

## Effects of Foreign Banks on Relation Between Income Distribution and Financial Depth: Evidence from Transition Economies

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### ABSTRACT

One of the common features of transition economies in eastern and central Europe is dominance of foreign institutions in financial systems. In the early stages of the transition process, foreign banks entered financial systems and had big shares via new entrants and also privatization of state banks. No doubt, this affected them in the way of development. But it is not clear that how it affected the distribution of income. In this study, we query possible relations between income distribution inequality and financial depth via symmetric and asymmetric panel causality tests in selected transition economies between the years 1993 and 2015. According to asymmetric panel causality test, there is only a uni-directional causality running from positive component of financial depth to positive component of income inequality in Ukraine and from negative component of financial depth to negative component of income distribution inequality in Slovakia. The reason of weak relation between financial development via foreign bank entry and income inequality may be the type of foreign bank entry.

### ملخص

من السمات المشتركة للاقتصادات التي تمر بمرحلة انتقالية في أوروبا الشرقية والوسطى هيمنة المؤسسات الأجنبية على النظم المالية. ففي المراحل الأولى من العملية الانتقالية، دخلت البنوك الأجنبية النظم المالية وكانت لديها أسهم كبيرة بفضل الوافدين الجدد وكذلك نتيجة خصخصة البنوك الحكومية. ولا شك في أن ذلك ساعدها على التطور. غير أن الطريقة التي أثربها هذا الأمر على توزيع الدخل لا تزال غير واضحة. وفي هذه الدراسة، نتساءل عن العلاقات المحتملة بين التفاوت في توزيع الدخل والعمق المالي من خلال اختبارات السببية المتماثلة وغير المتماثلة في اقتصادات

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مختارة تمر بمرحلة انتقالية بين عامي 1993 و 2015. ووفقاً لاختبار السببية غير المتماثلة، لا توجد سوى علاقة سببية أحادية الاتجاه تمتد من العنصر الإيجابي للعمق المالي إلى العنصر الإيجابي لعدم المساواة في الدخل في أوكرانيا، ومن العنصر السلبي للعمق المالي إلى العنصر السلبي لعدم المساواة في توزيع الدخل في سلوفاكيا. وقد يكون سبب ضعف العلاقة بين التنمية المالية عن طريق دخول المصارف الأجنبية وعدم المساواة في الدخل هو نوع الدخول المصرفي الأجنبي نفسه.

### ABSTRAITE

L'une des caractéristiques communes aux économies en transition d'Europe centrale et orientale est la prédominance des institutions étrangères dans les systèmes financiers. Au début du processus de transition, les banques étrangères sont entrées dans les systèmes financiers et ont pris des parts importantes par le biais de nouveaux entrants et de la privatisation des banques d'État. Il ne fait aucun doute que cela a eu un impact sur leur développement. Mais il n'est pas évident de savoir comment cela a affecté la distribution des revenus. Dans cette étude, nous nous interrogeons sur les relations possibles entre l'inégalité de la distribution des revenus et la profondeur financière par le biais de tests de causalité symétriques et asymétriques en panel dans des économies en transition sélectionnées entre les années 1993 et 2015. Selon le test de causalité asymétrique en panel, il n'existe qu'une causalité unidirectionnelle allant de la composante positive de la profondeur financière à la composante positive de l'inégalité des revenus en Ukraine et de la composante négative de la profondeur financière à la composante négative de l'inégalité de la distribution des revenus en Slovaquie. La raison de la faible relation entre le développement financier via l'entrée de banques étrangères et l'inégalité des revenus peut être le type d'entrée de banques étrangères.

**Keywords:** Gini Coefficient, Financial Depth, Foreign bank entry

### 1- Introduction

By collapse of the Soviet Union, a number of countries have been transited from command economy to free market economy strategy. These economies are called as transition economies. Not only countries those were members of USSR, but also former Yugoslavian countries, Bulgaria and Romania can be put into the same group.

In early 1990s, they chose capitalism and structural reforms were employed to be adopted to free market economy. Before transition period, financial systems were dominated by the state in these economies. By transition process, financial systems were liberalized, some of the state banks were privatized and private institutions have started to dominate the system. In these economies, banking sector has a big share, and another important point is that foreign banks are included in. Not only new entrants and also state bank purchases induced foreign bank dominance in the banking system of transition economies. Some evidence about foreign bank dominance is presented below.

In Poland, share of banks in the Polish financial system is 70% according to [Narodowy Bank Polski \(2019\)](#). Moreover, 50% of banks have foreign partners. According to [Tomsik \(2015\)](#), banks have an important share in the Czech financial system and share of foreign banks is approximately 80%. Similarly, Hungarian banking system was dominated by foreign banks in early transition period. According to [Hungary Central Bank \(2019\)](#), there are thirty-three banks and sixteen of them belong to foreign ownership and three of thirty-three have foreign partners. In Romania, financial system is dominated by banks and share of them is 80%. In banking system, 75% of total assets belongs to foreign partners ([Arakelyan, 2018: 9](#)).

In Ukraine, there are ninety-eight commercial banks and thirty-eight of them have foreign owners and/or partners (CU, 2019). According to the Central Bank of Bulgaria (2019), there are twenty-five banks and twenty of them accommodate foreign partners. In the Slovak Republic, although size of financial system is relatively small, it is controlled by Austrian, German and Italian foreign capital, only four banks are purely national ownership (European Banking Federation, 2019).

The dominance of foreign banks has been a crucial role in the development performance of the transition economies. Another issue to investigate is the effect of development in the financial system via foreign bank entrants on income inequality in the transition economies. In this study, we try to answer to the question is that “Are foreign banks help to reduce income inequality in selected transition economies?”. The relation between financial system development and income inequality is investigated in various economies in the related literature. But it was not investigated for transition economies to our knowledge. Different from

developed economies, transition economies had weak financial structure at the beginning. The development of financial system via growing banking sector had been achieved by foreign banks. Findings of this study may help to find contribution of foreign bank entrants on income equality in selected transition economies.

In the following section, theoretical framework about relation between variables is summarized. In the third section, literature investigating financial development-income distribution is summarized. In the following section, empirical findings are presented. In the last section, empirical findings are interpreted, and policy implications are made.

## **2- Theoretical Framework**

The possible effects of financial system on different indicators of economy are well documented in economic literature. Theoretically, developing financial system contributes to economic growth. In this regard, According to [Chen and Kinkyo \(2016\)](#), development of financial system has a crucial role in growth strategies of in low- and middle-income countries ([Chen and Kinkyo, 2016: 733](#)). On the other hand, related to development of financial system and income distribution relation, there are various arguments. While some economists imply positive effect on reducing income inequality (inequality narrowing hypothesis), some of them imply negative effects on increasing income inequality (inequality widening hypothesis). Moreover, a group of economists claim U-shaped relation between developing financial system and income distribution.

According to [Demirguc-Kunt and Levine \(2009\)](#), there are direct and indirect effects of financial depth on inequality. According to them, development of financial system can operate on the extensive margin and individuals can use financial system due to availability of financial services. Because an important share of population may not use financial services because of price and other impediments. So development of financial system can expand financial opportunities of disadvantaged groups in the context of income inequality. According to [Clarke et al. \(2006\)](#), deepening financial markets allow individuals who do not have access the system before and they would have some beneficiaries. By doing so, poor individuals will be able to finance their new business by borrowing from financial system.

Demirguc-Kunt and Levine (2009) also emphasize that financial development can also operate on the intensive margin, enhancing the financial services of those already accessing the financial system, which are frequent high-income individuals. So financial development would widen the gap and inequality would increase.

According to Townsend and Ueda (2006), development of financial system might affect income distribution indirectly. Developing financial system provides more credit to manufacturing sector and increase aggregate production. Both increasing credit availability and production may positively affect income distribution via altering demand for low and high skilled workers. That would tighten distribution of income.

Another view, called Greenwood – Jovanovic (1990) hypothesis, claims that income inequality rises at the initial phase of financial development. In the second phase, it slows down during the development of financial system. Third phase is called as maturity phase and in this phase, income inequality falls. Therefore, the association between financial development and income inequality follows an inverted U-shaped form and it is called financial Kuznets curve (Destek et al., 2020: 3).

The relation between two indicators might change when the time-period gets longer or shorter. According to Chen and Kinkyo (2016), financial development might increase income inequality and it is associated with the vulnerabilities of countries in terms of their susceptibility to crises and quality of governance. On the other hand, development of the system would reduce inequality.

In the light of theoretical explanations made, the relation between them might change according to conditions such as development level of economy, time span and period analyzed. Also, development type of financial system is effective on how it does affect income inequality, positively or negatively. In this regard, application of advanced econometric methods investigating possible asymmetric effects might give more robust results about the relation.

### **3- Literature Review**

The relation between income distribution and development of financial system is investigated via different channels. One of the initial studies

belongs to [Greenwood and Jovanovic \(1990\)](#). They claim that there are three phases of interaction between income distribution and financial development and the shape of relation is inverted U. [Galor and Zeira \(1993\)](#) find a positive linear relationship between financial system development and income inequality. Deepening financial system would ease credit allocation, so individuals belonging to low-income group will be able to use financial system.

[Dollar and Kraay \(2002\)](#) investigate the effects of inflation, trade openness, financial development, and government consumption on income of bottom 20% population in 92 countries. According to regression analysis results, economic growth and growth and the policies and institutions that support it on average benefit the poorest. Moreover, financial development does have little systematic effect on income level of poorest population.

[Clarke et al. \(2006\)](#) examine the relation for 83 countries between 1960 and 1995. They employ cross sectional regression method and find that income inequality is less when financial development is greater. This result support [Galor and Zeira \(1993\)](#). Moreover, they reject hypothesis of [Greenwood and Jovanovic \(1990\)](#) implying financial development benefits only the rich.

[Beck, Demigüç-Kunt and Levine \(2007\)](#) employ 72 economies over the period 1996 – 2005. Analysis results imply that financial development disproportionately increases income of the poor countries. So, it is possible to conclude that financial development reduces income inequality.

[Shahbaz and Islam \(2011\)](#) analyze the relation for the Pakistan economy between years 1971 and 2005 via ARDL bounds test approach. According to results, financial development reduces income inequality while financial instability aggravates it. Also trade openness deteriorates income distribution also. Findings of this study is contrary to suggestion of [Greenwood and Jovanovic \(1990\)](#).

[Kim and Lin \(2011\)](#) investigate the relation in 72 countries over the period 1996 – 2005. They employ threshold regression model to better understand if there is a non-linear relation. Analysis results indicate that development of financial system positively affects distribution of income.

But there is a threshold in financial development level to see positive effect. Otherwise development of the system affects income distribution negatively.

In the latter studies, advanced econometric methods are employed, and the number of countries investigated is increased. In one of them, [Naceur and Zhang \(2016\)](#) investigate the relation using a sample of 143 countries from 1961 to 2011. They also employ different dimensions of financial development and try to find which of them is efficient in reducing inequality. According to results, financial development reduces income inequality and conclude that development in banking sector is more effective than development in stock markets.

[Chen and Kinkyo \(2016\)](#) investigate the relation in 88 economies over the period 1961 – 2011. They employ pooled mean group method and find that development of the system affects distribution of income positively in the long run. But it adversely affect income distribution in the short run.

[Seven and Coskun \(2016\)](#) analyze 45 emerging market economies in the context of income inequality – financial development interaction. They employ data belonging to 1987 – 2011 period and use GMM method. According to results, financial development affects income inequality in low-income emerging market countries.

[Jauch and Watzka \(2016\)](#) employ data belonging to 138 countries between years 1960 – 2008 via fixed effect and dynamic panel model. Findings obtained from dynamic panel model present a negative impact of financial development on income inequality. This is some inconsistent with the existing literature.

[Destek et al. \(2020\)](#) analyze the Turkish economy and they use four different dimensions of financial development like [Naceur and Zhang \(2016\)](#). According to results of ARDL bounds test, financial Kuznets curve is valid in the Turkish economy.

As can be seen in the literature review, literature is inconclusive. Although there is a number of studies implying positive interaction, negativity is found in some of them. Different from existing studies, this study tries to find effects of financial development via foreign bank entry

in transition economies. To our knowledge, although analyses are mainly based on country groups, the transition economies are not investigated in the context of interaction between development of finance and income distribution.

#### 4- Empirical Findings

As can be seen in the literature review, relation between variables is well documented. In these studies, different indicators are chosen to measure financial system development. [Sahay \(2015\)](#) indicates three components of financial development. These are financial depth, access and efficiency. While efficiency is related to institutional structure and low costs, size and liquidity of the financial system determine deepness. In this regard, efficiency component might be ignored. Depth component is suitable for investigating effect of financial system on income inequality such developing countries. Several studies summarized in literature review section also prefer to use depth to measure development level of economies such as [Demirgüç-Kunt and Levine \(2009\)](#), [Naceur and Zhang \(2016\)](#).

To measure income inequality level, Gini coefficient is one of the indicators. Series of Gini coefficient was built by University of Texas Inequality Project which is the broadest source including Gini coefficient for almost all transition economies. The data period covers 1993 and 2015 period. Because transition period starts by just beginning of 1990s. So, series begin by 1993. On the other hand, although financial depth series goes to 2020, Gini coefficient is calculated until 2015 by the project. For this reason, analysis covers 1993 – 2015 period. Source of financial depth (FD, hereafter) series is the International Monetary Fund's database named International Financial Statistics section. The data frequency is annual.

In the study, Bulgaria, Czech Republic, Estonia, Hungary, Croatia, Latvia, Lithuania, Poland, Romania, Slovak Republic and Ukraine economies are taken into account. The number of countries is limited due to absence of data belonging to other transition countries. In the first step, it is necessary to employ cross section dependency test if there is a cross section dependency between series belong to same indicator of each economies. To measure cross section dependency, [Peseran \(2004\) CD<sub>LM</sub>](#), [Breusch-Pagan CD<sub>LM1</sub>](#), [Peseran \(2004\) CD<sub>LM2</sub>](#) tests are employed. In tests



investigating whether cross-sectional dependency is present, the null hypothesis is that there is no cross-sectional dependency among the countries in the panel, and the alternative hypothesis is that there is a cross-section dependency among series.

**Table 1:** Cross Section Dependency Test Results

Constant Model	FD		INEQ	
	Statistic	p value	Statistic	p value
$CD_{lm}$ (BP,1980)	59.463	0.316	78.630	0.020**
$CD_{lm}$ (Pesaran, 2004)	0.426	0.335	2.253	0.012**
$CD$ (Pesaran, 2004)	-2.283	0.011**	-2.299	0.011**
$LM_{adj}$ (PUY, 2008)	-1.889	0.971	0.298	0.383

Notes: In the following model  $\Delta y_{i,t} = d_i + \delta_i y_{i,t-1} + \sum_{j=1}^{p_i} \lambda_{i,j} \Delta y_{i,t-j} + u_{i,t}$ , lag length ( $p_i$ ) is determined as one. \*, \*\* and \*\*\* denote that alternative hypothesis is accepted in 10%, 5% and 1% significance levels, respectively.

Test statistics and probability values of CD and LM tests are presented in table 2. According to probability values, only the alternative hypothesis that there is cross section dependence is accepted in CD test for financial depth. For the Gini coefficient, alternative hypothesis that there is a cross-sectional dependency is accepted in all tests, except  $LM_{adj}$  test.

**Table 2.** Cross Section Dependency and Homogeneity Test Results

	Statistic	p-value
<u>Cross Section Dependency</u>		
$LM$ (BP,1980)	319.925	0.00***
$CD_{lm}$ (Pesaran, 2004)	25.260	0.00***
$CD$ (Pesaran, 2004)	6.336	0.00***
$LM_{adj}$ (PUY, 2008)	58.854	0.00***
<u>Homogeneity</u>		
$\tilde{\Delta}$	5.558	0.00***
$\tilde{\Delta}_{adj}$	5.942	0.00***

Note: \*, \*\* and \*\*\* denote that alternative hypothesis is accepted in 10%, 5% and 1% significance levels, respectively.

In the following regression model  $INEQ_{it} = \alpha_i + \beta_{1i}FD_{it} + \varepsilon_{it}$ , Gini coefficient is determined as dependent variable and financial depth is determined as independent variable. According to probability values, the alternative hypothesis is accepted, which shows that there is cross-sectional dependency in the panel and claims that the coefficients are not homogeneous.

Therefore, methods that consider the cross-sectional dependency and are based on heterogenous estimation should be used. Therefore, second generation panel unit root tests should be applied.

In the panel unit root test developed by [Smith et al. \(2004\)](#), critical values can be obtained with the "bootstrap" method. [Smith et al. \(2004\)](#) claims that in the panel unit root test, the null hypothesis is that variable has a unit root and the alternative hypothesis is that variable does not have a unit root.

**Table 3:** [Smith et al. \(2004\)](#) Panel Unit Root Test Results

Level	Constant		Constant and Trend	
	Statistic	Bootstrap p value	Statistic	Bootstrap p value
INEQ	-3.597	0.00***	-2.908	0.008***
FD	-1.700	0.300	-2.507	0.157
<b>First Difference</b>				
INEQ	-3.993	0.00***	-4.274	0.00***
FD	-5.024	0.00***	-4.975	0.00***

Notes: Maximum lag length is determined as four and optimal lag length is determined according to general-to-specific approach. Probability values are obtained via 5.000 bootstrap distribution. \*, \*\* and \*\*\* denote that alternative hypothesis is accepted in 10%, 5% and 1% significance levels, respectively.

According to panel unit root test results, Gini coefficient is stationary in level. On the other hand, financial depth series is stationary in first difference. In [Emirmahmutoğlu and Köse \(2011\)](#) panel causality tests, it is needed to accept  $d_{\max}$  stationary level as one. In panel vector auto-regression model (PVAR) following regressions are estimated;

$$\Delta INEQ = \delta_{1i} + \sum_{p=1}^{k+d_{\max}} \delta_{11ip} \Delta INEQ_{it-p} + \sum_{p=1}^{k+d_{\max}} \delta_{12ip} \Delta FD_{it-p} + v_{1it}$$

$$\Delta FD = \delta_{2i} + \sum_{p=1}^{k+d_{\max}} \delta_{21ip} \Delta FD_{it-p} + \sum_{p=1}^{k+d_{\max}} \delta_{22ip} \Delta INEQ_{it-p} + v_{2it}$$

In these regressions, the null hypothesis  $\sum_{p=1}^{k+d_{\max}} \delta_{12ip} \Delta FD_{it-p} = 0$  presents that

there is no uni-directional causation linkage from financial depth to Gini coefficient. In the second equation, the null hypothesis

$\sum_{p=1}^{k+d_{\max}} \delta_{22ip} \Delta INEQ_{it-p} = 0$  presents that there is no uni-directional causation

linkage from Gini coefficient to financial depth. In panel causality tests developed by [Emirmahmutoğlu and Köse \(2011\)](#) and [Konya \(2006\)](#), validity of co-integration relation between variables is not necessary condition.

**Table 4:** Symmetric Emirmahmutoğlu ve Köse (2011) Panel Causality

Country	p+d <sub>max</sub>	GINI $\nrightarrow$ FD		FD $\nrightarrow$ GINI	
		Wald	p-value	Wald	p-value
Bulgaria	4	3.149	0.369	7.922	0.047**
Czech Republic	2	0.733	0.391	1.232	0.266
Estonia	2	0.027	0.868	0.123	0.725
Hungary	2	0.398	0.527	0.005	0.938
Romania	2	0.039	0.841	1.173	0.278
Poland	3	0.004	0.949	0.411	0.521
Croatia	2	3.738	0.154	9.409	0.00***
Slovakia	3	0.563	0.452	0.280	0.596
Ukraine	2	1.485	0.475	2.197	0.333
Lithuania	2	0.046	0.829	0.013	0.907
Latvia	2	0.505	0.477	0.118	0.730
<b>Fisher</b>		<b>14.539</b>	<b>0.881</b>	<b>21.046</b>	<b>0.049**</b>

Notes:  $\nrightarrow$  shows null hypothesis claiming there is no causality. p presents optimal lag length and d<sub>max</sub> presents stationary degree. \*, \*\* and \*\*\* denote that alternative hypothesis is accepted in 10%, 5% and 1% significance levels, respectively.

According to results in table 4, there is a uni-directional causality from financial depth to Gini coefficient. On the other hand, there is no causality running from Gini coefficient to financial depth.

In the second step, possible causation linkage income inequality and financial depth is investigated via following seemingly unrelated regressions developed by [Konya \(2006\)](#);

$$INEQ_{1,t}^+ = \delta_{11} + \sum_{p=1}^{l_{y1}} \delta_{11,j} \Delta INEQ_{1,t-j}^+ + \sum_{p=1}^{l_{x1}} \delta_{12,j} \Delta F D_{1,t-j}^+ + v_{1it}^+$$

$$INEQ_{2,t}^+ = \delta_{12} + \sum_{p=1}^{l_{y1}} \delta_{12,j} \Delta INEQ_{2,t-j}^+ + \sum_{p=1}^{l_{x1}} \delta_{22,j} \Delta F D_{2,t-j}^+ + v_{2it}^+$$

$$INEQ_{N,t}^+ = \delta_{1N} + \sum_{p=1}^{l_{y1}} \delta_{1N,j} \Delta INEQ_{N,t-j}^+ + \sum_{p=1}^{l_{x1}} \delta_{2N,j} \Delta F D_{N,t-j}^+ + v_{Nit}^+$$

In these regressions,  $l$  denotes optimal lag length selected according to Schwarz information criterion,  $v$  denotes error term with independent identical distribution. In these regressions where financial depth is the independent variable, the F test is used to test the equality of the parameters of financial depth to zero.

The null hypothesis claims that there is no causality running from financial depth to Gini coefficient. Similarly, a seemingly unrelated regression is built which financial depth is dependent variable and Gini coefficient is independent variable.

**Table 5:** Asymmetric Kónya (2006) Panel Causality Test Results

<i>Panel A</i>	<b>Ho: GINI<sup>+</sup> <math>\nrightarrow</math> FD<sup>+</sup></b>				<b>Ho: FD<sup>+</sup> <math>\nrightarrow</math> GINI<sup>+</sup></b>			
	<b>Countries</b>	<b>Wald (prob)</b>	<b>1%</b>	<b>5%</b>	<b>10%</b>	<b>Wald (prob)</b>	<b>1%</b>	<b>5%</b>
Bulgaria	3.006 (0.59)	14.371	11.087	8.943	5.856 (0.30)	24.138	14.008	11.053
Czech Republic	13.71 (0.57)	58.360	31.961	32.077	3.947 (0.76)	29.392	20.633	16.172
Estonia	0.888 (0.96)	27.576	15.334	12.525	0.267 (0.99)	36.113	17.978	14.666
Hungary	2.451 (0.99)	101.285	72.764	62.373	1.606 (0.99)	145.061	113.189	90.589
Romania	0.453 (0.96)	14.634	9.688	8.279	1.978 (0.80)	65.683	26.406	20.341
Poland	0.0016 (0.98)	6.173	5.069	4.545	3.260 (0.59)	20.016	15.250	10.484
Croatia	12.322 (0.09)*	31.030	16.212	11.861*	0.450 (0.99)	43.417	22.389	17.193
Slovakia	6.891 (0.87)	40.165	33.416	25.890	0.004 (0.99)	49.586	39.969	31.080
Ukraine	27.329 (0.00)***	11.741***	5.759**	5.177*	6.398 (0.02)**	7.314	4.680**	3.0384*
Lithuania	2.098 (0.86)	40.602	24.578	18.219	4.924 (0.65)	44.617	20.692	16.295
Latvia	24.124 (0.27)	58.875	43.472	36.908	7.365 (0.68)	59.997	41.187	34.872

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<i>Panel B</i>	<b>Ho: GINI <math>\nrightarrow</math> FD</b>				<b>Ho: FD <math>\nrightarrow</math> GINI</b>			
	<b>Countries</b>	<b>Wald (prob)</b>	<b>1%</b>	<b>5%</b>	<b>10%</b>	<b>Wald (prob)</b>	<b>1%</b>	<b>5%</b>
Bulgaria	76.383 (0.00)***	30.867***	17.619**	14.864*	16.849 (0.68)	80.906	67.566	57.920
Czech Republic	3.970 (0.97)	84.669	54.443	48.133	3.962 (0.97)	114.378	97.810	73.577
Estonia	0.022 (0.99)	8.741	7.083	4.567	1.147 (0.64)	14.612	10.518	7.717
Hungary	1.513 (0.82)	26.434	20.206	14.289	21.956 (0.68)	57.639	45.697	37.769
Romania	5.906 (0.76)	46.960	29.343	24.289	5.684 (0.98)	85.462	80.285	63.826
Poland	5.239 (0.52)	20.665	15.960	13.278	3.714 (0.92)	48.265	36.498	29.554
Croatia	2.205 (0.63)	18.120	11.094	9.004	13.269 (0.17)	43.916	28.073	19.270
Slovakia	5.771 (0.96)	118.190	68.196	57.120	117.265 (0.07)*	152.631	120.159	111.215*
Ukraine	0.466 (0.98)	26.972	14.795	12.843	29.674 (0.34)	63.766	52.545	43.710
Lithuania	2.466 (0.94)	45.645	33.271	24.046	1.066 (0.97)	38.927	22.832	19.080
Latvia	0.385 (0.92)	18.588	14.191	10.260	0.901 (0.92)	33.471	26.694	20.452

Notes:  $\nrightarrow$  shows null hypothesis claiming there is no causality. \*, \*\* and \*\*\* denote that alternative hypothesis is accepted in 10%, 5% and 1% significance levels, respectively.

In table 5, asymmetric causality test results are presented. Results imply that:

- In the Croatian and Ukrainian economies, there is a uni-causality from the positive component of the Gini coefficient to the positive component of financial depth.
- In the Ukrainian economy, there is a uni-directional causality from the positive component of financial depth to the positive component of the Gini coefficient.
- In the Bulgarian economy, there is a uni-directional causality from the negative component of the Gini coefficient to the negative component of the financial depth.
- In the Slovakian economy, there is a uni-directional causality from the negative component of financial depth to the negative component of the Gini coefficient.

## **Conclusion**

Development of financial system affects related economy in different ways. For instance, developing financial system induces economic growth via easing credit allocation, reduces unemployment rate, etc. Another aspect of financial development is on income inequality. But the net effect of financial development on income inequality is inconclusive. Positive effect of financial development in income distribution is supported by a number empirical studies. On the other hand, there are numerous studies claiming that financial development might increase income inequality.

In this study, we analyze transition economies to find a relation between financial development and income inequality between 1993 and 2015. Different from existing studies, we analyze not only effect of financial development on income distribution and also effects of foreign bank entry to transition economies. By doing so we try to answer if foreign banks help to reduce income inequality in selected transition economies.

According to results obtained from symmetric and asymmetric panel causality test results, relation between financial development and income inequality exists in Bulgaria, Croatia, Ukraine and Slovakia. But directions of causality are different for each country. In the Ukrainian and

Slovakian economies, direction of causality runs from financial depth to income inequality. In each case, financial deepening increases income inequality in Ukraine and reduction in financial development affects income distribution positively.

These findings imply that development of financial system is not effective on income distribution in transition economies. Only in Ukraine and Slovakia, there are some evidence about positive effects of financial development. Another interesting finding is that the lowest foreign bank entrance belongs to Ukraine and Slovak Republic and the level of foreign bank entrance is low in these economies.

This might be because of foreign bank entry type. Foreign banks try to allocate credits for international companies, corporate national companies and government. These companies and/or institutions with low risk and low managerial costs are the desired customer base in foreign banks. Foreign banks that add the customers who are described as "cream layer" to their portfolio are in an advantageous position ([Detragiache et al., 2006](#)). So, foreign banks are not interested in individuals to give credits for various reasons. This explains the reason why there is no significant relation between financial development via foreign bank entry and income inequality in selected transition economies.



## References

- Arakelyan, M. (2018). Foreign banks and credit dynamics in CESEE. IMF Working Paper no WP/18/3.
- Beck, T. H. L., A. Demirgüç-Kunt, and R. Levine. (2007). Finance, inequality and the poor. *Journal of Economic Growth* 12 (1):27–49
- Breusch, T., and Pagan, A. (1980). The Lagrange multiplier test and its application to model specification in econometrics. *Rev. Econ. Stud.* 47, 239–253.
- Central Bank of Bulgaria (2019). Annual Report. Website: [https://www.bnb.bg/bnbweb/groups/public/documents/bnb\\_publication/anual\\_report\\_2019\\_en.pdf](https://www.bnb.bg/bnbweb/groups/public/documents/bnb_publication/anual_report_2019_en.pdf) Access date: 05.05.2021
- Chen, W. and Kinkyo, T. (2016). Financial Development and income inequality: Long-run relationship and short-run heterogeneity. *Emerging Markets Finance and Trade*, 52 (3), 733-742.
- Clarke, G. R. G., L. C. Xu, and H. Zou. (2006). Finance and income inequality: What do the data tell us? *Southern Economic Journal* 72 (3):578–96.
- Demirgüç-Kunt, A., and R. Levine. (2009). Finance, financial sector policies, and long run growth. Policy Research Working Paper, WPS4469, Washington, DC: World Bank.
- Destek, M.A., Sinha, A., Sarkodie, A. (2020). The relationship between financial development and income inequality I Turkey. *Journal of Economic Structures*, 9 (11), 1 – 14.
- Detragiache, E., T. Tressel, P. Gupta, (2006). Foreign Banks in Poor Countries: Theory and Evidence. IMF Working Paper.
- Dollar D, Kraay A. 2002. Growth is good for the poor. *J. Econ. Growth* 7(3):195–225
- Emirmahmutoglu, F. And Kose, N. (2011). Testing for Granger Causality in Heterogeneous Mixed Panels. *Economic Modelling*, 28, 870–876.

European Banking Federation (EBF) (2019). Website: <https://www.ebf.eu/ebf-media-centre/banking-in-europe-ebf-publishes-2019-facts-figures/> Access date: 01.05.2021.

Galor, O., and J. Zeira. 1993. Income distribution and macroeconomics. *Review of Economic Studies*, 60 (1), 35–52.

Greenwood, J., and B. Jovanovic. 1990. Financial development, growth, and the distribution of income. *Journal of Political Economy* 98 (5), 1076–107.

Hungary Central Bank (2019) website: <https://www.ebf.eu/hungary/> Access date: 28.04.20201.

Jauch S, Watzka, S. (2016). Financial development and income inequality: a panel data approach. *Empir Econ* 51(1), 291–314.

Kim, Dong-Hyeon and Lin, Shu-Chin, (2011). Nonlinearity in the financial development income inequality nexus. *Journal of Comparative Economics*, 39(3), 310-325.

Kónya, L. (2006). Exports and Growth: Granger Causality Analysis on OECD Countries with a Panel Data Approach. *Economic Modelling* (23), 978-992.

Naceur, S.B. and Zhang, R. (2016). Financial development, inequality and poverty: Some international evidence. IMF Working Paper, WP/16/32.

Narodowy Bank Polski (2019). Website: <https://www.nbp.pl/homen.aspx?f=/srodeken.htm> Access date: 29.04.2021.

Pesaran, Hasem, M. (2004). General Diagnosti Tests for Cross Section Dependence in Panels. Working Paper No:0435, University of Cambridge.

Pesaran, M.H., Ullah, A., Yamagata, T. (2008). A bias-adjusted LM test of error cross section independence. *Econometrics Journal* 11, 105–127.

Pesaran, M. H., and Yamagata, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics*, 142 (1), 50-93.

Sahay, R., Čihák, M., N'Diaye, P., and Barajas, A. (2015). Rethinking financial deepening: Stability and growth in emerging markets. *Revista de Economía Institucional*, 17 (33), 73-107.

Seven, U and Y Coskun (2016). Does financial development reduce income inequality and poverty? Evidence from emerging countries. *Emerging Markets Review*, 26: 34-63.

Shahbaz, M. and Islam, F. (2011). Financial development and income inequality in Pakistan: An application of ARDL approach. *Journal of Economic Development*, 36 (1), 35 – 58.

Smith, L. V., Leybourne, S., Kim, T. H., & Newbold, P. (2004). More powerful panel data unit root tests with an application to mean reversion in real exchange rates. *Journal of Applied Econometrics*, 19 (2), 147-170.

Tomsik, V. (2015). International Banks' Business Models: Branches vs Subsidiaries. *Emerging Market Deputy Governors' Meeting Bank for International Settlements, Basel*, 26 – 27 February 2015.

Townsend RM, Ueda K. (2006). Financial deepening, inequality and growth: a model-based quantitative evaluation. *Rev. Econ. Stud.* 73(1):251–93.