Institutional quality and access to financial services: evidence from European transition economies

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Abstract
Purpose – This paper outlines an analytical framework for estimating households' access to formal credit across European transition economies shortly after the onset of the global financial crisis. This study, along with the individual-level socio-economic and demographic characteristics also considers the perceived quality of the institutions. The author wants to assess whether an adequate policy-level intervention to promote financial inclusion should account for the individuals' subjective evaluation of the political situation in their own country as well as their personal experience of corruption.

Design/methodology/approach – This paper identifies the main determinants of financial inclusion using European microdata (*Life in Transition Survey* II, LiTS II). In order to estimate individuals' access to formal financial markets, the author constructs a bivariate probit model to account for joint access to short-term and long-term credit products (Mohieldin and Wright, 2000).

Findings – The results show that improving people's access to financial markets across European regions requires a set of interventions at the institutional and local levels to link-up policies of financial inclusion and financial integrity.

Originality/value – The paper contributes to the existing literature by identifying a number of key causes of financial inclusion and the role of institutional (corruption crimes) factors in determining the levels of financial access in a country.

Keywords Formal credit services, Transition economies, Corruption, Bivariate probit

Paper type Research paper

1. Introduction
Financial exclusion is quite widespread across Europe: after the onset of the global financial crisis around a quarter of European households reported difficulties in getting a credit card, a third in getting a loan and almost a half in getting a mortgage approved, with large disparities between countries and between regions within countries [1]. It is widely recognized that those who are unable to access financial services face greater challenges in achieving social and economic integration. Access to credit is fundamental to smooth consumption plans but it is also a key instrument to access other financial services. Lack of access to or usage of credit services also impacts on achieving the minimum national standard of living which can stigmatize people. Also, "credit excluded" people who are refused access to credit by mainstream lenders are exposed to informal moneylenders who lend money at very high or extortionate rates, further exacerbating their vulnerability (Lämmermann, 2010). The recent financial and economic crisis represents an important source of concern which could worsen

the problem of financial exclusion. This stems from a tendency of the mainstream financial markets toward a sort polarization between those who are financially "hyper-included" and those who are excluded or unbanked since they have no access even to basic financial services, i.e. bank accounts (Kempson and Whyley, 1999; Claessens, 2006).

Financial exclusion has been defined in the literature as "The inability, difficulty or reluctance of particular groups to access or use mainstream financial services [2] that are appropriate to their needs and allow them to lead a normal life in the society which they belong to." (McKillop and Wilson, 2007, p. 9). The term financial exclusion was originally coined by geographers Leyshon and Thrift (1995) as resulting from limited physical (geographical) access to financial services caused by bank branch closures. Only from the 1990s afterward more attention has been devoted to financial exclusion defined as the extent to which individuals, firms and households lack access to mainstream financial products and services, including bank accounts, credit, savings and insurance (Kempson and Whyley, 1999). Several studies were recently carried out on financial exclusion by academics (Anderloni and Carluccio, 2006; Brown et al., 2011; Carbo et al., 2005; Devlin, 2005; Gloukoviezoff, 2006; Sinclair, 2001), policy makers and international institutions (European Commission, 2010; World Bank, 2012). People worldwide are encountering difficulties in accessing or using necessary financial services in the mainstream market, and reducing financial exclusion is an important and crucial dimension to be taken into account to fight poverty and social exclusion (Corrado and Corrado, 2017). Amartya Sen (2006) argued that ultimately poverty must be seen in terms of poor living standards, rather than in terms of low income. Therefore a deprived life implies the absence of opportunities, security and ability to participate in the economic and political life. Poor people have generally no access to basic financial services which, in turn, reinforces the risk of social exclusion [3] and income inequality. Modern development theories increasingly emphasize the strategic role of accessing to financial services as part of a much wider social and economic exclusion (Rajan and Zingales, 2003; Demirgüç-Kunt et al., 2007; Demirgüç-Kunt; Klapper, 2012; Allen et al., 2012; Honohan, 2008; Kendall et al., 2010).

There are four main forms of financial exclusion, each with several possible degrees of intensity: transaction banking, savings, credit and insurance. The exclusion from basic financial services is presented as the most serious form of financial exclusion, given the widespread and the vital role of these services in many transactions such as, for example, the receipt of regular payments, like salaries or pensions, the ability to cash checks, pay utilities, or pay for the goods with electronic money. Owning a bank account is now increasingly necessary to access a range of financial services and products related to the daily management of payments, savings and credit. Therefore, it is generally acknowledged that financial exclusion is a relative and multi-faceted concept with different degrees of exclusion. In this analysis, we consider two different levels of access to financial services: (1) people partially banked or underbanked who have access to basic financial services; for example, they have a bank account and an electronic payment card, such as a credit card and (2) people "fully banked" who have access to a wider range of financial services tailored to their needs, such as long-term credit in the form of collateralized loans.

The underlying assumption is that the access to transaction services (a bank account and/ or a payment card) is a key to access other financial services, in particular to long-term credit services such as mortgages. Hence, access to credit services is paramount to assess the individual-level of financial inclusion. As stressed above, the difficulty encountered by financially excluded people to have access to external lines of credit definitely has a strong impact on the level of social inclusion of individuals. In fact, the use of external credit, especially long-term credit, by affecting the habits and spending decisions and savings, is an integral part of the consumption plans of a family; therefore, it directly influences the responsiveness and protection against unexpected events. Access to credit increases also social mobility, vocational training, improvement of housing conditions and the overall quality of life that contribute positively to the self-esteem of individuals. One of the negative

consequences of the refusal by formal financial intermediaries is the reliance on alternative sources of credit either informal (friends, relatives, associations, institutions of mutual support, etc.) or illegal (such as unlicensed moneylenders and usurers).

This study contributes to the existing literature in the following way. It outlines an analytical framework for financial inclusion using microeconomic survey data collected after the global crisis across the European transition countries. We have taken into account, along with traditional individuals' socio-economic and demographic controls, also the individual subjective perception of the quality of the political and administrative institutions using European microdata on corruption episodes (bribery). We want to assess whether an adequate policy-level response to financial exclusion across European economies should also account for the individuals' subjective evaluation of the socio-economic and political environment as well as their experience of corruption in the public sector and the incidence of other law-breaking activities. On this point, Claessens and Leaven (2003) and Demetriades and Andrianova (2004), among others, have shown that the financial system is more inclusive in countries with observance of the law fair, efficient enforcement of the rule of law especially in creditors' and debtors' rights and relationships. Rojas-Suarez and Amado (2014) find a negative relationship between weak rule of law and financial inclusion both for developing and high-income economies; as a proxy of the quality of institutions the authors use the "rule of raw" pillar of the Worldwide Governance Indicators (WGI), which measures "Agents' confidence in and commitment to abiding by the rules of society, the quality of contract enforcement, the police, the courts and the likelihood of crime and violence." (Rojas-Suarez and Amado, 2014, p. 14). In line with this more recent economic literature, our work aims at investigating whether along with socio-economic factors also the institutional environment where the financial system operates may influence financial intermediaries' provision of basic financial services to large segments of the population. Our results show that in certain European regions improving access to financial markets requires a set of interventions at the institutional and local level to prevent unlawful practices and to link-up policies of financial integrity and financial inclusion of the poorest and most vulnerable segments of the population. Our findings are in line with well-established literature on the causal relationship between corruption and income inequality (see, among others, Batabyal and Chowdhury, 2015; Dincer and Gunalp, 2011; Apergis *et al.*, 2010; Mo, 2009; You and Khagram, 2005; Gupta *et al.*, 2002; Gyimah-Brempong, 2002; Easterly and Fischer, 2001) showing that corruption affects more individuals who belong to low-income groups. Moreover, corruption by rising the wealth gap between the rich and the poor makes the latter group more vulnerable to financial exclusion which, in turn, contributes to further increasing income inequality. When credit is inclusive it creates economic opportunity to those who may not have the means today, allowing them to access the resources necessary for survival and to pursue opportunities for higher earnings.

The paper is structured as follows. Section 2 presents data and methodology. Section 3 introduces the analytical framework. Section 4 presents and discusses the results. Section 5 concludes.

2. Data
We use a cross-country dataset built surveying people across European transition economies and five Western "comparator" countries. The second round of the *Life in Transition Survey* II (LiTS II) conducted jointly by the European Bank for Reconstruction and Development (EBRD) and the World Bank in 2010; it surveyed almost 39,000 households in the transition region which covers 35 countries in Central-Eastern Europe and the Baltic region, South-Eastern Europe plus Turkey, the Commonwealth of Independent States and Mongolia. The coverage has been expanded allowing to benchmark the transition region against some advanced market economies represented by five Western European neighboring countries, defined as the "comparators" and represented by France, Germany, Italy, Sweden and the UK. LiTS II also

allows to detect individuals' assessments about their well-being, their attitudes to the role of government, democracy and their perceptions and experience of corruption. We consider the following eighteen European transition economies: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia, Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia and Turkey.

The first part of the questionnaire concerns the composition and type of family, housing conditions and spending. The second part of the survey provides a range of information on individual socio-economic and demographic characteristics, such as the respondent's current and past professional activity, level of education, religion, household income and composition and nationality of respondents.

Finally, there are two new sections in the LiTS II questionnaire. One on the key attitudes and values where respondents are asked to answer on their overall sense of well-being and optimism, their views on markets, democracy and the role of the government and their attitudes toward particular population groups. The other section collects respondents' views on trust -social and institutional- and corruption both low-level administrative corruption and high-level corruption.

An approach to measuring [4] access and usage of financial services is to count the number of users of basic financial services [5]. Proxy for access to financial services that is more readily amenable to measurement is the use of a wider range of financial services and products than simply access to an entry-level bank account (Honohan, 2008) [6]. We employ two indicators of households' usage of financial services. The first is the dummy variable *credit card* that indicates whether any member of the household holds a credit card which allows him/her to access a short-term loan [7]. The second is the dummy variable *mortgage* that indicates whether any member of the household has asked and obtained a secured (collateralized) long-term loan. Figure 1 shows the average access and usage of the above credit facilities across Europe: households in transition economies are much less likely to have a credit card or other forms of borrowing such as mortgages than their counterparts in Western Europe.

Among the explanatory variables, we use socio-economic and demographic controls. The variable household's income has been built by summing total household's expenses over the year (both in durable and nondurable goods) [8] plus savings all expressed in the same

Figure 1.
Credit by Macro-Regions (Author's calculations using data from LiTS, 2010). "Western Europe" comprises: France, Germany, Italy, Sweden and the UK "Central-Eastern and Baltic States" includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia. "South-Eastern Europe" comprises Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia plus Turkey

Short-term and Long-term Credit Facilities, by region (in %)
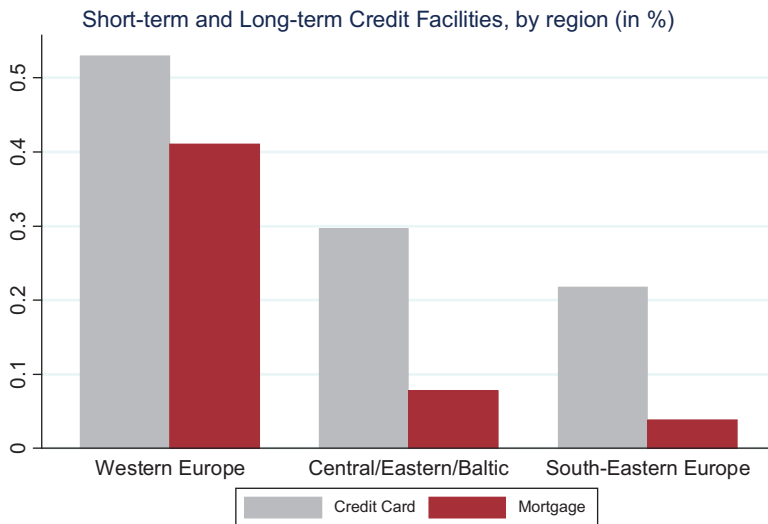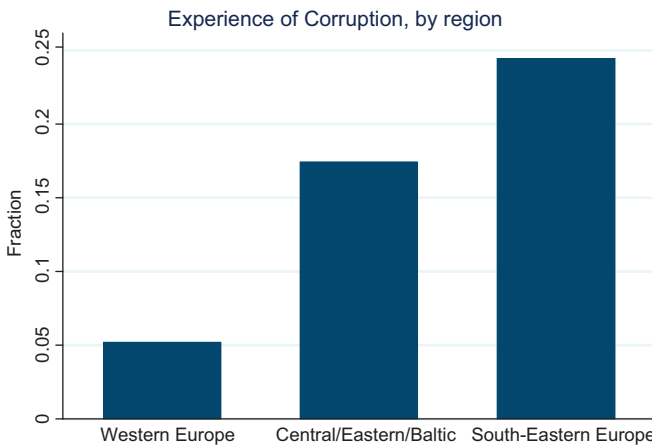
Source(s): LiTS, 2010

currency, US dollars. We use some dummy variables to capture the main source of household income: wage or self-employment income, state benefits, pensions. The other individual characteristics are gender, age, marital status, number of children in the household, education attainment, language and religion; in particular, we consider Muslim households that may choose, for religious reasons, not to deal with non-Islamic financial institutions which offer financial products that are not structured in compliance with the principles of Islamic law (Shariah). We also include the household's place of residence – whether the household is located in an urban, metropolitan or rural area – and their subjective assessments of the quality of the institutions – whether they reported experience of corruption crimes when dealing with public services [9] – and of the political situation of the country. In particular, we are interested in our analysis in controlling for corruption since it distorts political and economic systems by allowing those who can afford to bribe state officials to "bypass" legal and regulatory obligations. We insert as a control variable the individuals' personal experience of corruption. Figure 2 shows the distribution of this variable across the European macro-regions including the Western European countries, while Figure 3 shows for those who report paying bribes to public officials the reason for doing this. Table 1 lists the variables used in the econometric analysis and Table 2 reports the summary statistics.

3. The econometric model

Respondents' access and usage of financial services are assumed to be influenced by the individual and household characteristics as well as by institutional factors such as the experience of corruption crimes (i.e. bribery). The latent variable y_i^* represents the *i-th* household's usage of financial services. This depends on a vector of explanatory variables, $\boldsymbol{x}_i$, which includes individual and household demographic characteristics as well as institutional and socio-economic factors. This leads to a response model which can be presented as:

$$y_i^* = \boldsymbol{x}_i\boldsymbol{\beta} + \varepsilon_i \tag{1}$$

The household's usage of financial services y_i^* like short-term credit (credit cards) or long-term credit (mortgages) is assumed to be dependent on the bank's credit risk assessment but also on the individuals' assessment of the marginal cost and benefits associated with the usage and non-usage of these facilities. Based on both these assessments the respondent may

Figure 2.
Corruption by Macro-Region (Author's calculations using data from LiTS, 2010). "Western Europe" comprises: France, Germany, Italy, Sweden and the UK "Central-Eastern and Baltic States" includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia. "South-Eastern Europe" comprises Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia plus Turkey

or may not access and use credit services. In reality, we do not observe this marginal costs and benefits neither the bank's credit risk assessment, based on the individual characteristics, hence the dependent variable y_i^* in equation (1) is unobservable. One can only observe whether the respondent uses credit or not through the survey questionnaire. Hence, we define another variable y_i that leads to a binary outcome for the dependent variable such that:

$$y_i = 0 \text{ if the respondent uses a credit service}$$
$$y_i = 1 \text{ if the respondent does not use a credit service} \tag{2}$$

In order to assess more formally respondents' level of financial inclusion we follow Mohieldin and Wright (2000) and Corrado and Corrado (2015) by using a bivariate probit model, with the following econometric specifications:
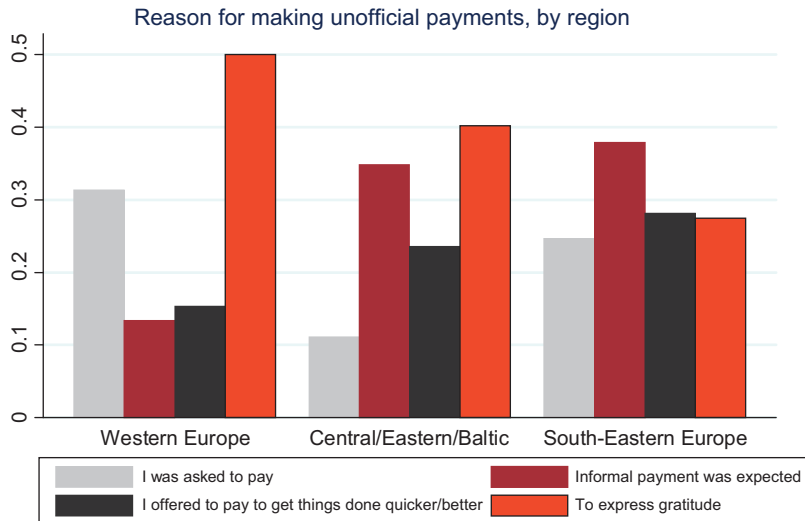
$$y_{1i}^* = \boldsymbol{x}_{1i}\boldsymbol{\beta}_1 + \varepsilon_{1i} \qquad y_{1i} = \begin{cases} 1 \text{ if } y_{1i}^* > 0 \\ 0 \text{ if } y_{1i}^* \leq 0 \end{cases}$$

$$y_{2i}^* = \boldsymbol{x}_{2i}\boldsymbol{\beta}_2 + \varepsilon_{2i} \qquad y_{2i} = \begin{cases} 1 \text{ if } y_{2i}^* > 0 \\ 0 \text{ if } y_{2i}^* \leq 0 \end{cases} \tag{3}$$

$$E(\varepsilon_{1i}) = E(\varepsilon_{2i}) = 0 \ Var(\varepsilon_{1i}) = Var(\varepsilon_{2i}) = 1 \ Cov(\varepsilon_{1i}, \varepsilon_{2i}) = \rho \ i = 1, 2, \ldots, n$$

where y_{1i}^* is the latent variable, that is the latent utility from using short-term credit (holding a credit card); y_{1i} is the observed response for those who use a credit card and we can define as partially banked. While y_{2i}^* is the utility that individuals can derive from getting a long-term credit (a mortgage) and y_{2i} is the observed response for those who have long-term credit and are defined as fully banked; $\boldsymbol{x}_{1i}$ and $\boldsymbol{x}_{2i}$ are $(1 \times k)$ vectors of explanatory variables with $\boldsymbol{\beta}_1$ and $\boldsymbol{\beta}_2$ being their associated $(k \times 1)$ parameter vectors; ε_{1i} and ε_{2i} are random error terms that are jointly bivariate normal with correlation equal to ρ.

The respondent has a propensity (latent utility) to use short-term credit (y_{1i}^*) not directly observable. When the latent utility becomes positive ($y_{1i}^* > 0$) then the use of transaction services (credit cards) is observed ($y_{1i} = 1$). This is identical to the standard latent variable

Figure 3.
Reasons for Bribing across Macro-Regions (Author's calculations using data from LiTS, 2010). "Western Europe" comprises: France, Germany, Italy, Sweden and the UK "Central-Eastern and Baltic States" includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia. "South-Eastern Europe" comprises Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia plus Turkey

Source(s): LiTS, 2010

Variables	Categories	Description
Credit card	Binary	"Do you or anyone in your household own a credit card?" 1 = Yes and 0 = No
Mortgage	Binary	"Do you currently have a mortgage?" 1 = Yes and 0 = No
Region dummies		
EU member	Binary	Dummies for European Union countries: "Bulgaria", "Croatia", "Czech", "Estonia", "Hungary", "Latvia", "Lithuania", "Poland", "Romania", "Slovakia", "Slovenia"
Macro-region	Binary	Dummies for macro-regions: "Central-Eastern Europe and the Baltic States" (CEB) which includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia; and South-Eastern Europe (SEE) which includes Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia plus Turkey
Socio-economic and demographic characteristics		
Gender	Binary	Dummy for 1 = Female; 0 = Male
Age	Binary	Dummies for respondent's age: "Young" if he/she is 18–34 years of age; "Middle-aged" if he/she is 35–54 years of age; "Older" if he/she is 55 years of age or older
Marital status	Binary	Dummy variables for: "Single"; "Widowed"; "Separated/Divorced". Ref. Cat.: "Married"
Educational level	Binary	Dummy if the respondent's highest level of education is a Bachelor's degree, a Master's degree or a Ph.D
Children	Continuous	"How many children are living in the household?"
Income	Continuous	Household's income expressed in USD per year (in Logs)
Muslim	Binary	Dummy if respondent is Muslim
Official language	Binary	Dummy if respondent speaks any of the official languages of the country
Residence	Binary	Dummies for "Urban/Metropolitan area", if the respondent lives in a metropolitan or in an urban area; Ref. Cat.: "Rural Area"
Institutional factors		
Experience of corruption	Binary	Dummy if "the respondent or any of the member of the household has made an unofficial payment or gift in the last 12 months when using the following public services: interacting with police; interacting with the judiciary; receiving public education receiving medical treatment in the public healthcare system; requesting unemployment or social security benefits. 1 = Yes 0 = No
Subjective political Situation	Binary	Dummy variable for: "The political situation in our country is better today than around 4 years ago" 1 = Yes and 0 = No

Note(s): Individuals are sampled using the Primary Sample Unit (PSU) area-code. Source of data: LiTS II 2010

Table 1.
Variables description

approach of the probit model. However, in the bivariate probit model framework, the respondent is assumed to have also a propensity (latent utility) to use long-term credit facilities (y_{1i}^*) which again is observed ($y_{2i} = 1$) if the latent utility is positive ($y_{2i}^* > 0$). It is possible that the probability to use both financial services–short and long-term credit–may not be independent; therefore, we allow the random error of the two equations -one for the partially banked households and the other for the fully banked households- to be correlated, with correlation coefficient ρ.

4. Households' access to long-term credit

We analyze the determinants of households' access to secured long-term and unsecured short-term loans [10]. Since our results show that corruption is not affecting access to short-

Variable	Observations	Means (% if counts)	Std. Dev	Min	Max
Credit card	19,638	0.289	0.453	0	1
Mortgage	17,348	0.062	0.242	0	1
Female	19,621	0.588	0.492	0	1
Middle-aged	19,642	0.350	0.477	0	1
Older	19,642	0.345	0.475	0	1
Single	19,527	0.583	0.492	0	1
Separated/divorced	19,527	0.083	0.276	0	1
Widowed	19,527	0.122	0.327	0	1
Children	19,642	0.530	0.909	0	7
Higher education	19,642	0.155	0.361	0	1
Income (in Logs)	17,816	8.716	0.802	1.571	14.307
Muslim	19.177	0.209	0.406	0	1
Official language	19,642	0.924	0.264	0	1
Urban/metropolitan area	19,642	0.611	0.487	0	1
Experience of corruption	14,878	0.201	0.401	0	1
Subjective evaluation of political situation	18,796	2.375	1.096	1	5
EU member	19,642	0.600	0.489	0	1

Table 2.
Summary statistics

term credit, we focus on the impact of selected socio-demographic and institutional variables on access to long-term credit (i.e. mortgages). Specifically, we are interested in investigating the effect of corruption on households' access to finance via the corruption-asset income inequality link; the penultimate column of Table 3 reports the marginal effect at the means (MEMs) of each covariate on access and usage of long-term credit.

The $\chi^2(1)$ Wald test on the statistical significance of the correlated effects ($H_0 : \rho = 0$ vs $H_1 : \rho \neq 0$) suggests that both the access to some basic financial services used for transactions/payments and to long-term collateralized credit display some correlation that cannot be entirely accounted for by the inclusion of our controls. From a purely statistical viewpoint, a positive and statistically significant $\widehat{\rho}$ indicates a positive and interactive correlation between the two dependent variables, suggesting that it is potentially harmful to explore them separately. An alternative way to interpret a statistically significant correlation between the error terms is to think about the impact of other determinants of access to short-term and long-term credit that are not fully accounted for by observable effects in the model, although they also influence the dependent variables. Therefore, ruling out the assumption of correlated disturbances may potentially bias the estimates (Corrado and Corrado, 2015).

In Table 3 we report the estimates for the European transition regions that embrace both *South-Eastern Europe* (SEE) comprising Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia plus Turkey and *Central-Eastern Europe and Baltic States* (CEB), where the latter macro-region includes Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia.

Among the explanatory variables, we include (1) "*Socio-Economic and Demographic Characteristics*" and (2) "*Institutional Factors*". The first category comprises individual-level characteristics such as age, gender, educational attainment [11], income, number of children, marital status, language, religion and place of residence. While in the second category we consider other relevant variables such as the subjective evaluation of the current political situation of the country where households live. We also consider among the controls the individuals' experience of corruption: respondents are asked whether they or any member of the household have made an unofficial payment or gift over the last 12 months when interacting with public officers or bureaucrats [12].

European transition economies[a]				
	Short-term credit[b]		Long-term credit[c]	
Variables	MEMs	SE	MEMs	SE
Socio-economic and demographic characteristics				
Female	0.002	(0.006)	−0.014***	(0.005)
Middle-aged	−0.026**	(0.011)	−0.032***	(0.006)
Older	−0.141***	(0.013)	−0.101***	(0.012)
Single	0.026	(0.017)	0.037***	(0.007)
Separated/divorced	0.031*	(0.017)	0.022**	(0.009)
Widowed	−0.045**	(0.021)	0.008	(0.012)
Children	−0.005	(0.007)	0.010***	(0.002)
Higher education	0.083***	(0.013)	0.025***	(0.004)
Income	0.118***	(0.020)	0.012***	(0.004)
Muslim	0.005	(0.022)	−0.048***	(0.010)
Official language	0.052***	(0.014)	−0.001	(0.009)
Urban/metropolitan area	0.029	(0.019)	0.023***	(0.007)
Institutional factors				
Experience of corruption	0.165	(0.249)	−0.098**	(0.048)
Experience .of corruption*income	−0.0168	(0.027)	0.012**	(0.005)
Subjective evaluation of political situation	0.0167***	(0.005)	−0.002	(0.001)
EU member	0.213***	(0.028)	−0.020**	(0.008)
Country dummies		YES		
ρ		0.214*** (0.039)		
$\chi^2(1)$ (Prob $> \chi^2(1)$)		29.565 (0.000)		
Log-likelihood		−7957.16		
Observations		11,091		
Clusters		17		

Note(s): Significance level at ***p<0.01, **p<0.05, *p<0.1. Robust Standard Errors (SE) in parentheses. Constant included [a]European Transition Economies comprise: Central-Eastern Europe and Baltic States (CEB) and South-Eastern Europe (SEE) plus Turkey. [b]The term "Short-term Credit" refers to credit cards. [c]The term "Long-term Credit" refers to mortgages

Table 3.
Credit access. Marginal
effect at the
means (MEMs)

4.1 Socio-economic and demographic characteristics

Results confirm that age is one of the key factors affecting the respondent's likelihood of being approved for a mortgage. Table 3, penultimate column, shows that the two age groups "middle-aged" and "older" have a lower probability to access long-term credit than their younger counterparts. In particular, among those aged 35–54 and those aged 55 or older the probability of getting a mortgage drops respectively by 3.2 and 10.1% (in percentage points). This result can be explained by several reasons: on the one hand, older people have a lower propensity to demand and use credit, on the other hand, they are also more likely to be excluded from long-term finance by the intermediaries for eligibility reasons. Financial intermediaries across European countries impose strict age requirements [13] to the mortgagees, which became more stringent after the wake of the global financial crisis.

Unmarried people are more likely to access credit services; single and separated/divorced individuals are respectively 3.7 and 2.2% more likely to get a mortgage compared to their married counterparts. Living in a household with children increases by 1% the likelihood to access long-term finance: this may be explained by the parents' primary need to live in a suitable family home where growing their children which leads to a higher demand for mortgages: Moreover, some mortgage lenders often include child benefit payments when assessing the applicant's finances, which could help parents on lower incomes boost both their chances to get a mortgage and the amount they can borrow.

Education exhibits a positive relationship with the access to and usage of credit services. In particular, the probability of obtaining a mortgage increases by 2.5% for borrowers with a higher education attainment. Also, income has a positive impact on access to credit services; the likelihood of access long-term finance increases by 1.2% for higher-income households. These findings, therefore, confirm that higher income and higher education are positively associated with greater financial inclusion, so poor, low-income and illiterate individuals do not benefit from financial inclusion, and this exposes them to a serious threat since they cannot handle, for example, income shocks over unforeseen emergencies such as illness or a job loss.

The geographical residence also affects the probability of using and accessing formal credit services. People who reside in a metropolitan or urban area are 2.3% more likely to get a mortgage than people who live in a rural area. This result suggests that rural populations are more likely to remain excluded from the formal financial market; in the transition economies there is a clear urban-rural divide in the access to long-term credit which may widen the city-country income inequality gap. Religion also matters: being a Muslim reduces the probability of accessing long-term credit by 4.8%. This result might be explained by the underdevelopment of Islamic finance practices across Europe where Islamic banking is still at a fairly embryonic stage, and this makes Muslims more likely to be financially excluded.

4.2 Institutional factors

We find a quite interesting result on the impact of experienced corruption (bribes) on the access to secured credit across European regions when we control for the income level of the respondent. Corruption in transition countries has a negative and statistically significant impact on household access to credit; the probability of getting long-term credit from financial intermediaries drops by around 9.8% for higher levels of experience of corruption, as Table 3 shows. These findings might be explained in the light of the recent literature on corruption where it is recognized that there are important theoretical links between corruption and the functioning of the economic, political as well as financial institutions (Arestis *et al.*, 2001; Claessens and Leaven, 2003; Demetriades and Andrianova, 2004; Blackburn *et al.*, 2010; Asongu, 2014). Corruption and financial intermediation are related in several ways: a stable and well-functioning financial system can exist only if laws and regulations concerning their activities exist and if these laws are enforced. Also, corruption seems to widen the gap among the poor and the rich in terms of access to formal financial services, especially across European transition regions; this is confirmed by the sign of the interaction term *Experience of Corruption*Income* (see Table 3, penultimate column). It is not surprising that in the European transition economies where corruption crimes are widespread the richest people might easily circumvent regulations in the financial sector as they have more resources (income) to pay bribes to get access to formal credit facilities. Moreover, the rich can refuse to pay a bribe when they are asked because they have more wealth to pledge as collateral when they apply for large long-term loans. Our results reveal that when the quality of the institutions is low, corruption practices may hinder the well-functioning of the financial sector which becomes much less inclusive and more unequal since for low-income people the likelihood of being financially included decreases. This finding is in line with that strand of literature which proves empirically the existence of a link between corruption and income inequality, as we refer to earlier in this study [14]. Specifically, in our analysis this relationship is mainly driven by financial factors: since the poor are less protected by asset income when their real wages fall (Easterly and Fischer, 2001) corruption may increase income inequality; because the poor lack of resources, they cannot refuse to pay the bribes when they are asked to get access to financial services. Corruption not only directly reduces the access to credit of the poor when they cannot afford to pay bribes, but corruption also exacerbates financial exclusion indirectly since it reduces the propensity of the poor to

apply for credit due to the additional costs of the extortion fees (i.e. illegal payments) [15]. Therefore, the vulnerability of low-income individuals to financial exclusion might increase according to a bidirectional causal relationship corruption-inequality-financial exclusion-inequality-corruption, similarly to the studies of Apergis *et al.* (2010) and Dincer and Gunalp (2011).

5. Conclusions

Financial exclusion has been defined as the inability, difficulty or reluctance of individuals to access necessary financial services in an appropriate form (Sinclair, 2001; McKillop and Wilson, 2007). It can originate either from problems with individuals' access to financial services (i.e. involuntary exclusion) or from self-exclusion from formal financial markets in response to negative individual experiences or perceptions of the institutional and political environment. We performed our analysis using the EBRD and World Bank first comprehensive survey LiTS II carried out in 2010 across households living in the European transition economies. In line with more recent research, we detect among the main factors affecting access and usage of credit facilities (mortgages), households' socio-economic and demographic characteristics such as income, education, marital status, age and area of residence. However, we also find that other institutional factors seem to be relevant for enhancing financial inclusion. For example, experienced corruption might affect the access to and usage of formal financial services. Not surprisingly, in transition and emerging economies unofficial payments are often made by people to access public services and/or improve the quality of service received. In line with well-established literature on the relationship between corruption and income inequality, our analysis shows that in the macro-region comprising the European transition countries with lower quality of the institutions (i.e. high corruption) the likelihood for the low-income individuals to access secured credit services in the formal financial markets decreases, widening the income gap between the rich and the poor. Unlawful and corrupt practices, such as bribery, might overcome legal and administrative barriers to access formal financial services, so those, typically the poorest people, who cannot afford to pay bribes remain excluded from the formal financial markets. Our results suggest that in some European regions improving access to financial services requires a set of policy interventions at the institutional level to link-up policies of financial inclusion and financial integrity: facilitating people's access to finance through good banking practices.

Notes

1. European Commission (2010).

2. The World Bank (2012) identifies four key areas of financial exclusion: transaction banking, savings, credit and insurance.

3. Financial exclusion is strictly related to social exclusion as a cause and a consequence, although difficulties of access may not always lead to social exclusion. While social exclusion almost automatically leads to financial exclusion, the latter can be seen as a process that may increase the risk to face social exclusion (Anderloni *et al.*, 2008).

4. It is easy to measure the usage of financial services, but *usage* does not imply *access* (Demirgüç-Kunt *et al.*, 2007). In fact, while usage reflects both demand and supply of services, it cannot express voluntary exclusion (where services are offered but not taken up) and involuntary exclusion (where services are not offered). Ideally, the measurement of access, rather than use, should take account of both current use and voluntary exclusion. But other authors have argued that this distinction is too minimal so that one can simply focus on measuring usage of financial services (see Honohan, 2008).

5. From the data we cannot identify whether the household is excluded from the market involuntary or voluntarily, that is whether the household needs financing but he/she is rejected by the bank or

whether the household does not borrow from a financial institution because he/she does not need this form of credit by choice.

6. The use of a bank account is often seen as the primary proxy for access to financial services.

7. The survey asks to respondents whether they own a credit card, so in this sense the variable "credit card" does not necessarily indicate usage of a bank credit card. In fact, in several European countries, there are a large number of issuers who are not banks, such as specialist credit card companies plus retailers and other providers. However, this is not relevant for our analysis since we are assessing the access and usage of financial services provided from formal financial intermediaries.

8. The main items included among the expenses are: (1) Food, beverages and tobacco, (2) Utilities (electricity, water, gas, heating, landline phone service) (3) Transportation, (4) Education (including tuition, books and other kindergarten expenses) (5) Health, (6) Clothing and footwear, (7) durable goods (e.g. furniture, appliances, TV, car, home etc.)

9. LiTS II asks to the respondent the following question "Did you or any member of your household make an unofficial payment or gift when using these services over the past 12 months?: (1) Interact with the road police; (2) Request of official documents (e.g. passport, visa, birth or marriage certificate, land register, etc.) from authorities; (3) Going to courts for a civil matter; (4) Receive public education; (5) Receive medical treatment in the public healthcare system; (6) Request unemployment benefits; (7) Request other social security benefits. (Question Q6.04).

10. Our analysis can identify households who access and use financial services; however, survey microdata do not allow us to identify whether a household is excluded from the formal financial market "voluntarily" or "involuntarily". This is a limitation of the study.

11. The dummy variable "Higher Education" comprises a Bachelor's degree, a Master's degree or a Ph.D.

12. As specified in the "Data" Section, the eight public services covered by the survey are: interacting with road police; requesting official documents; going to the courts for a civil matter; receiving primary or secondary public education; receiving public vocational education; receiving treatment in the public health system; requesting unemployment benefits; requesting other social security benefits.

13. For example, in many European countries you need to be at least 18 years old to apply for a mortgage and the mortgage term must end before you are 75 years old.

14. See, among others, Dincer and Gunalp (2011), Apergis *et al.* (2010), Batabyal and Chowdhury (2015), Nissan and Naghshpour (2013), Mo (2009), You and Khagram (2005), Gupta *et al.* (2002), Gyimah-Brempong (2002), Easterly and Fischer (2001).

15. As reported by Apergis *et al.* (2010) "The burden of corruption falls disproportionately on low-income individuals who pay a larger proportion of their incomes in the form of bribes than high-income individuals." (p. 126).

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