THE IMPACT OF SOCIAL BANKING ON ECONOMIC DEVELOPMENT

Stefanos DOURTMES
INTERNATIONAL HELLENIC UNIVERSITY

Andreas ANDRIKOPOULOS
UNIVERSITY OF AEGEAN

ABSTRACT

We investigate the association between social banking and economic development. We employed a random effects model to estimate panel regressions on annual GDP per capita growth and assess the variables that concern social banking and can affect economic development. We find statistically a significant relationship between social banking and economic development in developing countries. It seems that social impact and financial sustainability, even when achieved simultaneously, can be beneficial for the economy.

Keywords: Social Banking, Economic Development, General Least Squares, Panel Data Set, Random Effects Model

JEL Classification: G21, O16

Introduction

Schumpeter (1911) is amongst the economists that highlighted the significance of the financial sector for economic development long before other peers, delineating the argument for the subsequent literature. Nevertheless, other

economists have claimed that there is no significant association between the financial system and the economic growth. According to this point of view, it is the actual economic growth that triggers the development of the financial sector as a necessary response to the increased demand on financial services and not vice versa (Robinson, 1952), or otherwise that there is no association between financial sector development and economic growth at all (Lucas, 1988). Many researchers have followed these arguments, boosting the empirical support for both claims. In regards to the first concept, researchers have tested whether there is an impact from financial development on economic growth, without considering a reverse impact (e.g., King and Levine, 1993a; Levine et al., 2000). However, the second wave of researchers implemented cointegration and Granger tests to examine the direction of causality between financial development and economic growth (Ang and McKibbin, 2007; Demetriades and Hussein, 1996). Herwartz and Walle (2013) provided empirical evidence that the impact of finance on economic development depends on several macro-economic factors such as government size, level of financial growth, rate of inflation and the level of economic development itself.

Robinson (1952) suggests that the financial system consistently responds to the increased rush for financial intermediation caused by economic growth. This claim is in conflict with Schumpeter's (1911) argument on the causality between financial development and economic growth and also with the hypothesis that efficient financial intermediaries can lead to economic growth by triggering capital accumulation (Pagano, 1993). Efficient and accurate evaluation of projects, accompanied by large fixed costs can be performed more effectively by specialized institutions like banks according to King and Levine (1993). Moreover, such investments often require large amounts of funds, more easily amassed by financial intermediaries like banking institutions. The latter help diversify idiosyncratic and liquidity risk and result in allocating capital to more productive investments, triggering economic growth (Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991).

Moreover, ever-growing theory and research supports that efficient financial intermediation mobilizes deposits, allocates funds more accurately, diversifies risks and as a result it contributes to economic growth (Greenwood and Jovanovic, 1990; Jbili, Enders, and Treichel, 1997). Recent evidence about economic development states that financial intermediaries and markets may respond endogenously to any potential market incompleteness and hence trigger long term growth (Hassan, Sanchez and Yu, 2010). Thus, it is safe to say that financial institutions that are specialized in project evaluation and financial monitoring can be more efficient that individuals.

In this paper we examine the interaction of the financial sector with economic development, focusing on a part of the financial system that is not yet greatly developed in the biggest part of the globe, the social banking institutions. In contrast to traditional banks, social banks provide debt with the purpose of causing social or environmental impact (da Silva, 2007; Edery, 2006). For this reason they tend to follow two core pursuits (1) a positive impact on the communities, the environment and sustainable economic development and (2) a sustainable financial profit. Some of the first modern social banking institutions using these principles were founded in the 1970s in order to emphasize financial principles and with the purpose to use finance as a means to influence both society and business (Milano, 2011). Social banking adapts to a strict triple bottom line concept at the heart of the business model and is based on communities, serving the real economy and facilitating innovative business models. Social banks operate on long term partnerships with customers, based on the direct and complete comprehension of their economic conditions and the risks involved. They define themselves as sustainable, self-dependent, transparent, open towards communities and significantly insulated from outside disruptions; social banks invest with a purpose to produce social and environmental impact as well as financial returns (Monitor Institute, 2009). Other authors describe social finance "as the application of tools, instruments and strategies where capital deliberately and intentionally seeks blended value (economic, social and/or environmental) returns" (Harji & Hebb, 2009, p. 2). Furthermore, social banking institutions aim at generating blended returns (Emerson, 2003), which means producing both social and financial returns. The missions of social banking institutions can be clustered into securing member and community well-being, sustainable energy finance, social economy finance, supporting ecological building principles, allocating sources in high environmental, social and economic performers, social impact priority and microfinance.

Karl's (2015) view on social banks is enlightening. She stated that these institutions adapt their investment and their lending activities to their business goals. Some usually exclude several activities from their operations, like certain areas of business that do not fulfill their criteria, while on the contrary, they focus on exclusive activities, like providing debt only to socially or environmentally oriented projects. Many of the social banking institutions are environmentally oriented, for instance, they implement sustainable energy sources projects, compensate for their CO_2 emissions or thoroughly monitor their use of resources. Several ethical banks apply their policies by adjusting their interest rates according to social and environmental criteria. The interest rate of

the granted loans depends on the type of the investment that was funded. Discounts are offered, especially to social projects or environment friendly construction projects. Clients may also, for instance, choose to exchange part of their interest income that they would receive from deposits, in order to contribute to environmental projects with stable interest rates. While most banks seek to maximize their returns, some explicitly state that they have a different purpose. Often, part of the profit is donated. Usually, employees' compensation can be competitive but also lower compared to traditional banks. To prevent discrimination in executive compensation, some banks define a maximum spread between highest- and lowest-earning employees while other institutions provide none at all or small insignificant bonus payments. Finally Karl (2015) concluded that social banks distinguish themselves through high transparency and allocation of assets with the purpose to create additional social impact.

The question that motivated our research is whether social banks can really impact the economy. Therefore, we utilized all the available data related to social banking institutions from countries across the globe and built a random effects model to capture their impact on several key figures of the real economy. In order to provide more accurate and measurable results, we classified the countries where the social banks are located in two clusters, based on the level of income. Relying on Schumpeter's (1911) argument about the effect of the financial system on the economic development and the empirical evidence that the diversification of idiosyncratic and liquidity risk can result in more efficient capital allocation and then trigger economic growth (Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991) our estimations produced positive and significant results, especially in regards to developing economies.

The paper is structured as follows. In the "Literature Review" part we present a review of past research that is considered related to our research. In "Data" part we describe the panel data set we used for our estimations, the sources, the variables that comprise our model and summary statistics. In the "Methodology" part we present our model, the methodology and empirical results upon which we based our assumptions. In the "Empirical Results" part we present the results of our tests and estimations and in the "Conclusions" part we provide the outcome of our research.

Literature Review

In this section we discuss prior studies that motivate our research. We first present some empirical evidence that distinguishes social banks from conventional banks in terms of selectivity and transparency on their lending and

borrowing activities. Subsequently, we briefly present some empirical evidence on how the development of the financial sector affects economic growth and vice versa.

Social Banking

Cornée, Kalmi and Szafarz (2016) investigated the distinction between social banks and traditional banks. The criteria they implemented were the selectivity of fund allocation, the transparency of interest rates offered and the margin between loans and deposits. They worked on balance sheet data of 5,000 European banks that fulfilled their criteria for social banks, between 1998 and 2013. They used Ordinary Least Squares (OLS) regression with dummy variables representing the type of bank (cooperative or savings). The variables they used were deposits to total assets ratio, interest income to total income ratio and loans minus deposits to total assets ratio. Subsequently they compared the coefficients of the social banks and the conventional banks. Their results showed that social banks score higher in terms of selectivity presenting higher deposits to total assets ratios than conventional banks, corroborating the rationale that they maintain healthier credit relations with their borrowers. The coefficients of revenues were also positive and higher for social banks, reflecting the benefits of a simple local based financial intermediation. This advantage is a product of a more efficient utilization of soft information, based on the standardization of organizational structure (e.g., Berger et al. 2007). Finally, the coefficients of the loans minus deposits ratio, showed that smaller banks achieve higher liquidity, meaning they transform deposits into debt to a lesser extent than conventional banks. The authors concluded that increased selectivity causes social lending to be more transparent. However, selectivity can hinder loan granting enough to undermine direct intermediation and transparency. Consequently, social banking institutions may opt to fund social projects with lower returns in the short run. For this purpose, they would need to find resources from motivated funders who demand lower or no return at all.

Karl (2015) worked on distinguishing "alternative" banks from traditional ones in terms of riskiness. She characterized the social banking institutions as alternative and ethical in terms of activities and fund allocation in order to differentiate them from those banks that are just using these concepts for marketing purposes. Her sample consisted of 65 alternative institutions, the data set spans from 1997 to 2012 and it is considered unbalanced due to bank failures, mergers and acquisitions. Subsequently she matched these banks with conventional banking institutions that share common characteristics and metrics so that the sample could provide measurable results. The matching criteria were

the origin of the banks, its size and the last year of operations. The analysis was based on the z-score measure of bank risk, which is defined as the fraction of the return on assets ratio plus the capital asset ratio of the institution, divided by the standard deviation of the return on assets. The higher the z-score that the banks scored, the higher stability they presented. Then she regressed the z-score with OLS by using several bank control variables and a dummy variable that captured the effect of a bank being alternative. After using a wide variety of robustness checks she concluded that social banks were significantly more stable in terms of riskiness than the conventional banking institutions and that during periods of financial stress, ethical banks are more resilient to economic stress.

Economic Development

In regards to economic development and the factors triggering it, Cavenaile and Sougné (2012) examined the role of banks and institutional investors. They used Johansen-like panel cointegration techniques to study the long-run causality between economic development and financial institutions. They collected data on six OECD countries. The variables they used were, GDP per capita representing economic growth, private credit by deposit money banks representing the growth of the banking sector and financial assets held by institutional investors representing the rest of the financial sector. Their results showed that the causality direction between the variables is different from country to country. This heterogeneity of results is in line with Demetriades and Hussein (1996) and Neusser and Kugler (1998). For instance there were countries that exhibited positive long term causality between the financial sector and the economic growth. There were countries where financial sector growth was a response to the demand caused by economic development. Only one country did not present any significant association between the fluctuations of these variables and, finally, only one country exhibited negative causality between financial development and economic growth. Interestingly, the coefficients of the banking sector and the rest of financial sector had opposite signs.

Hassan, Sanchez and Yu (2010) examined the role of financial development in economic development. They pioneered by focusing their sample on middle-low-income economies instead of using heterogeneous cross-countries data, hence achieving more homogeneous results. Their sample covered the period of 1980 until 2007, which is considered an era of financial liberalization and development in terms of output expansion, money growth and volume of investing. They included 168 countries with homogeneous level of GDP per capita according to World Bank's classification clusters. They employed panel

data regression and multivariate time series within geographical regions with common macro-financial metrics. Their variables were GDP per capita growth, domestic credit provided by the banking sector, the broadest definition of money (M3), the rate of growth of domestic deposits, the rate of trade to the GDP and the rate of general government consumption to the GDP. Their results indicated that an initially low GDP per capita can lead a higher growth rate which is in line with Bekaerst et al. (2005) and Barro's (1997) findings. Furthermore they corroborated King and Levine (1993b) and Levine et al. (2000) on the existence of strong long-run links between financial development and economic growth. Finally, they found that domestic credit provided by the banking institutions is positively related to economic growth, especially in certain areas like East Asia and Pacific, Latin America and the Caribbean.

Herwartz and Walle (2013) focused on presenting economic factors that can make financial development beneficial to economic development. They retrieved data on 73 economies spanning the period 1975–2011 and found that the impact of finance on economic development is mostly stronger in higher-income economies than in low-income economies and that there are additional factors that effect this nexus such as the size of the government. The authors constructed a panel data set including the variables of GDP growth, government size measured by the government expenditures, the inflation and the countries' openness to foreign markets. Then they distinguished the 73 economies into smaller groups according to income criteria measured with their GDP. Eventually the authors implemented a weighted parametric regression, with the weights depending on the local position of a particular observation with respect to a certain factor variable. Their results showed that government size in both low and high-income economies restricts the correlation nexus of financial and economic development. In regards to the financial sector development, low-income countries where financial development is high presented a strong relationship nexus too. This happened most likely because the majority of the growth-enhancing functions of the financial sector increases along with the financial system (Levine, 2005). For instance, the financial sector has to achieve a certain level of development in order to aggregate savings that are large enough to finance significantly profitable projects (Rioja and Valev, 2004). An efficient risk diversification and highly profitable investment identification procedure (Rioja and Valev, 2004) also demands a notably high level of financial development.

Past research exhibited promising results that positively link financial sector growth to economic development. Social banks though, operate under different principles, heavily focused on delivering positive impact on the society, which is

the essence of economic development. In this context, social banking constitutes a formidable opportunity to assess the effect of the financial system on economic development.

Data

In order to investigate the impact of social banking on economic development we built a panel data set comprising 31 economies. We collected the data on the social banking institutions that are operating in each country. The period that our model covers runs from 2014 to 2018, which is considered rather short in terms of the academic debate on economic growth. Nevertheless, this is a relatively homogenous period in terms of global financial system, since it starts right after the financial crisis of 2008 and does not cover the more recent recession caused by the coronavirus pandemic that is still in motion. We chose this sample period based on the availability of published key figures by the majority of the social banks. We expected to be able to retrieve data for more social banking institutions and for more countries, but the concept is still rather fresh and not developed enough around the world to provide representative measurements across the globe.

Model variables

Economic development is a concept that is broader than economic growth, which is often captured by GDP growth, but we choose to focus exclusively on economic growth to present more comprehensible comparisons and readily interpretable results. For reasons of simplicity and standardization we chose to follow the debate of the financial and economic development nexus (e.g. Apergis et al., 2007; Christopoulos and Tsionas, 2004; Demetriades and Hussein, 1996), and to represent economic development with the most common measure, the growth of GDP per capita (GDPPCG). Therefore, we will interpret our findings as evidence on the relationship between economic growth and social banking.
We measure the growth of social banking by estimating the growth of the total credit provided by the social banking institutions (LG). This choice is partly in line with Herwartz and Walle (2013), who chose the credit provided by all deposit money banks and the rest of financial institutions, but with the difference that we included only the institutions that are considered ethical according to Karl (2015). We consider this parameter indicative of the activity of social banks, especially because it represents their purpose.
Several metrics have been employed to capture the level of financial development, varying from interest rates, to monetary aggregates, to the size of the banking system(e.g., Al-Awad & Harb, 2005; Chuah & Thai, 2004). Limited

by the availability of data, we chose to measure the growth of the social banking sector but in a different manner, by estimating this time the growth of their total assets (TAG).

Furthermore, we embedded a macro-economic metric to examine another potential factor for economic growth. GDP cannot reflect the impact of inflation on prices and their fluctuations. For this reason we decided to adapt Herwartz and Walle's (2013) model and mount the GDP per capita deflator (GDPDG) to our model. The latter addresses the fluctuation of the prices and can be used in order to compare a base (fiscal) year with the following years. According to Barro (1995) who studied the effects of inflation on economic development, if we assume several country characteristics are constant, we can observe that adjustments in the inflation can affect the real GDP per capita. Since the measure of GDP deflator captures the level of inflation, we consider the latter a key figure for our analysis. For reasons of compatibility we used the growth percentage of the GDP deflator so we can interpret our findings more efficiently. The GDP deflator would be calculated as follows

$$GDP\ deflator = \frac{nominal\ GDP}{real\ GDP} x100, (1)$$

Data sources and summary statistics

We retrieved data from the Global Alliance for Banking on Values [1] (GABV), an organization that holds the most powerful and representing members amongst the social finance groups, offering a significant quantity of key figures of its members. The GDP per capita and the GDP deflator data was retrieved from the World Bank Open Data.

In order to get deeper insight of the actual effects of the financial growth on the economy, we classified the economies into two subsamples according to the GDP per capita level (income). The classification resulted in 15 countries with higher GDP per capita mainly comprised by European countries and the United States of America, and 16 countries with lower GDP per capita mainly comprised by countries located in Africa and Latin America. The countries of each subsample are shown in table 1 (Table 1: GDP per capita classification

---

[1] The Global Alliance for Banking on Values is an independent network of banks using finance to deliver sustainable economic, social and environmental development.

matrix).[2] This kind of distinction according to the income is very common in the literature (e.g., Hassan, Sanchez and Yu, 2010 - Cavenaile and Sougné, 2012).

Table 1: GDP per capita classification matrix

Social Banks	Country
Amalgamated Bank	USA
Atlernative Bank Switzerland	Switzerland
Banca Etica	Italy
Banco Ademi	Dominican Republic
Banco de Antigua	Mexico
Banco Mundo Mujer	Colombia
Banco Popular	Mexico
Banco Solidario	Equador
Bancopartir	Colombia
BancoSol	Bolivia
BANFONDESA (Savings and Credit Bank FONDESA)	Dominican Republic
Bank Australia	Australia
Beneficial State Bank	USA
BRAC Bank	Banglades
Caisse d'économie solidaire Desjardins	Canada
Caja Arequipa	Chile
CARD Bank, Inc.	Philippines
Charity Bank	UK
Clearwater Credit Union	USA
Cooperativa Abaco	Peru
Cooperative Bank of Karditsa	Greece
Credit Cooperatif	France
DAI-ICHI KANGYO Credit Cooperative (DKC)	Japan

---

[2] All the information regarding the social banks was retrieved from the Global Alliance for Banking on Values (GABV) website (2020) from http://www.gabv.org/

Decorah Bank & Trust Company	USA
Ecology Building Society	UK
Ekobanken	Sweden
Folkesparekassen	Denmark
GLS Bank	Germany
Grooming Microfinance Bank	Nigeria
Kindred Credit Union	USA
LAPO Microfinance Bank	Nigeria
Lead Bank	USA
Magnet Hungarian Community Bank	Hungary
Merkur Cooperative Bank	Denmark
Muktinath Bikas Bank Limited (MNBBL)	Nepal
National Cooperative Bank	USA
NMB Bank Limited	Nepal
Opportunity Bank Serbia	Serbia
SAC Apoyo Integral, S.A.	Mexico
Southern Bancorp	USA
Sunrise Banks	USA
Teachers Mutual Bank Limited	Australia
The First MicroFinance Bank - Tajikistan	Tajikistan
The First MicroFinance Bank-Afghanistan (FMFB-A)	Afghanistan
Triodos Bank	Netherlands
Umwelt Bank	Germany
Vancity	Canada
Verity Credit Union	USA
Vision Banco	Paraguay
VSECU (Vermont State Employees Credit Union)	USA
XacBank	Mongolia

Table 2 (Summary statistics) shows some descriptive statistics of the data covering the full-sample period.[3] We can easily notice that the lower GDP per capita countries outperform the higher GDP per capita countries, in terms of both financial development and economic growth. They also presented higher variances for all variables. A notable point is that there is actually financial development and economic growth in both the subsamples. Furthermore, the median of the GDPDG variable is negative for the higher-income subsample, while it is significantly higher and positive for the lower-income subsample. The maximum of higher-income economies is almost double the maximum of the lower-income economies, while their minimums are nowhere near. The minimum for higher-income countries is negative, while for lower-income countries is always positive. A macro-economic explanation for this phenomenon, according to equation (1) is that the higher the inflation is, the higher the GDP deflator it presents. Thus developing countries also score higher in the GDPDG variable in terms of average. According to Mottaleb (2007), developing countries can achieve rapid economic growth by comparing domestic savings and foreign investment and by introducing the latest technology and managerial know-how from developed countries. This happens when a country can offer modern and abundant infrastructure, so it can accommodate potential investments.

Table 2: Summary statistics

Variable	Median	Max	Min	Std	Var
Higher-income economies, N=15					
DGPPCG	0.01371	0.05227	-0.00918	0.01072	0.00011
LG	0.10240	0.33520	-0.09860	0.07689	0.00591
TAG	0.09638	0.62100	-0.16300	0.09603	0.00922
DGPDG	-0.16076	3.44706	-8.01876	1.66505	2.77239

---

[3] LG variable represents the growth of total credit provided by social banks, TAG represents the growth of the total assets held by social banks and GDPDG represents the GDP deflator growth (yearly adjustment). The values for LG and TAG were retrieved from the Global Alliance for Banking on Values (GABV) website (2020) from http://www.gabv.org/ . The values for GDPDG were retrieved from the World Bank website (2020), from https://data.worldbank.org/indicator . All variables are measured as growth percentages. The metrics max, min, std and var represent maximum, minimum, standard deviation and variance respectively. The number of the economies under scrutiny is 31.

Lower-income economies, N=16					
DGPPCG	0.02513	0.06790	-0.07490	0.02716	0.00074
LG	0.11730	0.94300	-0.17430	0.14518	0.02108
TAG	0.12420	0.80500	-0.11420	0.13057	0.01705
DGPDG	0.61375	1.46700	0.02562	0.52321	0.27375

Methodology

In order to uncover the impact of our variables on economic development we must estimate the parameters of our panel data set, thus we employed a random effects model. Our first step was to run a Hausman test to determine that the there is no correlation between the error term and the regressors. Subsequently, we run Breusch-Pagan Langrage multiplier tests to detect possible differences in the estimations amongst countries of the sample. While the variance across entities is not zero, our data set exhibited random effects and the Generalized Least Squares (GLS) method can provide consistent estimations of the coefficients. Our random effects panel model as

$$Y_{it} = \alpha + \beta x_{it} + \omega_{it}, (2)$$
or
$$GDPPCG_{it} = \alpha + LG_{it} + TAG_{it} + GDPDG_{it} + \omega_{it} , (3)$$
where
$$\omega_{it} = \varepsilon_{it} + u_{it}, (4)$$

Here ε_{it} captures the heterogeneity of the cross-sectional dimension. We also assume that ε_{it} has zero mean, has a constant variance σ^2 and is independent from the independent variables x_{it} (LG_{it}, TAG_{it}, $GDPDG_{it}$). We should point that although our parameters could be estimated with Ordinary Least Squares (OLS) would not be efficient due to the cross-correlations between error terms for each independent variable. In order to tackle this problem GLS subtracts a weighted mean of the y_{it} over time. Then we define the quasi-demeaned data as $y_{it}^* = y_{it} - \theta \bar{y}_i$ and $x_{it}^* = x_{it} - \theta \bar{x}_i$ where $\bar{y}_i$ and $\bar{x}_i$ are the means of the observations over time. θ stands as a function of the variance of the error term σ_u^2 and of the variance of the entity specific error term, σ_ε^2 .

$$\theta = 1 - \frac{\sigma_u}{\sqrt{T\sigma_\varepsilon^2 + \sigma_u^2}}, (5)$$

This transformation helps us to ensure that there are no cross-correlations in the error terms.

We also investigated the existence of cross-sectional/contemporaneous correlation by running Pesaran Cross-sectional Dependence tests. Since the residuals are not correlated we can tackle any bias in our estimations that could be caused by geographical dependence or idiosyncratic binary dependence.

Empirical results

This section is divided in two parts. In the first part we present and discuss the results of the tests (Hausman, Breusch-Pagan, Pesaran CD) that we ran for the three samples. In the second part we present the estimations of the parameters of our model along with an analysis.

Test results

The results of the conducted tests are documented in Table 3 (Test results) below.[4] Firstly in regard to the total sample of 31 economies we cannot reject the null hypothesis that the error terms u_i are not correlated to the regressors. However, we rejected the null hypothesis that the unit specific error ε_i variance is 0 across entities, which indicates that there are significant differences across units, therefore the choice of random effects is consistent. The results on the Pesaran cross-sectional dependence test do not reject the null hypothesis that there is no cross-sectional dependence. The full sample of 31 economies includes data from countries that are scattered around the globe. This means that there is substantial heterogeneity in the sample. Specifically we assume that there are many great differences between the economies with respect to macro-economic performance, regulation and government characteristics. We should also point that the total sample consists of economies from both higher and lower-income levels, which means that they also perform differently in terms of economic growth.

For our second subsample that consists of 15 higher-income economies, we did not reject the null hypothesis of the Hausman test, but only marginally so. The existence of random effects resulted in rejecting the hypothesis of the variance of the unit-specific error being 0 and also marginally not rejecting the null

---

[4] In all three sections we present the p-values for all the tests we run for our models. The tests are Hausman test, Breusch-Pagan LM and Pesaran-CD test respectively. The null hypotheses are not rejected at the 5% level of significance.

hypothesis of the Pesaran cross-sectional dependence test. This subsample comprises economies mainly from Europe and the United States of America. This means that there is significant homogeneity among their economic systems, especially in Europe. They share several mutual economic characteristics and restrictions and this could lead to a potential cross-sectional dependence. Furthermore the economic policies and regulatory frameworks of these countries share more common characteristics than their lower-income counterparts.

Table 3: Test results

p-value	N= 31 economies	N=15 economies	N=16 economies
Hausman test	0.18792	0.06219	0.14071
Breusch-Pagan Lagrage multiplier	7.11E-16	5.96E-06	1.23E-08
Pesaran CD test	0.18333	0.06869	0.91508

Subsequently, we ran all the tests for the second subsample of 16 economies. As expected we did not reject the null hypothesis for Hausman test, concluding that error terms u_i are not correlated to the regressors. We rejected the null hypothesis of Breusch-Pagan Lagrange multiplier test which means that the variance across entities is not 0, hence the differences between countries can be captures by the random effects model. Finally the null hypothesis for the Pesaran cross-sectional dependence test was not rejected, meaning that there is no cross-sectional dependence. This subsample consists of the 16 low-income economies. Even though they all share a low- income the rest of their characteristics differ significantly. There is no notable economic bond or connection between them, resulting in the nonexistence of dependence between them or between the variables that we use in our model.

According to the results for all of our subsamples, we can proceed with the GLS regression in order to estimate their parameters. Moreover, there is no cross-sectional dependence among our models, which is a positive outcome, since a cross-sectional dependence would bias our estimations.

Coefficient estimation

Table 4 (The impact of social banking on economic growth) presents the results on parameter estimation. Starting with the full sample of 31 economies, the parameter of the social banking sector growth measured by the total credit provided is significant at 10% level of significance and positively affects economic growth. However, the growth of total assets is neither statistically significant nor positive. The GDP per capita deflator parameter is marginally positive but not significant at any level. Therefore we assume that the average effect of the growth of social banking credit provided across time is positive, while the growth measured with total assets and the GDP per capita deflator growth do not affect the economic growth for the sample of 31 countries. We could state that this result corroborates Schumpeter's (1911) argument of the existence of a meaningful relation between the financial sector development and economic development. Furthermore, this positive impact of the provided credit is in line with much of the arguments and findings Levine (2005), even though he did not consider the effect of economic growth on financial development. Our results are also in line with those of Cornée, Kalmi and Szafarz (2016), and show that simple local banks can benefit and trigger the economic growth by allocating credit in moderate amounts, but with substantial selectivity and transparency, while social banks of greater size and wider loan supply often score lower in sensitivity and thus transparency.

In regard to the subsample that comprises the 15 higher income economies, our analysis did not produce any statistically significant result. The developed countries economic growth is not associated with the presence of social banking. We assume that this result is partially caused by the scarcity of the available data. The activity of social banking is broad in Europe and the United States of America, thus with a larger data set we could achieve more robust results. Specifically, the coefficient on social banking credit provided growth is positive but statistically insignificant. The size of social banks in terms of total assets growth is also positive but statistically insignificant. Finally, the coefficient on the GDP per capita deflator growth is positive and insignificant. None of the variables affect economic growth in this subsample.

The second subsample that comprised 16 low-income economies exhibited the highest statistical significance and interest, among all of the samples that we obtained. The economies of this sample are scattered around Asia, Africa and Latin America. We assume that there are little similarities in their economic systems and consider this sample as substantially heterogeneous. More

specifically, the coefficient of total credit provided growth is positive and statistically significant. The coefficient of the total assets growth of social banks is negative and statistically significant, while the coefficient of GDP per capita deflator growth is positive and statistically insignificant. Interestingly both variables that represent social banking cause an impact on economic growth but in different directions. This result is in line with that of Hassan, Sanchez and Yu (2010) that also provided empirical evidence that domestic credit provided by the banking institutions is positively related to economic growth, especially in certain areas like East Asia and Pacific, Latin America and the Caribbean. These countries belong to the low-income economies that belong to the second subsample.

Table 4: Random effects model GLS estimation.[5]

	N=31 economies	**N=15 economies**	**N=16 economies**
a	0.01913***	0.013338***	0.025726***
LG	0.028066	0.008502	0.05313**
TAG	-0.261594	0.00649	-0.066141**
GDPDG	0.000289	0.000422	0.000555
p	-0.077582	-0.041006	-0.120021
θ	0.584372	0.516356	0.592679

The estimations of the parameters of all of the samples also corroborate the findings in Cavenaile and Sougné's (2012). They too provided empirical evidence of the heterogeneous results among countries, regarding the association of financial growth and economic development. Likewise, our samples exhibited different results when we estimated the impact of social banking growth and size on economic growth. Herwartz and Walle (2013) also argued that in low-income

---

[5] The symbols *, ** and *** represent the level of significance of 10%, 5% and 1% respectively. LG variable represents the growth of total credit provided by social banks, TAG represents the growth of the total assets held by social banks and GDPDG represents the GDP deflator growth (yearly adjustment). The values for LG and TAG were retrieved from the Global Alliance for Banking on Values (GABV) website (2020) from http://www.gabv.org/ The values for GDPDG were retrieved from https://data.worldbank.org/indicator. The dependent variable is the GDP per capita growth (GDPPCG) and each subsample has a common intercept (constant) α. θ stands as a function of the variance of the error term σ_u^2 and of the variance of the entity specific error term, σ_ε^2 that is used in order to tackle cross correlation between error terms.

countries there is stronger relationship between financial development and economic growth. A solid interpretation is that the potential of the growth boosting factors increases as the financial sector develops through time (Levine, 2000). For instance, the financial sector must reach a certain threshold of growth before it could aggregate savings that are large enough to finance notable, high return, investments (Rioja and Valev, 2004).

Conclusion

Motivated by Schumpeter's (1911) work that highlighted the significance of the financial sector on economic development, we focused on a certain part of the financial sector, social banks. Social banks provide loans to create a social or environmental benefit in contrast to conventional banks that their pure goal is profit maximization. The recent financial crisis of 2008 led to an increased popularity for social banking, mainly due to the great resilience they present during periods of great financial stress. Their popularity has attracted several traditional institutions, luring them into duplicating their ethical policies and therefore making the distinction between ethical and conventional banking institutions more complicated. The concepts of "ethical" and "sustainability" are very frequently adapted by traditional banks for marketing purposes, although such statements aim exclusively in generating a more attractive image for the institutions and not in implementing actually ethical policies. The credibility and accuracy of these announcements may then be doubtful (Karl, 2015). Therefore, we referred to global associations for social banking in order to retrieve data exclusively for related institutions. We built a panel data based on this data which comprised 31 economies around the world. After testing for the existence of random effects and cross-sectional dependence across our variables, we estimated the parameters of our model by using GLS.

The results showed that the growth of the social banking sector can be beneficial to the sovereign economic growth. In lower-income countries we are providing empirical evidence that both the development of the social banking industry and the growth of its size can cause an impact on sovereign economic growth, but towards both directions. The growth of the total credit provided by social banks is affecting positively economic development while the growth of the total assets of the social institutions has a negative impact on it.

We believe that social (ethical) banks which exhibit substantial resilience in periods of financial stress and operate under moderated risk are connected positively to economic development. Furthermore, given that social banks apply strict selectivity criteria in their fund allocation and provide consistent

transparency in the interest margin they offer, we assume that these institutions can cause a positive impact on the domestic economic development, especially in lower-income countries. Small, local banking institutions that operate with soft and more personal information and interaction can benefit the economy, in lower-income countries where access to financial vehicles is more restricted. Our findings, of course, do not cover every aspect of social banking's benefits. Further research should be conducted by implementing a larger data set in terms of the number of social banks and the time span. This could alter the results or provide robustness to our own. Moreover, there are many macro-economic and financial variables that can reflect the presence of social banking and could possibly turn out to be beneficial to economic development, such as the interest rates offered and key bank profitability metrics.

References

Al-Awad, M., Harb, N. 2005, Financial development and economic growth in the Middle East, *Applied Financial Economics*, 15, 1041–1051.

Apergis, N., Filippidis, I. and Economidou, C., 2007, Financial deepening and economic growth linkages: a panel data analysis, *Review of World Economics*, 143 (1): 179–198.

Barro, R. J., 1995 , Inflation and economic growth, National Bureau of Economic Research, *Working Paper 5326*.

Bencivenga, V. and Smith, B., 1991, Financial markets intermediation and endogenous growth, *Review of Economic Studies*, 58: 195–209.

Bekaert, G., Harvey, C. and Lundblad, C., 2011, Financial openness and productivity, *World Development*, 39 (1): 1–19.

Berger, A.N., Rosen, R.J. and Udell, G.F., 2007, Does market size structure affect competition: the case of small business lending, *Journal of Banking & Finance,* 31: 11–33.

Brooks, C., 2019, *Introductory Econometrics for Finance*, Cambridge University Press.

Cavenaile, L. and Sougné, D., 2012, Financial development and economic growth: an empirical investigation of the role of banks and institutional investors, *Applied Financial Economics*, 20 (22):1719-1725.

Christopoulos, D. and Tsionas, E., 2004, Financial development and economic growth: evidence from panel unit root and co-integration tests, *Journal of Development Economics,* 73 (1): 55–74.

Chuah, H. and Thai, W., 2004, Financial development and economic growth: Evidence from causality tests for the GCC countries, *IMF Working Paper*.

Cornée, S., Kalmi, P. and Szafarz, A., 2016, Selectivity and Transparency in Social Banking: Evidence from Europe, *Journal of Economic Issues*, 50 (2): 494-502.

Da Silva, A. F. C., 2007, Social Banking: The need of the hour, in A. F. C. Da Silva (ed.), *Social Banking - Perspectives and Experiences*, The ICFAI University Press, Hyderabad, India, pp. 3-9.

Demetriades, P. and Hussein, K., 1996, Does financial development cause economic growth? Time series evidence from 16 countries, *Journal of Development Economics,* 51 (2): 387–411.

Edery, Y., 2006, A new model for supporting social enterprise through sustainable investment, *Social Enterprise Journal*, 2(1): 82-100.

Emerson, J., 2003, The Blended Value Proposition: Integrating social and financial returns, *California Management Review*, 45(4): 35-51.

Greenwood, J. and Jovanovic, B., 1990, Financial development, growth and the distribution of income, *Journal of Political Economy*, 98 (5): 1076–1107.

Hassan, MK., Sanchez, B., and Yu, JS., 2011, Financial development and economic growth: New evidence from panel data, *The Quarterly Review of economics and Finance,* 51: 88–104.

Hausman, J., 1978, Specification tests in econometrics, *Econometrica*, 46 (6): 1251–1272.

Herwartz, H. and Walle, Y.M., 2014, Determinants of the link between financial and economic development: Evidence from a functional coefficient model, *Economic Modelling,* 37 (C): 417–427.

Herwartz, H. and Xu, F., 2009, A new approach to bootstrap inference in functional coefficient models, *Computational Statistics & Data Analysis*, 2009, vol. 53 (6): 2155-2167.

Harji, K. and Hebb, T., 2009, *The Quest for Blended Value Returns: Investor Perspectives on Social Finance in Canada*, Carleton Centre for Community Innovation, Ottawa, Canada.

Jbili, A., Enders, K. and Treichel, V., 1997, Financial reforms in Algeria, Morocco, and Tunisia: A preliminary assessment, *IMF Working Paper*.

Karl, MA., 2015, Are ethical and social banks less risky?, Evidence from a new dataset, *Working Paper,* No. 96.

Kim, H. S., 2017, Patterns of economic development: Correlations affecting economic growth and quality of life in 222 countries, *Politics and Policy,* 45(1): 83-104.

King, R. and Levine, R. 1993a, Finance, entrepreneurship and growth, *Journal of Monetary Economics,* 32, 513–42.

King, R. and Levine, R., 1993b, Finance and growth: Schumpeter might be right, *The Quarterly Journal of Economics,* 108 (3): 717–737.

Levin, A., Lin, CF. and Chu, CJ., 2002, Unit root tests in panel data: asymptotic and finite sample properties, *Journal of Econometrics*, 108 (1): 1–24.

Levine, R., 1991, Stock markets, growth and tax policy, *Journal of Finance*, 46: 1445–65.

Levine, R., 1997, Financial development and economic growth: views and agenda, *Journal of Economic Literature*, 35: 688–726.

Levine, R. and Zervos, S., 1998, Financial stock markets, banks, and economic growth, *American Economic Review*, 88: 537–58.

Levine, R., 2005, Finance and growth: theory and evidence, in: Aghion, P. and Durlauf, S.N. (Eds.), *Handbook of Economic Growth*, vol. 1A. Elsevier North-Holland, Amsterdam, pp. 865–934.

Levine, R., Loayza, N. and Beck, T., 2000, Financial intermediation and growth: causality and causes, *Journal of Monetary Economics*, 46: 31–77.

Lucas, R.E., 1988, On the mechanics of economic development, *Journal of Monetary Economics,* 22: 3–42.

Milano, R., 2011, Social banking: a brief history, in O. Weber and S. Remer (eds.), *Social Banks and the Future of Sustainable Finance*, Routledge, New York, NY., pp. 15-47.

Monitor Institute, 2009, *Investing for Social and Environmental Impact*, Monitor Institute, Cambridge, MA.

Mottaleb, KA., 2007, Determinants of foreign direct investment and its impact on economic growth in developing countries, *MPRA Working Paper.*

Neusser, K. and Kugler, M., 1998, Manufacturing Growth and Financial Development: Evidence from OECD Countries, *Review of Economics and Statistics,* 80(4): 638-46.

Pagano, M., 1993, Financial markets and growth: An overview, *European Economic Review,* 37: 613–622.

Pesaran, M., 2007, A simple panel unit root test in the presence of cross-section dependence, *Journal of Applied Econometrics*, 22: 265–312.

Rioja, F., Valev, N., 2004, Does one size fit all? A re-examination of the finance and growth relationship, *Journal of Development Economics*, 74 (2): 429–447.

Robinson, J., 1952, *The generalization of the general theory. The Rate of Interest and Other Essays,* MacMillan, London.

Schumpeter, J., 1911, *The Theory of Economic Development*, Harvard University Press, Cambridge, MA.