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The Impact of Financial Inclusion on Economic Growth and Income Inequality

Finansal Kapsamanın Ekonomik Büyüme ve Gelir Adaletsizliği Üzerindeki Etkisi

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Finansal Kapsamanın Ekonomik Büyüme ve Gelir Adaletsizliği Üzerindeki Etkisi *

Öz

Finansal kapsama; hane halkının ve firmaların, ihtiyaçlarına uygun olan, avantajlı ve makul maliyetli finansal ürünlere ve hizmetlere erişimleri olarak tanımlanmaktadır. Bu finansal ürün ve hizmetler; finansal işlemler, transferler, tasarruflar ve krediler olarak örneklendirilebilir. Bu çalışma endeksleme tekniğini kullanarak finansal kapsamanın ölçülmesi hedeflemektedir. Finansal kapsamayı ölçmek için finansal erişim endeksi, şirketler seviyesinde finansal kullanım endeksi ve hane halkı seviyesinde finansal kullanım endeksi olmak üzere üç endeks oluşturulmuştur. Bu üç endeks, hane halkının ve şirketlerin finansal hizmetlere ulaşımını ve bu hizmetleri etkin kullanımını gösteren finansal kapsamanın farklı boyutlarını ele almaktadır. Bu çalışmada, Dünya Bankası tarafından hazırlanan Global Findex veri tabanı ile Enterprise Survey veri tabanı ve Uluslararası Para Fonu tarafından hazırlanan Financial Access veri tabanı kullanılarak, firmalar seviyesinde ve hane halkı seviyesinde finansal kapsamayı ölçmek için yollar gösterilmiştir. Bu doğrultuda Avrupa ve Orta Asya bölgesindeki ülkelere odaklanılmış, bu ülkelerin finansal kapsamları tarihi bir sırayla ve ülkeler arasındaki finansal kapsamlar karşılaştırmalı bir şekilde analiz edilmiştir. Avrupa ve Orta Asya bölgesinin içindeki dinamikler incelenerek, bölgenin içinde bulunduğu finansal kapsama gösterilirken, aynı zamanda finansal kapsamanın ekonomik büyüme ve gelir adaletsizliği üzerindeki etkisine de ölçümlenmiştir. Panel Regresyon ve en küçük kareler yöntemi regresyon modelini kullanılarak, finansal kapsamının iki önemli makro verisi olan ekonomik büyüme ve gelir adaletsizliği üzerindeki etkileri analiz edilmiştir. Çalışmasının sonucunda, güncel literatürle uyumlu olarak, finansal kapsamanın tüketim ve yatırım için gereken kaynaklara ulaşmayı sağlayan finansmanı sayesinde, ekonomik büyümeyi artırdığı ve gelir eşitsizliğini azalttığı sonucuna varılmıştır. Bununla birlikte Avrupa ve Orta Asya bölgeleri için finansal kapsamanın büyüme üzerindeki etkisinin de anlamlı düzeyde çıktığı görülmüştür.

Anahtar Kelimeler: Finansal Kapsama, Ekonomik Büyüme, Gelir Adaletsizliği, Dünya Bankası, Avrupa ve Orta Asya, IMF

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The Impact of Financial Inclusion on Economic Growth and Income Inequality

Abstract

Financial inclusion is defined as the access of households and firms to beneficial and reasonably priced financial products and services which are in line with their necessities. These could be financial transactions, transfers, savings, and loans. After narrowing down the definition, it then measures financial inclusion by using indexation technique. A major contribution of this study is the development of a measure of financial inclusion via formation of three indices, namely financial access index, firm-level and household-level financial usage indices. These three indices capture different aspects of financial inclusion, which is comprised of access to financial services by both households and firms in addition to effective use of these services. Based on Global Findex database and the Enterprise Survey database collected by the World Bank, Financial Access database collected by the International Monetary Fund the study introduces measures of household-level and firm-level inclusion, with placing Europe and Central Asia in a historical and cross-country perspective. By using Panel and Ordinary Least Squares regression analysis, it analyzes the impact of financial inclusion on two important macroeconomic variables, namely growth and inequality. Moreover, it focuses particularly on the ECA region and analyzes the dynamics in the region. The study aims at documenting the status of financial inclusion in ECA, while shedding light on the impact of financial inclusion on growth and inequality. It concludes that, in line with the contemporary literature, financial inclusion enhances growth and reduces inequality with better access to resources to finance both consumption and investment. According to the article's findings, the positive impact of financial inclusion on growth is significant in the ECA region.

Keywords: Financial Inclusion, Economic Growth, Inequality, the World Bank, Europe and Central Asia, IMF

Introduction

Financial inclusion stands for access of households and firms to beneficial and reasonably priced financial products and services which are in line with their necessities. These could be financial transactions, transfers, savings, and loans.

Financial inclusion can also be defined as the access to and household- level and firm-level utilization of formal financial services. Only financial access is

not sufficient to define the financial inclusion given that access without any usage does not explain financial inclusion. Therefore, in this study, to measure financial inclusion, the definition has been narrowed to cover access and usage.

Financial inclusion has become a very popular topic in the recent years particularly after the 2008 financial crisis. It has displayed an increasing trend in many countries worldwide and its degree varies extensively from region to region.

There are two main indicators to measure financial inclusion: access and usage indicators. Access indicators display how deep the financial services' outreach is. These include the branch or ATM network and their penetration levels. Usage indicators measure the clients' utilization of financial services. These include how frequently the products/ services are used over a certain period. Access indicators are captured by supply-side data. Supply-side data surveys give information for the formal financial institutions either directly from them or via financial regulators. The data contain information on geographical access (location of branches), network or utilization of products and services. Supply-side data can be collected regularly given that there are formal and regulated providers of this data. Its cost base is low compared to the demand-data surveys.

Usage indicators are captured by demand-side data. Demand-side data surveys give information about users of financial services (households and firms) collected by conducting surveys of household and firms. Users' financial needs are captured by these surveys (either met or unmet), also the survey results point out to encountered barriers while looking for formal financial services and products.

It should be noted that demand-side data and supply-side data are complementary and both should be used to evaluate financial inclusion in a holistic approach. Therefore, this study uses both supply-side and demand-side data to measure financial inclusion.

A contribution of this study is the development of a measure of financial inclusion via formation of three indices, namely financial access index, firm-level and household-level financial usage indices. These three indices capture different aspects of financial inclusion, which is comprised of access to financial services by both households and firms in addition to effective use of these services.

The aim of this article is to contribute to the literature by studying the macroeconomic relevance of financial inclusion with an emphasis on Europe and Central Asia (ECA) countries. This study examines the linkages of financial inclusion with economic growth and inequality. The study will

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analyze financial inclusion in three main sections: index formation, regression analysis and qualitative analysis of the ECA region.

As shown in the contemporary literature, financial inclusion enhances growth and reduces poverty and inequality with better access to resource necessitated to finance both consumption and investment. This study aims at documenting the status of financial inclusion in ECA, while shedding light on the impact of financial inclusion on growth and inequality.

The study aims at measuring financial inclusion with the formation of three indices. Similar indices were formed by using similar approaches from the literature. The aim of this study is to quantify financial inclusion and to examine the relationship between financial inclusion and growth and inequality, after controlling for financial structure indicators (both covering financial markets and financial institutions). The intention is to decide if financial inclusion has an impact on growth and on inequality with a particular focus on the ECA region.

Literature Review

The research on the relationship between financial inclusion, inequality and macroeconomic growth has been limited.

Park and Mercado (2015) examined the importance of financial inclusion given that increasing the access to financial services for the poor households was known to be an effective instrument to reduce poverty and to alleviate income inequality. The paper used Sarma's definition (2008) that indicated "financial inclusion as a process that facilitates the access, availability, and usage of financial services" for the whole society. This paper developed a measure for financial inclusion that utilized cross-country data that was available while concentrating on developing countries in Asia. Within precincts of country level data, financial inclusion was connected with a number of macroeconomic outcomes including economic growth, stability and equality (Sahay et al., 2015: 20). It demonstrated that access to finance of the household has a very strong positive link with growth (Sahay et al.,2015a, 25). They used panel regression to test the linkage between stability and financial inclusion.

Dabla et al. (2015) analyzed the relationship of financial inclusion and macroeconomic topics. The authors formed 3 indices that embody various fragments of financial inclusion.

According to Dabla et al's perspective, 3 indices were formed which are

1) utilization of financial services by individuals,
2) utilization of financial services by small and medium-sized enterprises (SME's)
3) access to financing.

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The authors used 3 most widely referred sources including the World Bank Enterprise Survey, the World Bank Global Financial and the IMF's Financial Access Survey (FAS). One of the most significant additions of Dabla et al. (2015) study to the inclusion literature was the creation of the index of financial inclusion for small and medium-sized enterprises.

Batuo and et al. (2010) used a panel data analysis for twenty-two country economies from African from 1999 to 2004. They concluded that income inequality can be reduced when the countries improve their financial sector.

Aslan and et al.'s (2017) implemented cross-country regressions in their studies. The research results reported that financial inclusion was related to income inequality. The authors applied the Findex data to create an index of financial inclusion. In conclusion, the authors found that if financial access was constrained, then there is higher income inequality at the country level.

Methodology

This article will survey the financial inclusion by employing a multi-dimensional indices approach. It'll use Norris and Deng's approach (Norris et al. 2015: 20) in constructing 3 multi-dimensional indices that cover completely different aspects of financial inclusion.

Global Findex

The Global Financial Inclusion[1] dataset was launched in 2011 by the World Bank. It was absolutely comprised of comparable indicators showing how people globally tend to save, to borrow, to make payments; and to manage risk. The Global Findex dataset for 2014 contains more than one hundred indicators, while covering information regarding gender information, age classification, and household income. The indicators were shaped by using the survey data from interviews conducted with 150 Thousand nationwide representative and unsystematically selected adults[2] and in 143 countries representing more than % 97 of the worldwide population (World Bank Global Findex Questionnaire, 2014).

Enterprise Survey

Enterprise Survey is a vast dataset with an extensive collection of economic data on 131,000 firms in 139 countries. The survey contains a variety of business environment topics including but not limited to access to finance, corruption, crime, infrastructure, competition, and performance measures.

There are various topics covered in Enterprise Surveys including but not limited to business licensing, crime corruption, finance, innovation, informality, infrastructure, labour, perceptions about limitations for doing

[1] Global Findex
[2] more than age 15

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business, regulations, taxes, and trade. The Enterprise Surveys deliver indicators that show how firms finance their operations and features of financial transactions at the firm level (World Bank Enterprise Survey Questions, 2015).

Financial Access Survey

In June 2010, the IMF began to disseminate the results of its annual Financial Access Survey (FAS). The FAS covers the main indicators of financial access and utilization by both households and firms which are globally comparable. The FAS database contains annual meta-data including 189 countries. FAS mainly encompasses two main dimensions of financial inclusion including access to basic consumer financial services and utilization of basic consumer financial services.

Three different indices were formulated. These three indices capture different aspects of financial inclusion, which include access to financial services by both households and firms in addition to effective use of these services.

The diagram below shows the indicators included in each of the indices.

Table 1: Composition of Indices

Indices	Sub-components	Variables	Sources
Use of Financial Services	Households (%, age 15+)	• Account at a financial institution • Debit card • Credit card • Loan from a financial institution in the past year • Saved at a financial institution in the past year	Global Findex
	Firms ---------- SMEs (Enterprise Survey < 100 employees)	• % of companies a checking or savings account • % of companies with bank loans/ line of credit • % of companies using banks to finance investments • % of companies using banks to finance working capital • % of companies detecting access/ cost of finance as a most important restraint	Enterprise Survey
Access to Financial Infrastructure		• Quantity of ATMs[3] for each 1,000 square km • Quantity of branches of ODC's for each 1,000 square km • Quantity of branches for each 100,000 adults • Quantity of ATMs for each 100,000 adults	Financial Access Survey

All variables were normalized as shown below, while formulating the composite index:

$$Index_{a,it} = a_{it} - \min(a_{it}) / \max(a_{it}) - \min(a_{it}) \qquad (1)$$

Where $Index_{a,it}$ is the standardized variable of a of nation "I" and on time t, min (a_{it}) is the minimum value of variable a_{it} over all it; and max (a_{it}) is the

[3] Automated teller machines

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maximum value of a_{it}. For those indicators, which display an absence of financial inclusion, the reserve formulation was utilized:

$$I_{a,it} = 1 - [a_{it} - \min(a_{it})/\max(a_{it}) - \min(a_{it})] \quad (2)$$

After the completion of the index formation, the relationship between the explanatory variables and financial inclusion was explored. For usage indices including household-level index and firm-level index, cross sectional analysis; for access index panel data analysis was conducted while looking at the effect of financial inclusion on growth and on equality.

Panel analysis on FAS data was conducted. Given the availability of data for a longer time period from 2004 to 2015, the use of panel data was appropriate. Hausmann test was conducted resulting in significance of fixed effects model so in both growth and inequality regressions, fixed effects model was used.

As explained earlier there are three levels of analysis including financial access, firm level financial inclusion and household level financial inclusion. In the initial analysis, panel data was utilized for examining the link between growth and financial inclusion and between income equality and financial inclusion, after controlling for FI efficiency, FM depth and FM efficiency. Since our sample includes 189 countries from all regions over the period of 2004 to 2015, the use of panel data was a better choice compared to the use of either cross-sectional or time-series only data. The following panel regression was conducted:

$$Y_{it} = \alpha + \beta X_{it} + u_{it} \quad (3)$$

i = 1,2……,N; t=1,2,……,T; i stands for subjects (countries) as the cross-section dimension and t stands for time as the time-series dimension. α is a scalar, β is K x 1 and X_{it} is the itth observation of L explanatory variables. The error component is as shown below:

$$U_{it} = \mu_i + v_{it} \quad (4)$$

Where μ_i stands for the unobservable specific effects over time and v_{it} for the remainder disturbance, μ_i is assumed to be independently and similarly distributed. The empirical test is focused on the determinants of growth and equality of the world with a specific emphasis on the ECA region. The model formulated is:

$$GR_{it} = \alpha_0 + \beta_1 FAF_{it} + \beta_2 IRS_{it} + \beta_3 MCAP_{it} + \beta_4 MTURN_{it} + ECADummy + CrisisDummy + \varepsilon_{it} \quad (5)$$

$$GINI_{it} = \alpha_0 + \beta_1 FAF_{it} + \beta_2 IRS_{it} + \beta_3 MCAP_{it} + \beta_4 MTURN_{it} + ECADummy + CrisisDummy + \varepsilon_{it} \quad (6)$$

GR_{it} is the growth of country i at time t. One proxy, GDP per capita is used to measure growth. $GINI_{it}$ is the income equality of country i at time t. One proxy, GINI Coefficient is used to measure income inequality. FAF_{it}, Financial Access Index, is the measure of access to finance for country i at time t. IRS_{it}, Interest Rate Spread, is the measure of efficiency of financial institutions for country i at time t. $MCAP_{it}$, Market Capitalization to GDP, is the measure of depth of financial markets for country i at time t. $MTURN_{it}$, Stock Market Turnover ratio, is the measure of efficiency of financial markets for country i at time t. ECA Dummy, is the measure of not whether country i belongs to ECA or not. Crisis Dummy, is the measure of whether time t is 2008 or not. β is a vector of parameters to be estimated. ε_{it} is the error term.

Two dependent variables used in this study are GDP per Capita (GR) and GINI coefficient (GINI). GR is used to measure growth. Economic output and well-being of a country are most appropriately measured by the GR. It is the total output measure of a country which is calculated by dividing GDP by the country's population. When comparing different countries, the GR is particularly handy because it demonstrates the relative performance of the countries. Growth in the economies can be tracked by an increase in GR.

Inequality, as a concept, is much broader than poverty and it includes the entire population. In this study, GINI coefficient is used to measure income inequality consistent with the literature. The coefficient is within the range of 0 (or 0 percent) and 1 (or 100 percent), with 0 representing perfect equality and 1 representing perfect inequality. Values over 1 are theoretically probable due to negative income. A country with the same income level of all the residents would have a Gini coefficient of 0. A country which has one individual earned all the income, while others do not earn any income, would have a Gini coefficient of 1 (or 100). Table 2 shows that the mean value for GR is 8.43 for 189 countries in 11 years and 37.65 percent for the Gini.

Table 2: Descriptive Statistics of Dependent Variables

Variable Name	Mean	Standard Deviation	N
GR (GDP)	8.43	1.53	2173
Gini	0,03765	0,0893	715

In addition to the control variables elaborated above, there are two dummy variables, namely ECA Dummy and Crisis Dummy. Given that the study investigates the financial inclusion in ECA particularly, the ECA dummy was introduced to identify if it makes a difference to be part of ECA

countries in the financial inclusion's impact on growth and income inequality.

Table 3: Descriptive Statistics of Independent and Dummy Variables

Variable Name	Mean	Standard	N
FAF	.06	.06	1,883
IRS	7.55	5.97	1,528
MCAP	58.5	93.91	1,247
MTURN	39.3	58.08	1,231
ECA Dummy	.19	.46	2,190
CRISIS Dummy	.14	.34	2,190

Fixed effect and random effect models estimate the parameters of the panel data regression. In this study, the fixed effects model was expected to be the suitable method given that we expect to see the effect of 2008 global crisis on most of the countries in the sample.

Hausman and Taylor (1981) test is conducted to decide on the utilization of the appropriate model. In Hausman Test, the correlation between individual effects and regressors is tested with the null hypothesis that there is no correlation between individual effects and regressors.

Table 4: Hausman Test

Dependent Variable	Test Summary	Chi-Sq Statistics	Prob.
GDP per capita	Cross-section	82.82	0.0000
GINI	Cross-section	27.21	0.0001

$P \leq 0{,}01$

Hausman test in table 4 demonstrates that the fixed effects model is much better than the random effects model for the above-mentioned equations given that the results of both tests are significant.

To check whether the dependent and independent variables are stationary, Unit Roots (based on Dickey- Fuller tests) test is conducted for each variable. It is concluded that all the variables are stationary.

The independent variables are tested for correlation. It was concluded that private sector credit to GDP (DCR) is correlated with FAF and therefore it was removed from the model. The other independent variables were not correlated with each other. Kindly refer to table 5 for the correlation matrix.

Table 5: Correlation Matrix

Variables	FAF	DCR	IRS	MCAP	MTURN
FAF	1				
DCR	0.6408	1			

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IRS	-0.2533	-0.4085	1		
MCAP	0.4459	0.4924	-0.1833	1	
MTURN	0.2848	0.2813	-0.1501	0.1297	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Cross-country Ordinary Least Squares (OLS) Estimation

An estimation of cross-country ordinary least squares (OLS) was conducted, with respect to the measure of household level inclusion (household FI) and firm level inclusion (firm level FI) at one point in time with GDP per capita and GINI. The empirical test is focused on the determinants of growth and equality of the world with a specific emphasis on the ECA region. The model formulated is:

$$GR_{it} = \alpha_0 + \beta_1 FIH_{it} + \beta_2 IRS_{it} + \beta_3 MCAP_{it} + \beta_4 MTURN_{it} + ECADummy + \varepsilon_{it} \quad (7)$$

$$GINI_{it} = \alpha_0 + \beta_1 FIH_{it} + \beta_2 IRS_{it} + \beta_3 MCAP_{it} + \beta_4 MTURN_{it} + ECADummy + \varepsilon_{it} \quad (8)$$

$$GR_{it} = \alpha_0 + \beta_1 FIF_{it} + \beta_2 IRS_{it} + \beta_3 MCAP_{it} + \beta_4 MTURN_{it} + ECADummy + \varepsilon_{it} \quad (9)$$

$$GINI_{it} = \alpha_0 + \beta_1 FIF_{it} + \beta_2 IRS_{it} + \beta_3 MCAP_{it} + \beta_4 MTURN_{it} + ECADummy + \varepsilon_{it} \quad (10)$$

GR_{it} is the growth of country i at time t. One proxy, GDP per capita is used to measure growth. $GINI_{it}$ is the income equality of country i at time t. One proxy, GINI Coefficient is used to measure income inequality. FIH $_{it}$, Household Financial Inclusion, is the measure of access to finance for country i at time t (data is only available for 2011 and 2014). FIF_{it}, Firm level Financial Inclusion, is the measure of access to finance for country i at time t (data is only available for 2006, 2009, 2010 and 2013). IRS_{it}, Interest Rate Spread, is the measure of efficiency of financial institutions for country i at time t. $MCAP_{it}$, Market Capitalization to GDP, is the measure of depth of financial markets for country i at time t. $MTURN_{it}$, Stock Market Turnover ratio, is the measure of efficiency of financial markets for country i at time t. *ECA Dummy*, is the measure of not whether country i belongs to ECA or not. β is a vector of parameters to be estimated. ε_{it} is the error term.

Breuch-Pagan/ Cook-Weisberg test is conducted to test heteroscedasticity in 12 OLS regressions that are conducted. According to the test results, no heteroscedasticity is identified. All tests displayed low chi.

Table 6: Correlation Matrix

Variables	Year	FIH	MCAP	MTURN	DCR	IRS
FIH	**2006**	1				
	2009	1				
	2010	1				
	2011	1				
	2013	1				
	2014	1				

MCAP	**2006**	0.110*	1			
	2009	0.204*	1			
	2010	0.293*	1			
	2011	0.342**	1			
	2013	0.318*	1			
	2014	0.355*	1			
MTURN	**2006**	-0.138*	0.092*	1		
	2009	-0.032*	0.089*	1		
	2010	0.101*	0.202**	1		
	2011	0.452**	0.237*	1		
	2013	0.093*	-0.022*	1		
	2014	0.312*	0.039*	1		
DCR	**2006**	0.382*	0.514**	0.173*	1	
	2009	0.364*	0.532**	0.347**	1	
	2010	0.317*	0.559**	0.422**	1	
	2011	0.594**	0.590**	0.623**	1	
	2013	0.488**	0.666**	0.486**	1	
	2014	0.701**	0.656**	0.478**	1	
IRS	**2006**	-0.058*	-0.198*	-0.059*	-0.352**	1
	2009	-0.070*	-0.115*	-0.056*	-0.364**	1
	2010	-0.187*	-0.165*	-0.156*	-0.354**	1
	2011	-0.309*	-0.114**	-0.218*	-0.334**	1
	2013	0.052*	-0.196*	-0.042*	-0.297**	1
	2014	-0.277*	-0.077*	-0.116*	-0.294**	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Correlation tests were conducted for all independent variables. Credit to GDP was correlated with other independent variables; therefore, it was excluded from the regressions. Please find below the autocorrelation matrices for each regression. The dynamics between Financial Inclusion and growth; between Financial Inclusion and inequality will be analyzed by using OLS estimation formulated above as suggested (Sahay et al., 2015: 30).

Findings

Panel Regressions

This section provides empirical evidence on the effect of financial inclusion on growth and income inequality. The outcome of the unbalanced panel regression on GDP per Capita and Gini Coefficient are given in Table 7.

Table 7: Panel Data Regression for GDP Per Capita and GINI

Dependent Variables **Independent Variables**	GDP per Capita		GDP per Capita	
FAF	5.8607 (0.000)	***	-26.0611 (0.000)	***
IRS	-0.0413 (0.000)	***	0.0621 (0.197)	

MCAP	0.0002 (0.684)		0.0069 (0.355)	
MTURN	-0.0004 (0.091)	*	0.0104 (0.023)	**
ECA Dummy	0.0732 (0.502)		-1.4670 (0.1269)	
CRISIS Dummy	-0.0426 (0.0637)	*	-0.1566 (0.546)	
Adjusted R-squared F-statistic Prob (F-statistic)	0.5779 81.4600 (0.0000)	***	0.1599 70.5700 (0.0000)	***

***p < 0,001; **p < 0,01; *p < 0,10

Adjusted R-squared values of the panel regressions are 0.58 for GDP per capita and 0.16 for GINI which are in line with the existing literature. The F-test is found significant for both panel regressions.

The first panel regression analyzes the impact of finance on economic growth. The FAF variable is the proxy variable for financial inclusion which encompasses the access component of finance. As this index gets closer to 1, there is more financial access which also contributes to the increase in GDP growth. As expected, the coefficient sign is positive and significant for GDP per Capita, indicating that an increase in access to finance results in an increase in economic growth. This outcome is consistent with the previous studies which looked at impact of finance in economic growth.

Empirical findings of this study showed that there is a negative and significant coefficient on Interest rate spread for the GDP per Capita regressions. There is also a negative but less significant coefficient (significant at 10% only) on MTURN for the GDP per Capita regressions. These are also in line with the literature (Sahay,2015). Interest rate spread has a negative and significant impact on the bank performance in the long run and that is translated to a negative impact on the GDP growth. Regarding the MTURN, an increase in liquidity could result in the deterioration of growth. Firstly, an increase in the liquidity of the stock market could lead to the reduction of saving rates via both income and substitution effects. The liquidity of the stock market also boosts investor myopia, which then impacts the economic growth unfavourably (Demetriades, 1996: 387). Market capitalization to GDP (MCAP) has a negative coefficient, which implies that an increase in MCAP results in a decrease in growth. It is not significant for the growth equation. Therefore, it could be concluded that it does not have a significant impact on the economic growth (as reflected by lack of significant coefficient).

A "crisis" dummy variable (Laeven and Valencia, 2012: 40) was also added to control for the global crisis beginning in the 2008, as also proposed by (Rousseau and Wachtel, 201: 276). The crisis dummy was also included in the panel regressions and for the GDP per capita regressions. There is a

negative and significant coefficient (at 10% level) for the Crisis dummy in the growth regressions. The results point out that the occurrence of a financial crisis has a negative and significant impact on GDP growth in line with the above-mentioned literature.

As concluded in these studies, financial crises have negative impact on the whole economy including the financial sector. Financial crises, particularly the recent subprime crisis affected the economic activity significantly in the main industrial economies, in both emerging and developing countries.

In this study, an ECA dummy is introduced to test if being an ECA country has a significant impact on the growth regressions. ECA dummy coefficient is positive, implying that being from an ECA country has a positive impact on the economic growth. However, the ECA dummy is not significant for the growth regression.

The second panel regression analyzes the impact of finance on income inequality. The FAF variable is again the proxy variable for financial inclusion which encompasses the access component of finance. As expected, the coefficient sign is negative and significant for GINI, indicating that an increase in access to finance results in a decrease in income inequality. This is in line with the recent findings of the literature.

The previous studies pointed out that the impact of financial inclusion on income inequality was less significant while using Gini coefficient as the measure of inequality (Sahay et al., 2015). Park and Mercado identified a significant correlation between financial inclusion and income inequality. They included inflation, primary school completion and growth in bank claims as control variables. They used the Gini coefficient as a proxy for the income equality. They found that the coefficients are robust and significant according to their dataset.

Out of the three control variables/ financial development variables, MCAP, IRS and MTURN, only MTURN had a significant positive coefficient. This indicates that as market turnover increases, income inequality also increases. Both MCAP and IRS has positive coefficients; however, they are both not significant. Both dummy coefficients are negative and insignificant for the inequality equation. This implies that the crisis years have a negative relationship with the inequality. Being from ECA region also has a negative relationship with the GINI coefficient, meaning that being from ECA region decreases the probability of inequality.

OLS Regressions

Household-Level Growth Regressions

Below is the empirical evidence on the determinants on growth by using the OLS estimation with respect to the measure of household level inclusion. The outcome of the OLS estimations on GDP per Capita for years 2011 and 2014 are given in Table 8.

There were no issues with autocorrelation, heteroscedasticity and normality of the residual term for all equations. Adjusted R-squared values are 0.62, 0.78 and 0.51 for years 2011 and 2014 respectively. The F-test is found significant for all OLS regressions.

Table 8: OLS Regression Summarize

	FINDEX 2011		**FINDEX 2014**		**FINDEX 2011**	
Dependent Variables	GDP per Capita		GDP per Capita		Gini	
Independent Variables						
FIH	4.7219 (0.000)	***	4.989 (0.000)	***	-19.008 (0.091)	*
IRS	-0.036 (0.043)	**	-0.009 (0.720)		0.052 (0.784)	
MCAP	0.0009 (0256)		0.001 (0.176)		0.1109 (0.004)	***
MTURN	-0.000 (0.978)		-0.002 (0.332)		-0.0199 (0.783)	
ECA Dummy	0.2670 (0,293)		0.626 (0.074)	*	-9.9901 (0.006)	**
Adjusted R-squared	0.625		0.785		0.511	
F-statistic	25.960	***	31.660	***	6.220	***
Prob (F-statistic)	0.000		0.000		0.001	

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
Robust standard errors are in parentheses

FIH, which is the household-level financial inclusion variable, has a positive and significant coefficient for both years. This indicates that the increase in household inclusion results in an increase in economic growth. The result is consistent for both years of analysis.

Empirical results of the study further pointed out that there is a negative coefficient on the IRS (interest rate spread/ lending and deposit spread) which is a measure of the efficiency of Financial institutions. As the IRS increases, the growth decreases. This is in line with the literature (Amidžić, 2014: 105). This variable is significant for 2011 but not significant for 2014. The other financial development indicators, namely MCAP and MTURN do not have significant coefficients for both years. MCAP has a positive and MTURN has a negative coefficient and this is again in line with the empirical findings in the literature. ECA dummy has positive coefficient for both years implying that being from an ECA country increases the possibility of economic growth. The dummy variable is only significant for 2014. This is

mostly because for 2014, there are more ECA countries in the FINDEX database which is then used to construct the FIH variable.

Household-level Gini Regressions in Table 8 provides empirical evidence on the determinants on inequality by using the OLS estimation with respect to the measure of household level inclusion. These regressions were run for both years 2011 and 2014; however, the second regression was omitted due to insufficient number of observations (less than 25 observations). The outcome of the OLS estimations on Gini coefficient for 2011 is given in Table 8.

The household-level inclusion variable (FIH) has a negative and significant coefficient for this equation. This indicates that the increase in household inclusion results in a decrease in income inequality. Impact of household financial inclusion on income inequality was also examined in the previous studies (Sahay, 20015:40) As discussed by Sahay and others (Sahay et al., 2015), access of finance of the household has a significant negative relationship with income inequality. Regional studies looking at developing Asian economies had the same conclusion pertaining to the relationship between household level inclusion and income inequality (Park and Mercado, 2015: 25).

Empirical results of the study further pointed out that MCAP is found to be significantly and positively associated to income inequality. In other words, as market capitalization increases, income inequality also increases. The other financial development indicators including IRS and MTURN are not significantly related to income inequality. IRS has a positive coefficient and MTURN has a negative coefficient, in line with the previous findings. This shows that an increase in interest rate spread results in an increase in income inequality. Also, an increase in market liquidity which is reflected by market turnover results in a decrease income inequality. These are not tested at the household- level in previous literature; however, it is not correct to reach any conclusions given that these two variables do not have significant coefficients.

Finally, the ECA dummy has a negative and significant coefficient for this particular equation. This implies that ECA countries are more likely to have low GINI coefficients.

Firm-Level Growth Regressions

Below is the empirical evidence on the determinants on growth by using the OLS estimation with respect to the measure of enterprise level inclusion. The outcome of the OLS estimations on GDP per Capita for years 2006, 2009, 2010 and 2013 are given in Table 9. Adjusted R-squared values are 0.32, 0.27, 0.25 and 0.22 respectively. The F-test is found significant for all OLS regressions.

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Table 9: OLS Regressions Summarize for GDP per Capita and GINI

	Enterprise Survey 2006	Enterprise Survey 2009	Enterprise Survey 2010	Enterprise Survey 2013	Enterprise Survey 2006	Enterprise Survey 2009
Dependent Variables	GDP per Capita	GDP per Capita	GDP per Capita	GDP Per Capita	Gini	Gini
Variables						
FIF	2.4660 (0.002) ***	3.1358 (0.001) ***	2.8494 (0.002) ***	2.1198 (0.057) **	-6.1606 (0.530)	-16.6202 (0.071) *
IRS	-0.0538 (0.010) ***	-0.0505 (0.036) **	-0.0525 (0.024) **	-0.0194 (0.663)	0.3876 (0.040) **	0.2337 (0.285)
MCAP	0.0075 (0.003) ***	0.0063 (0.079) *	0.0033 (0.308)	0.0022 (0.595)	0.0387 (0.135)	0.0926 (0.061) *
MTURN	-0.0017 (0.554)	0.0000 (0.998)	0.004 (0.955)	0.0014 (0.761)	0.0078 (0.867) ***	-0.0082 (0.869)
ECA Dummy	0.4601 (0.098) *	0.4049 (0.188)	0.3906 (0.314)	0.7095 (0306)	-13.9065 (0.000)	-13.3263 (0.000) ***
Adj. R-Sq.	0.3196	0.2701	0.2456	0.2205	0.5435	0.4824
F-statistic	8.1400 ***	5.8900 ***	5.3600 ***	1.4700 ***	8.1400 ***	7.3400 ***
Prob (F-st.)	0.0000	0.0002	0.0004	0.0002	0.0010	0.0020

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
Robust standard errors are in parentheses

Firm-level financial inclusion variable (FIF) has a positive and significant coefficient. FIF consists of five main indicators including the percentage of firms with checking and savings account, percentage of firms with bank loans/ line of credit, percentage of firms utilizing banks to finance investments, percentage of firms utilizing banks in financing working capital and finally percentage of firms identifying finance costs as the major constraint.

The empirical findings of this study show that the FIF which captures the inclusion of firms (via the five channels listed above) is positively and significantly related to growth. This implies that as the firm-level inclusion increases, growth also increases. Dabla-Norris et al. illustrated that firm-level inclusion indicators including diminishing monitoring costs, lessening collateral requirements, and increasing access of firms to credit result in an increase in growth. They found a significant positive relationship with firm level inclusion and growth. (Dabla- Norris et al., 2015: 30)

From the financial development indicators, IRS has a negative and significant relationship with growth. This holds for all three years except for 2013. For 2013, the coefficient sign is still negative; however, the coefficient is not significant. Increase in interest rate spreads results in a decrease in growth. Again, this is in line with the previous literature. MCAP also has a significant and positive coefficient for the growth equation for the years 2006 and 2009. For the other three years, although the coefficient has a positive

sign, it is not significant. MTURN has a positive but insignificant coefficient for all equations. Finally, ECA Dummy has significant coefficient only for year 2006. It could be stated from the findings of 2006 firm-level growth equation that being from the ECA region increases the possibility of growth. ECA Dummy's coefficient is positive for all equations in this section however insignificant for the other years.

Firm-level Gini Regressions

This section provides empirical evidence on the determinants of inequality (proxied by the Gini Coefficient) by using the OLS estimation with respect to the measure of firm level inclusion. These regressions were run for years 2006, 2009, 2010 and 2013; however, the last two regressions were omitted due to insufficient number of observations (less than 25 observations). The outcomes of the OLS estimations on Gini coefficient for years 2006 and 2009 are given in Table 4.9. Adjusted R-squared values are 0.54 and 0.48 respectively. The F-test is found significant for both OLS regressions.

Firm-level financial inclusion variable (FIF) has a negative coefficient for inequality equations. It is only significant for 2009. This implies that an increase in financial inclusion of firms results in a decrease of inequality. Pertaining to the financial development indicators, IRS has a positive and significant relationship with inequality for 2006 inequality regression. For the year 2009, the IRS coefficient is not significant. According to the sign of the coefficient, as interest rate spreads increase, the inequality increases. This is also in line with the previous literature (Sahay et al., 2015). MCAP has a significant and positive coefficient for the inequality equation for the year 2009. The coefficient is not significant for MCAP for 2006. The sign of MCAP implies that as market capitalization increases, the level of inequality also increases. MTURN coefficients have diverging signs for the two analyzed years and these coefficients are not significant. Finally, ECA Dummy has significant negative coefficient for both years. It could be stated from the findings of the firm-level inequality equations that being from the ECA region decreases the possibility of inequality.

ECA Findings

Household-Level Financial Inclusion

According to the Global Findex database, ECA had 105 million unbanked people. This number reaches to 2 billion worldwide, and ECA has a significant share in this category.

According to the survey results, ECA has displayed a continuous growth in ownership of accounts. The account ownership increased from 43 percent in 2011 to 51 percent in 2014 (average rate of account ownership in developing countries was 54 percent). Some countries in ECA showed significant

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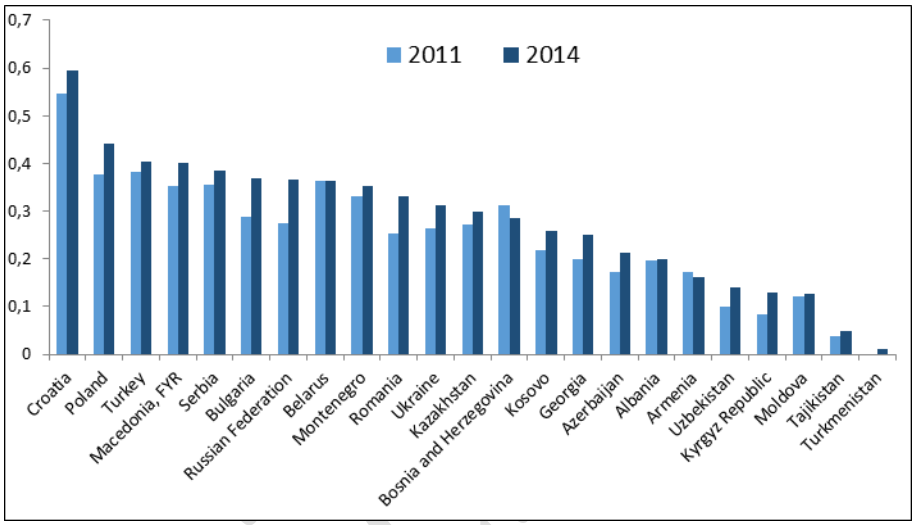
increases, namely Romania, Kazakhstan and Albania. Some countries in the region maintained the same level of account ownership including Armenia, Macedonia, Moldova and Turkey.

In ECA, the most prominent factor behind financial exclusion has been the absence of trust in financial intermediaries. 30 percent of the interviewers from ECA mentioned lack of trust as the reason of not having an account, well above the global average of 13 percent. This outcome is not surprising if one looks at the history of this particular region.

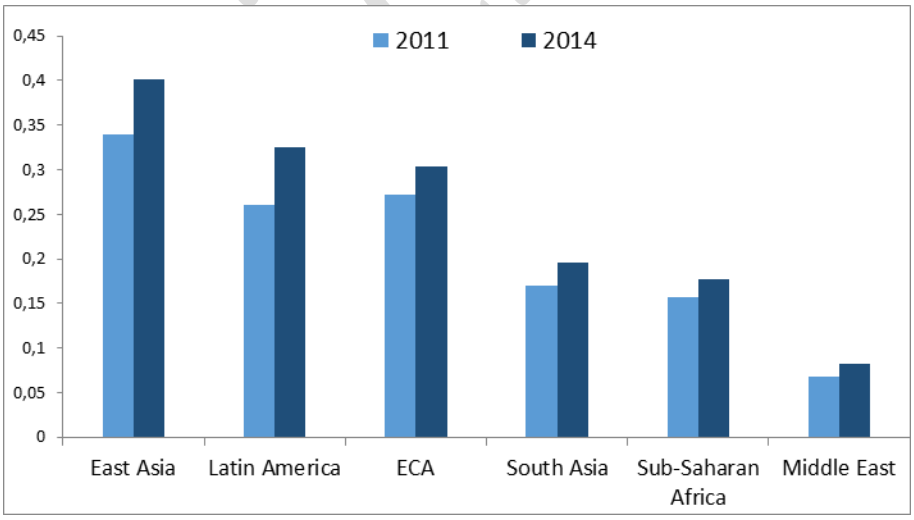
Figure 1: ECA Countries Household Index



Only 8 percent of ECA interviewees used financial intermediaries for savings compared to 27 percent worldwide. Formal savings were even less: in ECA only 15 percent of the account holders have formal accounts, compared to 42 percent globally. Additionally, religious factors were mentioned three times more than the global average. On the other hand, on a positive note, although lack of trust and religious tendencies contributed to decreased formal savings and account holding, it did not hinder digital payments. 72 percent of account holders either receive or make payments by utilizing their accounts. Compared to other regions, only sub-Saharan Africa exceeds this percentage due to common usage of technologies based on card payments. 23 percent of the interviewees in ECA were using debit cards and 15 percent were using credit cards. ECA has the highest usage of cards. Employers had a big role in this lion's share: 60 percent of the earnings were sent to a financial account. This is the highest percentage within developing regions. Although there have been noteworthy enhancements between 2011 and 2014, ECA has been behind Euro Area and OECD countries on financial inclusion of households. In 2011, Croatia, Turkey and Poland displayed the highest scores on financial inclusion of the household with ECA. In 2014, the same countries had the highest score. Within the covered ECA countries,

Croatia stood out both in 2011 and 2014 pertaining to the household index based on Global Findex database. Croatia has deep financial markets which can serve to wide population. Financial markets are also inclusive for the low-income households. The government has worked on the consumer protection and financial literacy. They both facilitate trust of customers for the financial institutions. The EU also encourages Croatia to strengthen its financial education programs. In conclusion, the EU anchor has been very instrumental for Croatia to improve house-hold level financial access. Croatia is followed by Poland and Turkey. After the global financial crisis, the Polish economy bounced back which resulted in an increase in disposable income per capita. Sentiment of the households also improved, and this encouraged them to use more financial services. Additionally, in Poland, there is a well-functioning financial system which facilitates the capital movement from entities with excess funding to entities with a need for funding. The worst performers included Turkmenistan, Tajikistan and Moldova in both years of household index. Kosovo, Georgia, Azerbaijan, Albania, Armenia and Kyrgyz Republic remained under ECA average for 2014. Household-level usage of finance improved for all countries from 2011 to 2014 except for Armenia and Bosnia. In Belarus and Albania, the calculated indices remained the same, pointing out no change between 2011 and 2014. Kyrgyz Republic, Russia and Romania improved the most respectively from 2011 to 2014 in terms of household inclusion.

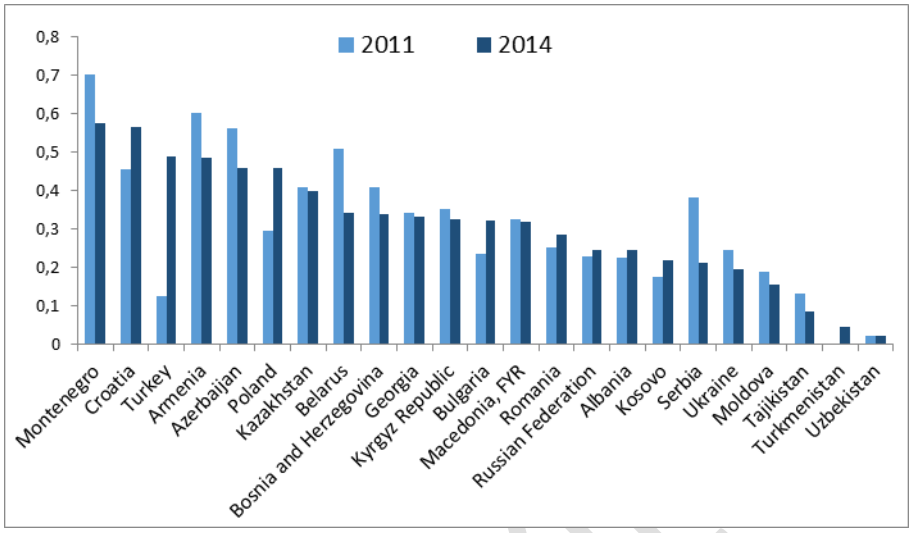
Figure 2: Regional Household Index



The World Bank Group categories the world under six regions including East Asia and Pacific, Latin America and Caribbean (Latin America), Europe and Central Asia, South Asia, Sub-Saharan Africa, Middle East and North Africa (Middle East). This regional categorization was used in this study

given that same regional division applied for the data which was utilized throughout the study.

Figure 3: ECA Findex: Borrowed from A Financial Institution



All regions displayed an increase in the financial inclusion of households. East Asia outperformed other regions for both years pertaining to the household index. This is mainly driven by the positive impact of developing Asian countries including Singapore, Republic of Korea and Hong Kong. ECA moved from being second to third from 2011 to 2014. This is mainly due higher increase in Latin America compared to ECA region. Latin America and Middle East improved the most related to the household index. With respect to borrowing from financial institutions, Montenegro ranked the highest and it was followed by Croatia and Turkey. Borrowing from a Financial Institution significantly increased in Turkey from 2011 to 2014. The worst performers for this indicator were Tajikistan, Turkmenistan and Uzbekistan. This is in line with loan to GDP ratios of these countries.

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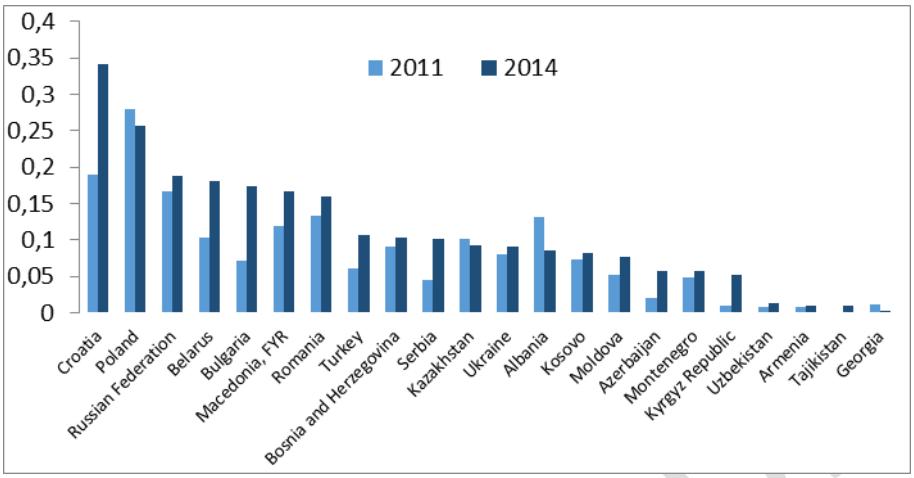
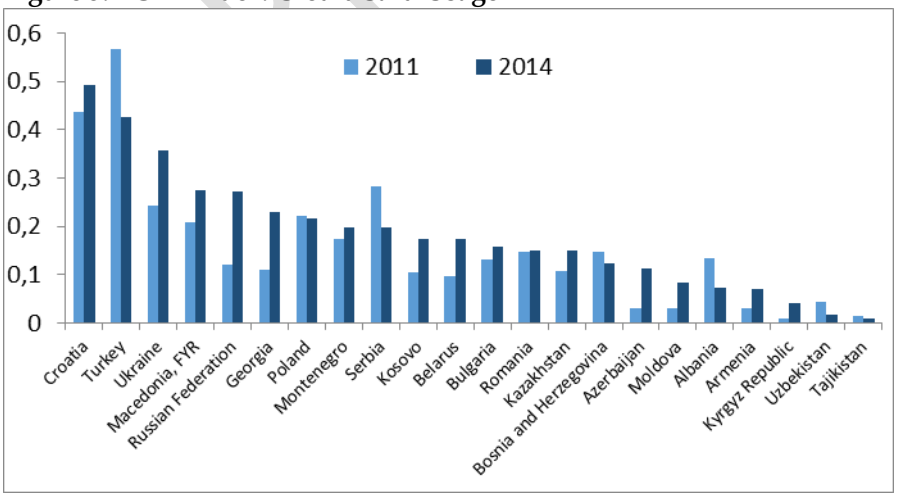
Figure 4: ECA Findex: Saved at a Financial Institution

Countries



ECA countries do not perform well when it comes to saving at a financial institution. This is due to legacy of banking crisis and distrust of households to the financial institutions. Croatia and Poland again displayed the highest numbers for the indices, albeit both are below "0.4". Armenia, Tajikistan and Georgia had the lowest rankings with the region. In Georgia, the observed low level of saving is mainly as a result of a disorganized spending behavior which is not backed by sufficient income levels. The Georgian population displays natural propensity to spend in extreme amounts. In Tajikistan, the low rate of savings is mainly due to the factors described above. In both Armenia and Uzbekistan, savings rate is very low compared to the region.

Figure 5: ECA Findex: Credit Card Usage



With respect to credit card usage, Croatia again ranked the highest within ECA region. It is followed by Turkey and Ukraine. The lowest indices

belonged to Kyrgyz Republic, Uzbekistan and Tajikistan. Bulgaria, Romania, Kazakhstan, Bosnia and Azerbaijan were also at the lower end of the index rankings within the region.

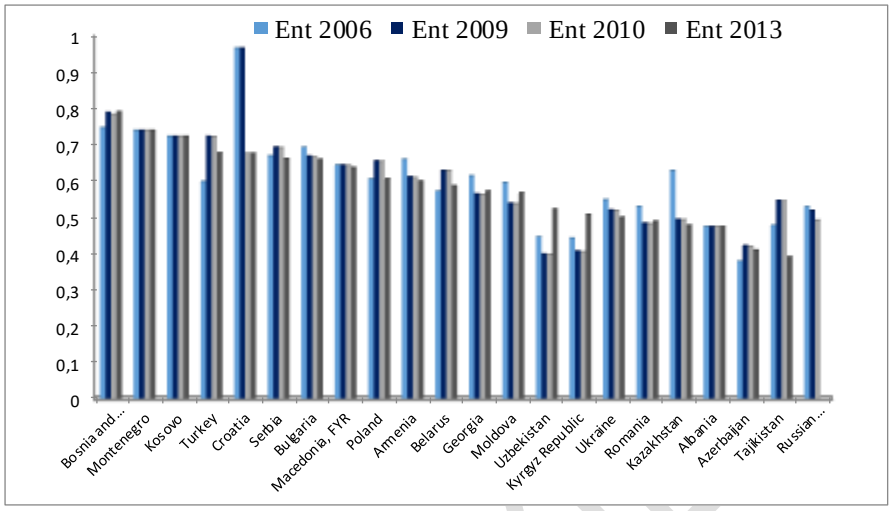
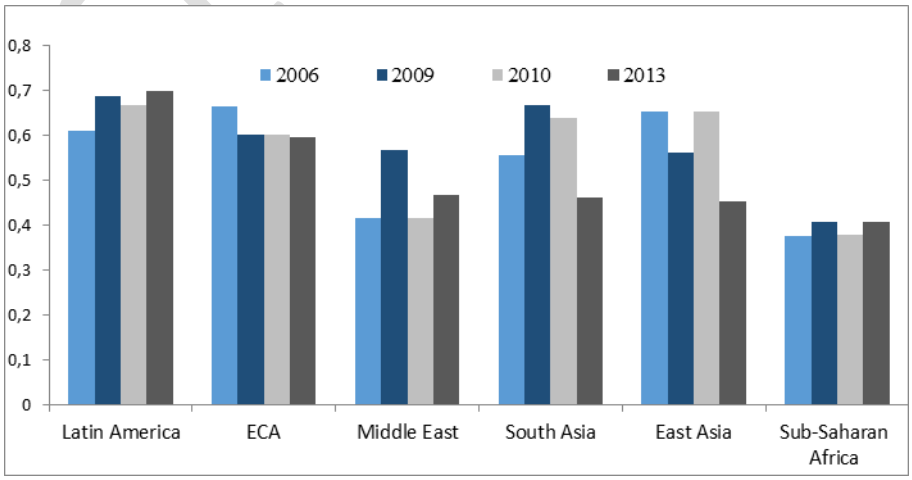


Figure 6: ECA Firm-Level Index

With respect to firm level index, overall, ECA countries performed very well, all of them remained above 0.4. Croatia had the highest index results in 2006 and 2009; however, Bosnia, Montenegro, Kosovo and Turkey outpace Croatia in 2010 and in 2013. Azerbaijan and Tajikistan were the worst performers in ECA for 2013. In Tajikistan, the banking sector has been weak with high NPLs, low profitability, limited funding and liquidity restraints. The banking sector remained under pressure mainly due to the slowdown in the economy which was accompanied by the global financial crisis.

Figure 7: Regional Firm-Level Index

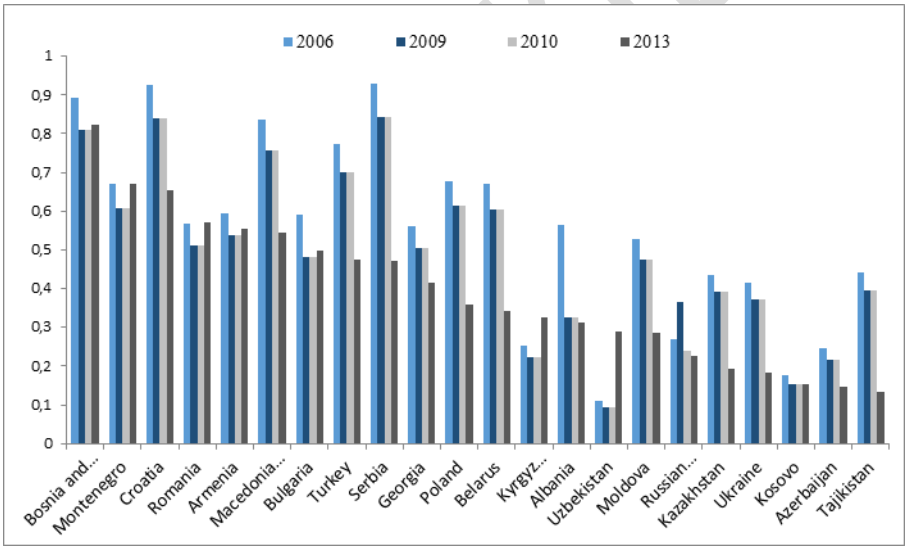


With respect to the regional performance, ECA had the second ranking for the years of analysis. Additionally, the indices have been above 0.6 in all four years. Although ECA outpaced Latin America in 2006, after 2006 for the years that were covered by the table above, Latin America took over the first ranking. ECA was followed by Middle East with respect to the firm level inclusion. Firm level inclusion decreased slightly in ECA from 2006 to 2011.

Same with household index, ECA lagged behind LAC in later years (2010, 2013). Balkan countries performed better than their counterparts in ECA region with respect to companies with bank loan or line of credit (particularly Bosnia, Montenegro, and Croatia). Although Serbia ranked highest in 2006, the firms' access to loans or line of credit decreased from 2006 to 2013. Tajikistan, Azerbaijan and Kosovo are the worst performers in this category.

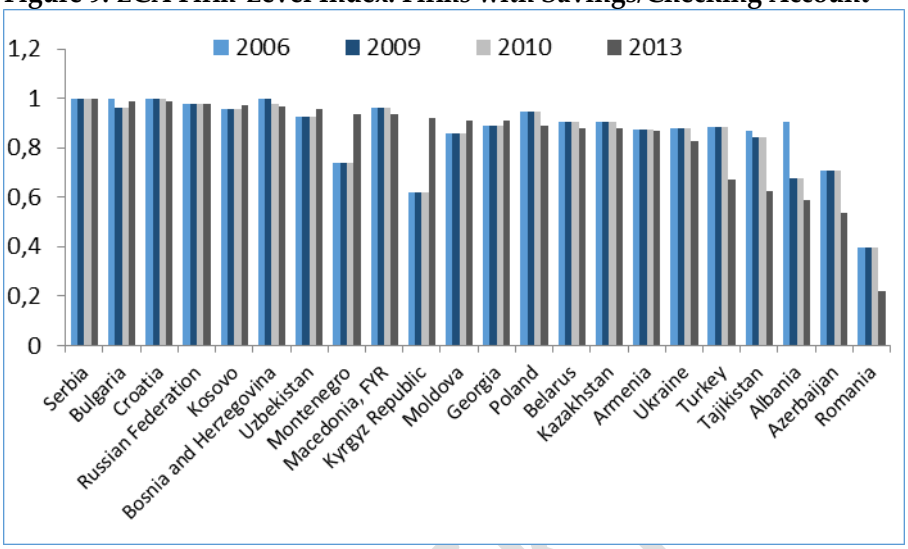
Overall, in ECA, firms have access to savings or checking accounts. Serbia, Bulgaria and Croatia are the forerunners in this category within the region.

Figure 8: **ECA Firm-Level Index: Companies with Bank Loan or Line of Credit**



Serbia was the best performer also within all countries. Albania, Azerbaijan and Romania remain under the regional average. In Azerbaijan and in Albania, the entrepreneurs face major challenges when it comes to access to finance. In Azerbaijan, 75 percent of the entrepreneurs find it difficult to seek operational financing.

Figure 9: ECA Firm-Level Index: Firms with Savings/Checking Account



4.3.2. Access to Financial Institutions

Russia Federation ranks highest with respect to financial access. The authorities reacted rapidly with supporting the banking sector pertaining to the liquidity and capital levels. Even though there was no major crisis, the crisis had a significant structural effect.

Figure 10: ECA Access to Financial Institutions (FAS Index)

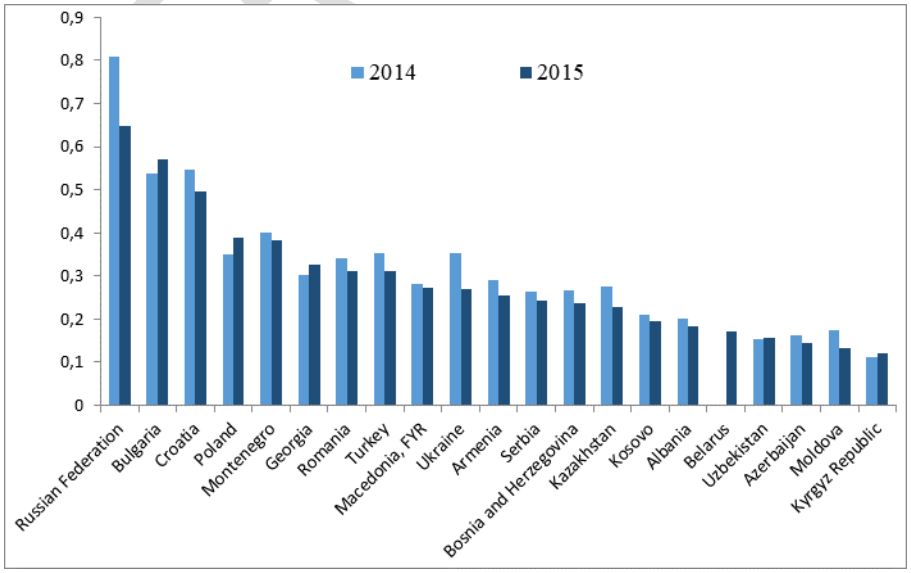
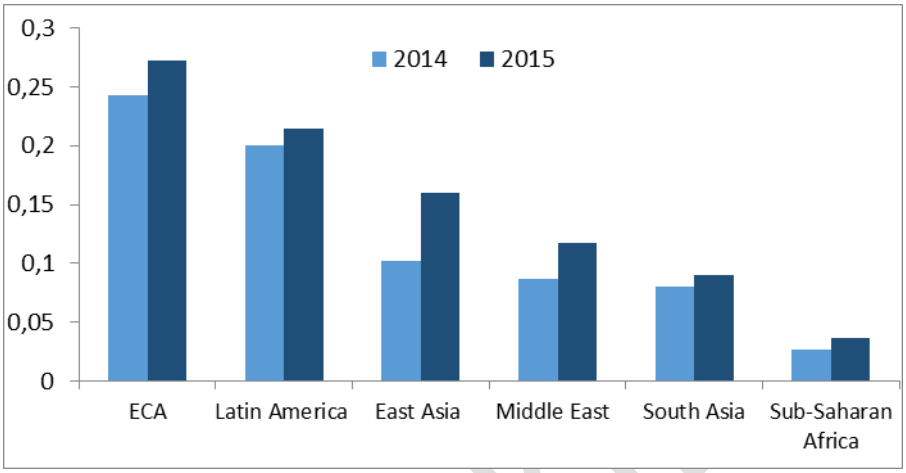


Figure 11: Regional Access to Financial Institutions



The publicly owned Russian banks increased their market share in the market while providing lending dynamically. The regional average is approximately "0.3". Armenia, Serbia, Bosnia, Kazakhstan, Kosovo, Albania, Belarus, Kyrgyz Republic, Azerbaijan, Uzbekistan and Moldova remained under the regional average for 2015. Kyrgyz Republic, Azerbaijan and Moldova were the worst performers in this category.

The small Central Asian economies were not affected much from the global financial crisis particularly because of their frail linkages with European trade. They also had low access levels to global markets. In Kyrgyzstan, conversely, as a result of the political crisis, there was a noteworthy economic and financial disturbance and GDP growth slowed significantly (less than 1 percent). Armenia, Moldova and Georgia were all significantly hit by the economic tremors in 2008; however, they managed to circumvent main banking crises. Georgia remained over the ECA average while Armenia and Moldova did not show the same performance related to the financial access indicator. Ukraine and Kazakhstan both remained under the ECA average. They both had main banking crises.

Different than the household inclusion and firm inclusion, ECA as a region has a much favorable position on financial access compared to other regions. Russian Federation, Bulgaria, Croatia and other accession countries lead this outcome. With respect to access, ECA outperformed the other five regions in both years 2014 and 2015 clearly. All of the regions displayed an

improvement pertaining to this index. The highest improvements were recorded in East Asia and ECA.

Conclusion

This study aimed at quantifying financial inclusion by formulating three different indices. These indices were divided into three categories namely access index, household-level inclusion and firm-level inclusion index. Based on Global Findex database and Enterprise Survey database collected by the World Bank, Financial Access Data collected by the IMF, the study introduced measures of household and firm level inclusion while placing ECA in a historical and cross-country perspective. It further aimed at shedding light on the impact of financial inclusion and growth while identifying determinants of financial inclusion. This article aimed at contributing to the literature by quantifying financial inclusion via index formation and by exploring the macroeconomic impact of financial inclusion with a more detailed focus on ECA countries.

In the findings part of this study, the impact of financial inclusion on growth and income inequality was interpreted. The results show that the increase in financial access leads to an increase in economic growth. These results are also consistent with previous studies looking at the impact of financing on economic growth. According to other findings in the analysis, the results indicated that the increase in financial access led to a decrease in income inequality. These results are also consistent with the latest findings in the literature. Another important finding of the study pointed out that an increase at the firm-level inclusion results in an increase in growth and reduction in inequality. These findings also in line with the previous findings in the literature. In conclusion, the study confirmed the previous studies which showed financial inclusion's contribution to multiple macroeconomic goals explicitly increasing growth and reducing inequality. The study further deep dived at ECA region which was not covered in the previous studies.

The empirical study can be enriched by adding a gender dimension and also by adding technology and digital finance indicators. Access to finance particularly with respect to access to finance by women entrepreneurs has been a very popular topic lately. Microeconomic and sociological studies find that financial access by women helps society more generally. Studies showed that women are subject to more barriers than men in accessing finance. In sum, exclusion of women from finance jeopardizes growth significantly and it could further lead to increase in inequality. The second aspect that could improve the study would be including the role of

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technology and digital banking while quantifying access to finance. To reach new customers, financial institutions started to offer digital financial services to underbanked segments of the society. Given that digital financial services result in the increase in accessibility and affordability of financial services, many cash based transactions were shifted to formal financial services. Technology is playing a vital role in the expansion of financial inclusion. Digital finance which includes mobile banking, electronic payments could considerably increase the usage and access of financial services by the poor and unserved population which then could result in macroeconomic growth and reduction of inequality.

Research Limitations

This study has two main limitations. First, the number of indicators which are embedded in each index is limited. There is room to add further indicators to capture more dynamics of the inclusion. Second, the time tested for a long-term relationship is not sufficient particularly pertaining to household and firm level indices. This is mainly due to the lack of data for these two indices; however, going forward, the study could be enriched by adding more years as more years of survey data will be available.

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