positive sign of provision of doubtful loans to total loans ratio indicates that on average banks are allocating their financial resources (deliver loans) efficiently and this result emphasize the good management skills. Positive but insignificant correlation of equity to total asset ratio showed that,

banks with relatively high earning assets are more likely to be associated with the increase in efficiency than others.

Table 8
Estimation results for the Cost efficiency (EF)

Dependent variable	EF
Intercept	0.343 (4.67)***
Total Loans/Total Assets	0.05 (3.15)***
Liquid Assets/Total Assets	0.255 (12.84)***
Log of Assets	0.024 (10.48)***
Equity/Total Assets	0.028 (0.54)
Provision of Doubtful Loans/Total Loans	0.024 (1.49)
Borrowing/Total Loans	-0.024 (-0.69)
Deposit/Total Assets	-0.147 (-2.67)***
Deposit Grows	-0.004 (-1.65)*
Net Interest Margin	0.002 (0.08)
Interest Expenses /Interest Bearing Funds	-0.259 (-2.1)**
Foreign Strategic Owner	0.013 (3.07)***
Foreign Majority Owner	-0.023 (-5.23)***
IFI	0.008 (1.11)
R ² = 0.453	
Adjusted R ² = 0.44	
Number of obs. 611	

* Significant at 0.1 level
** Significant at 0.05 level
*** Significant at 0.01 level

Proxy of firm size and logarithm of asset, are positively and significantly correlated with cost efficiency. It reflects that bigger institutions were relatively more efficient. The evidence, that borrowed fund from international financial institution negatively (insignificantly) affect cost

efficiency of banks, proves opinion that was discussed earlier. Negative and significant correlation of deposit to asset ratio indicates that accumulation of deposits relative to assets negatively affects banks cost efficiency.

As we can see from *Table 8*, foreign strategic ownership and international financial institutions involvement causes more efficient operation of banks relative to foreign majority ownership. Moreover, foreign majority ownership negatively affects banks cost efficiency.

It can be summarized from above that foreign strategic owned banks with international foreign institutions partner in Georgia outperformed their domestic counterparts and their active involvement improved the efficiency of banks in the Georgian banking sector. On the contrary, foreign majority ownership decreases the cost efficiency of the banks.

Conclusion

This paper introduces the Georgian banking sector and its experience and development during the country's move from centralized economy to a market-oriented system. Foreign participation in the Georgian banking sector has increased starting from 1999; the empirical findings suggest that such foreign ownership have a positive effect on the banks' performance. To observe this issue empirically, the study takes a sample of banks from the Georgian banking system and focuses, first, on the bank's financial performance measures, using ROA and ROE, and, second, on the banks' efficiency scores, using a stochastic frontier analysis for cost function. When investigating the ownership type's effect on the banks' financial performance, the study concludes that foreign strategic ownership and foreign majority ownership affect the banks' financial measurements – ROA and ROE, both differently and significantly. Applying the return on equity model estimation, the paper concludes that foreign majority ownership positively

affects the banks' financial performance, ROA. However, it renders a negative effect on ROE. Taking into account the fact that some banks under foreign strategic ownership did not change their activities after they have been purchased, the overall effect of foreign strategic ownership is negative. The fact, that international financial institutions require the banks to allocate cheap sources to inefficient economic sectors (such as agriculture) causes a negative, but insignificant, correlation with the banks' financial performance (ROA and ROE).

Applying stochastic frontier analysis renders interesting results: banks with strategic ownership or international financial institutions involvement (EBRD and IFC) are found to be more efficient than their domestic counterparts. However, banks with foreign majority ownership are significantly less cost efficient than those with foreign strategic ownership, international financial institutions involvement and domestic banks. The paper also concludes that the funds borrowed from international financial institutions have a negative impact on the cost-efficiency of the banks.

Observing the existing data, the study found that banks with foreign majority ownership collect more deposits and make more loans than domestic banks and those with foreign strategic ownership. Also, the banks with foreign majority ownership have the smallest provision of doubtful loans to gross loan ration and non-interest expenditure to asset. After adjusting for size, the study found that domestic banks are collecting more deposits and make more loans than the banks with foreign strategic ownership. One can argue that, because foreign banks have lower interest margin than domestic banks, domestic banks will also decrease their interest margins under increasing competition. This conclusion, however, is left for another study to elaborate on.

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Appendix

Table 2	Banks	Foreign Shareholders	Share in capital	Foreigners total share in capital
1	BANK OF GEORGIA	Bank New of York (Nominees) Limited ²³ Firebird Avrora Fund Firebird Republics Fund East Capital Financial Institutions II AB Others	66.2% 5.8% 5.7% 5.4% 7.63%	90.73%
2	TBC BANK	International Financial Corporation (IFC) Liquid Cristal International Deutsche Investitions and Entwicklungesellschaft mbH (German)	30.95% 20.10% 18.36%	69.41%
3	Bank REPUBLIC	Societe Generale (France) EBRD	60% 10%	70%
4	VTB BANK – (GEORGIA)	Vneshtorgbank (Russia) Others	51% 36.13%	87.13%
5	PROCREDIT BANK	ProCredit Holding AG (Germany) Internationale Projekt Consult (IPC) GmbH (Germany) Commerzbank (Germany)	91.42% 7.35% 1.23%	100%
6	BANK CARTU	-	-	0%
7	PEOPLE'S BANK OF GEORGIA	-	-	0%
8	STANDARD BANK	Financial Investment Management company	25%	25%
9	BASISBANK	-	-	0%
10	TAOPRIVATBANK	PrivateBank (Ukraine) Zurifin AG (Switzerland)	75% 23.78%	98.78%
11	BTA SILK ROAD BANK	Bank TuranAlem (Kazakistan) Other	49% 27.01%	76.01%
12	AGROINVESTBANK	-	-	0%
13	FIRST BRITISH BANK	MonteCristo Capital LTD (England)	67%	67%
14	INVESTBANK	Seton Enterprises (England) Comet Investments (US) Galbon Sarl (Sweden) London International Bank (England)	25% 25% 18% 32%	100%
15	HSBC BANK-GEORGIA	HSBC Europe Vingz establishment	70% 30%	100%
16	PROGRESS BANK	-	-	0%
17	Kor Bank Georgia	-	-	0%
18	Galt & Taggart Bank JSC	-	-	0%
19	JSC Halyk Bank Georgia	-	-	-
20	BANK A.S. (Head office – Ankara, Turkey), TBILISI BRANCH	-	-	-
21	International Bank of Azerbaijan - Georgia JSC	International Bank of Azerbaijan (Azerbaijan) CI Bank (Azerbaijan)	75% 25%	100%
22	OPEN JSC TRANSCAUCASUS DEVELOPMENT BANK TBILISI BRANCH	-	-	-

²³ . Bank New of York (Nominees) Limited owes the stocks which are traded in London stock exchange, so it cannot influence on strategic decisions of Bank of Georgia (BOG)

Table 3	Foreign majority owner	Domestic	International financing institutions
Foreign owner			
Republic bank	Bank of Georgia	Cartu Bank	Republic Bank
VTB Bank	BTA Silk Road Bank	Peoples Bank	TBC Bank
Procredit Bank	Investbank	standard bank	
TaoPrivateBank	TBC Bank	Basisbank	
First British Bank		Agroinvestbank	
Two Branches			