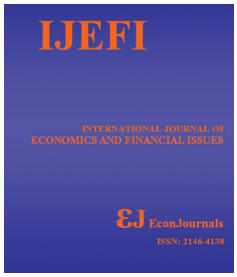

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Communism, Culture, and Financial Development

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ABSTRACT

This paper analyzes the relationship between culture and financial development in Europe, with culture defined as informal constraints on human interactions. We assert that various national characteristics such as people's trust and trustworthiness, and the level of control they feel they have over their lives can modify transaction costs, which in turn leads to different levels of financial development. Furthermore, we consider communism as an exogenous shock to the cultural values existent in Central and Eastern Europe. This exogenous component of culture is negatively related to present financial development, even after controlling for other historical variables such as religion and formal institutions at the beginning of the 20th century. Via two-stage least squares regression analysis, we show that communism has shaped cultural values, which in turn affect financial development.

Keywords: Financial Development, Culture, Transition Economies, Communism, Economic Growth
JEL Classifications: F43, F63, F65, P20, Z10

1. INTRODUCTION

It is generally agreed that financial development leads to economic growth[1]. The obvious question is then: What determines the development of the financial system in a country? In this paper, we are particularly interested to find the answer for the Central and Eastern European (hereafter, CEE) countries, as these nations transited from centrally-planned to market-economies in a relatively short matter of time, following more than 40 years of communism. And yet, their experiences of economic growth after 1990 were far from homogeneous. Our hypothesis is that the different cultures (as defined below) in these countries partly explain the differences in their financial development and, consequently, the differences in their economic development.

Until recently, culture has been treated as a black box, while formal institutions have taken the central role in the development literature[2]. Culture is a cumbersome concept to define and measure. It is viewed as the "informal institutions" of a nation and encompasses people's attitudes, beliefs, values, and norms, determined by ethnic, social, and religious groups and passed from one generation to the next. Conversely, "formal institutions," as defined by North (1991), represent the legal institutions and government regulations.

The law and finance theory suggests that a country with better legal institutions that protect and enforce private property, investors' rights, and private contracts has more people using financing through banks and financial institutions and, thus, experiences a better financial development[3]. An increasing literature shows, however, that we also need to look into the social conventions and the ethical and cultural values of a country.

Following Stulz and Williamson's (2003) seminal work, in which they find that culture has a substantial impact on financial development, many other authors find the same significant relationship, but from different perspectives. Not too much attention has been given to the cultural environment present in the transition economies of Central and Eastern Europe. Most papers studying the relationship between culture and financial development consider long periods of time and, consequently, disregard these countries, or consider only a small sample of them, and thus do not provide a clear picture for that part of the world. Our paper aims to fill that gap. We use a sample of 18

1 Levine (1997) for a comprehensive literature review.

2 Alesina and Giuliano (2015) provide a review of the relationship between culture and institutions.

3 See a survey of the literature in Beck and Levine (2008).

former communist countries over the time period 1995-2011 and compare them with a sample of 10 Western European (hereafter, WE) countries. As Blockmans (2006) observes, Europe suffers from a lack of common identity given that it has never experienced a unifying historical experience similar to those of North America or China. This translates into non-homogeneous cultural values and beliefs. While comparing CEE and WE countries, we analyze how culture affects their financial development. Our conjecture is that, as we move our attention to the East of the Berlin Wall, worse informal institutions can be found and those are associated with less financial development. We use both panel data and cross-sectional regression analyses, and, after controlling for formal institutions and macroeconomic conditions, we find that our results are robust. We need to be careful when interpreting the initial results, as they do not prove causation. Culture may be endogenous in explaining financial development. To address this problem, we apply a methodology similar to Acemoglu et al. (2002) and Tabellini (2010) and we use different instruments for culture, such as religion, years under communism, and political environment at the beginning of the 20th century. We find that history, including communism, shapes cultural norms and beliefs and those, in turn, affect financial development in the CEE countries.

This study is organized as follows. The next section provides an overview of the cultural traits in the CEE countries. Section 3 examines the data as well as theoretical and empirical models, while section 4 shows our main findings. Section 5 concludes.

2. CULTURE IN EX-COMMUNIST EUROPE

Culture represents the way people perceive the differences between good and bad, legitimate and illegitimate, desirable and undesirable, etc. All these values might be difficult to understand through the eyes of an outsider, as they are embedded in the traditions, history, and identity of a nation. People's mentalities on issues such as the death penalty or corruption are deeply rooted in aspects of their culture. Even though legal and political institutions can change suddenly, their acceptance and legitimacy might not change, which can make them largely ineffective for economic growth. Roland (2004) and Grosjean (2011) argue that culture changes very slowly, as it is shaped by hundreds of years of history. Schwartz and Bardi (1997) claim however that these cultural values have been altered for the CEE countries by the roughly 45 years of communism. Grosfeld and Zhuravskaya (2015) analyze Poland, which was divided among three empires until 1918 and experienced a divergence in culture immediately after unification, and find that these differences were smoothed out over time, in part by policy intervention. As Katchanovski (2000) notices, planning under communism took place both at the macro and at the micro levels, as the regime was trying to control every aspect of people's lives. Communism changed people's attitudes and beliefs mainly through indoctrination (i.e., communist propaganda) and through adaptation to the austere communist life.

In the 1950s and 1960s, many people in the CEE countries tried to fight communism, but were unsuccessful. Failing to overturn the regime, they were forced to adapt to a new lifestyle, because the communist government managed to penetrate and control their lives. The communist system very often punished people who did not conform to their rules. Therefore, people started to prefer being "low profile" individuals, which meant avoiding initiative, criticism, or challenging their "superiors." Moreover, the regime widely used informants, which increased distrust among the population. Another characteristic was paternalism, with its negative externalities: Passivity, loss of interest in the political process, loss of ambition, the expectation that the government should provide jobs and basic accommodations, and a reduced sense of responsibility for one's own actions. Communism also had a very chaotic way of rewarding people's work performance, which in turn decreased the incentives to innovate or to strive, as well as to promote intellectual autonomy.

As Licht et al. (2005) point out, the literature largely ignores the cultural environment present in the transition economies of Central and Eastern Europe, which prevents a more thorough understanding of the effectiveness of government policy. In the 1990s, many countries in ex-communist Europe tried to implement laws designed to protect investors' rights. However, according to Black et al. (2000) and Glaeser et al. (2001), these laws failed disastrously. The fiasco was probably due to the fact that simply enacting laws while disregarding the informal institutions of the nation does not solve much.

Williamson (2000) advances a theory that connects formal and informal laws in a model proposing four levels of analysis. "Level 1" consists of informal laws, such as customs, norms, traditions, and religions. Below "Level 1" we have "Level 2," which includes the formal institutions, as in North (1991)[4]. These levels are interconnected in that the higher level ("Level 1") imposes limitations on the lower level ("Level 2"). Culture encompasses what is good versus what is bad, what is legitimate versus illegitimate, what is appropriate versus inappropriate, etc. Licht et al. (2005) also find that cultural values underlie formal laws. Nevertheless, they emphasize that, unsurprisingly, culture is not the only factor that matters and that law is not redundant for economic growth. Moreover, they show only correlation between the formal and informal laws of a country, and not causality. In other words, the formal laws should be consistent with the norms and customs of a country in order to achieve the desired results[5]. Alesina and Giuliano (2015) also highlight the absence of a causal relationship between formal and informal institutions.

Culture, as an underlying factor of development, is far from homogeneous throughout Europe. Schwartz and Bardi (1997) notice different cultural values in the CEE countries, compared to the WE countries. Schwartz et al. (2000) revisit the same countries five to nine years after the fall of communism and find that, even though big steps towards democracy and market economy have been made, the cultural values have not changed much. Similarly, Glaeser et al. (2001) consider a period of 15 years and find that,

4 The last two levels are not relevant for our analysis.

5 A good example of the importance of the local norms and beliefs is the attempt made by the European settlers to transplant institutions into their colonies. For some of the colonies (such as U.S. and Canada), that process worked efficiently, creating powerful economies, but for others (like India or Africa), it was a huge failure.

even though some cultural indices have changed somewhat, the cultural differences among the CEE countries have not changed significantly. Furthermore, Alesina and Fuchs-Schündeln (2007) claim that the communist regime had a great effect on people's attitudes, concluding that it would take at least two generations for the people of East Germany to share the same beliefs as the people of West Germany (even though they had the same set of beliefs at the end of World War II). Van den Broek and de Moor (1994) show that people in Eastern Europe have similar values in terms of religion, politics, and relations as WEs, but show less appreciation for initiative, hard work, and responsibility for work outcomes, which is a consequence of the communist system.

As mentioned previously, Schwartz and Bardi (1997) find that there are cultural differences between WE and CEE countries, but they also find differences between central, on one side, and Eastern European countries, on the other side. Even though earlier history indicates that countries in Central and Eastern Europe had more agrarian and less developed societies, both socially and economically, this does not imply homogeneity. In fact, there are many and important differences among them. Ascherson (1992) asserts that Central European countries showed more resistance to the penetration of communism. These are also the countries that were considered economic successes in the transition period, as opposed to the Eastern European ones. This phenomenon can be explained through Roland's (2004) observation that geographic areas that promote more interaction among diverse cultures and religions have a greater potential of efficiently incorporating new fast-moving institutions (i.e., legal and political institutions). Central European countries were in fact more exposed to Western Europe's cultural values, both during and after communism. Similarly, Katchanovski (2000) finds that ex-communist countries with a more "western" culture have experienced less output decline than those with a less "western" culture, even after controlling for economic reform policies and macroeconomic stability.

In conclusion, even though people in the CEE countries did not fully embrace communism, they had to adapt and modify their cultural values. One can compare this adjustment to what long-term prisoners have to endure.

3. DATA AND RESEARCH DESIGN

Our sample period starts in 1995, a few years after the fall of communism, as the CEE countries were becoming more comfortable in their transitions to market economies and as some, though not all of them, were experiencing success in their economic development. The latest financial data currently available is from 2011. Since we want to analyze the impact of culture on financial development and since geographical proximity is an important factor influencing the culture of a country (Roland, 2004), we select both WE and CEE countries and present them in Table 1.

Our sample is limited by data availability to 6 Central European, 5 Eastern European, 7 former Soviet, and 10 WE countries. Table 1 also reports the number of years, if any, under communism. As can be seen, when strictly positive, the values range from around 41 years (for most CEE countries) to around 75 years (for Ukraine, Russia, and Belarus). These data come from Slavova (1999). The WE countries are all considered to be capitalist economies, even though East Germany had a communist regime before the fall of the Berlin Wall.

Table 1: Country characteristics

Country	Geographical location	Years under communism	Main religion
Albania	Eastern Europe	45	Islam
Belarus	Former Soviet Union	75	Orthodox
Bulgaria	Eastern Europe	43	Orthodox
Croatia	Central Europe	44	Catholic
Czech Republic	Central Europe	43	Catholic
Estonia	Former Soviet Union	51	Orthodox
Finland	Western Europe	0	Protestant
France	Western Europe	0	Catholic
Germany	Western Europe	0	Catholic/ Protestant
Hungary	Central Europe	41	Protestant
Italy	Western Europe	0	Catholic
Latvia	Former Soviet Union	51	Protestant
Lithuania	Former Soviet Union	51	Catholic
Macedonia	Eastern Europe	44	Orthodox
Moldova	Former Soviet Union	52	Orthodox
Netherlands	Western Europe	0	Catholic
Norway	Western Europe	0	Protestant
Poland	Central Europe	43	Catholic
Romania	Eastern Europe	43	Orthodox
Russian Federation	Former Soviet Union	74	Orthodox
Serbia	Eastern Europe	44	Orthodox
Slovak Republic	Central Europe	43	Catholic
Slovenia	Central Europe	44	Catholic
Spain	Western Europe	0	Catholic
Sweden	Western Europe	0	Protestant
Switzerland	Western Europe	0	Catholic
Ukraine	Former Soviet Union	75	Orthodox
United Kingdom	Western Europe	0	Protestant

This table reports our sample of 28 countries, their geographical locations, years under communism, and main religions. Note that, even though East Germany had experienced communism for around 45 years before the fall of the Berlin Wall, we include the unified Germany in the WE group of countries (with zero years of communism). WE: Western European

3.1. Financial Data

Čihák et al. (2012) define financial development as:

> "At a broader level, financial development can be defined as improvements in the quality of five key financial functions: (a) Producing and processing information about possible investments and allocating capital based on these assessments; (b) monitoring individuals and firms and exerting corporate governance after allocating capital; (c) facilitating the trading, diversification, and management of risk; (d) mobilizing and pooling savings; and (e) easing the exchange of goods, services, and financial instruments. Financial institutions and markets around the world differ markedly in how well they provide these key services." (p. 5)

Therefore, financial development measures the size and efficacy of the financial system in a country. Since markets are imperfect, it

is costly for a society to match the flow of savings with the needs of the investors. In different countries around the world, this is done mainly through direct channels (e.g., issuance of new stocks or bonds), or through financial intermediaries.

As dependent variables, we use two measures for the financial development of a country: The stock market capitalization (SMC) (as an indicator of equity financing) and the private credit by deposit banks (as an indicator of bank financing), both expressed as percentage of the gross domestic product (GDP). The data come from Beck et al. (2000). Table 2 presents the descriptive statistics by country and region, and the differences in the means for the different European regions.

Unsurprisingly, according to both measures, the Western countries experience higher levels of financial development than the CEE countries, on average by roughly 73% and 80% points, respectively (and statistically significant at the 1% level)[6].

Figure 1 shows the regional patterns of financial development, with filled rectangles for each country ranging from very dark (values below the first quartile) to very light (values above the third quartile).

For both indicators of financial development, there is an obvious transition from darker to lighter shades as we move from East to West on the maps.

3.2. Cultural Values Data

Approximately every 5 years, the World Value Survey (WVS) publishes data on beliefs, values, and motivations of people throughout the world. We use data from Waves 3-6, which cover the period 1995-2014. Not all of these waves contain data for all the countries in our sample. Guided by Tabellini (2010), we consider three of the cultural values reported by WVS to have an important effect on the financial development in Europe. We recognize that, out of the hundreds of cultural traits in the WVS, choosing only these characteristics can be considered overly reductive, but they have proven to be particularly affected by communism. The literature (presented in the next sub-section) finds that they affect the number of transactions between individuals especially through transaction costs, and therefore they also influence the number of financial transactions and the financial development in general.

The first cultural trait we consider is trust: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The level of trust in each region is measured by the percentage of respondents who answer that "Most people can be trusted" (the other possible answers are "Can't be too careful" and "Don't know"). Arrow (1972) argues that trust is vital in any type of transaction and that the lack of trust explains the "economic backwardness of the world." As mentioned in the previous section, trust is one of the cultural values modified to a great extent by the communist regime.

The other side of how much people trust in others is how trustworthy people are themselves. This cultural characteristic symbolizes the distinction between generalized and limited morality. Morality is defined as how individual values and principles are used in different situations. On the one hand, limited morality is associated with applying these norms of conduct only with the immediate family and small group of friends, which

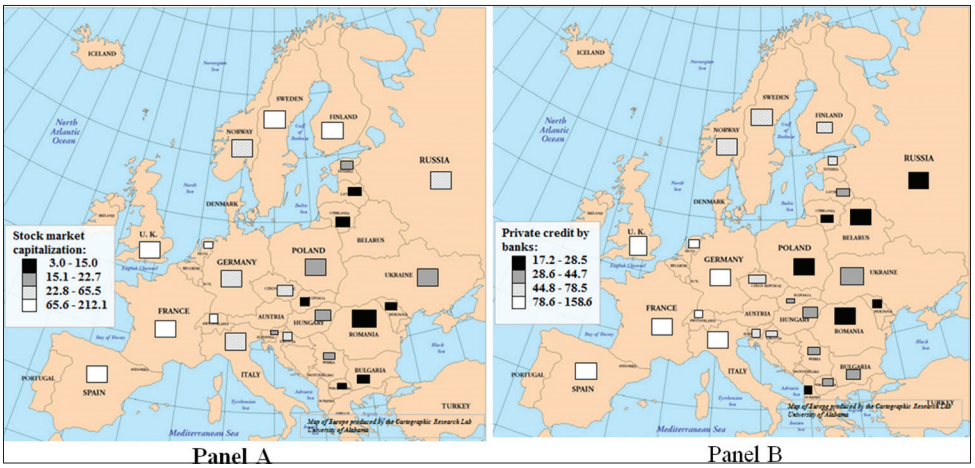
Table 2: Financial development by country and region

Country	Mean±SD	
	Stock market capitalization to GDP (%)	Private credit by deposit money banks to GDP (%)
Albania		17.37±15.60
Belarus		17.22±13.10
Bulgaria	11.92±9.93	29.24±15.79
Croatia	29.62±20.18	49.10±17.30
Czech Republic	22.96±4.79	46.77±14.41
Estonia	21.23±9.21	60.65±33.78
Finland	95.44±44.31	71.51±18.27
France	71.93±16.18	95.35±13.75
Germany	43.30±6.86	109.46±4.68
Hungary	21.83±4.01	37.33±17.02
Italy	33.86±14.00	87.06±26.73
Latvia	6.88±2.77	37.72±32.05
Lithuania	14.93±5.31	24.95±18.36
Macedonia, FYR	6.53±6.21	29.26±10.80
Moldova	3.04	20.87±11.44
Netherlands	98.64±18.46	153.16±47.48
Norway	46.60±12.51	69.04±8.67
Poland	22.69±12.93	26.37±7.65
Romania	11.21±8.18	21.06±14.19
Russian Federation	42.42±25.25	24.51±14.42
Serbia	21.12±12.23	32.05±11.90
Slovak Republic	5.54±0.89	42.77±4.38
Slovenia	18.89±11.18	56.31±30.57
Spain	73.71±19.12	139.52±61.60
Sweden	102.70±6.29	75.81±38.61
Switzerland	212.03±29.20	158.54±6.16
Ukraine	15.45±13.12	31.29±26.28
United Kingdom	133.38±9.87	154.59±39.85
WE Countries	91.16±53.66	113.46±45.09
CEE Countries	17.91±13.92	33.59±20.91
Europe	47.21±50.50	62.77±50.00
	Difference in means	Standard error	Difference in means	Standard error
CEE-WE	−73.25***	8.67	−79.86***	7.75

This table presents descriptive statistics for stock market capitalization and private credit by banks by country (top) and region (bottom). The last row reports the difference between the CEE and WE countries and its statistical significance. *,**, and *** represent significance levels of 10, 5, and 1%, respectively. GDP: Gross domestic product, CEE: Central and Eastern European, WE: Western European, SD: Standard deviation

6 For an interesting discussion on the differences among the CEE countries, see Berglof and Bolton (2002). They discuss a so-called "great divide" that prevented the CEE countries from having a homogeneous financial system, both in terms of equity financing (which is still considered very risky) and bank financing.

Figure 1: Financial development map. This figure shows the regional patterns of financial development, with filled rectangles ranging from very dark (the countries with measures below the first quartile) to very light (the countries with measures above the third quartile). Panels A and B report the stock market capitalization and private credit by banks, respectively (both as percentage of the gross domestic product)



Panel A Panel B

prevents transactions with people outside of one's small network. On the other hand, generalized morality prevents inappropriate behaviors towards everybody. Thus, to measure how trustworthy individuals are, we have to assess whether parents teach their children to treat everybody with respect, even outside of their small group (which hinders selfish and opportunistic behavior). We use tolerance: "Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five." The level of tolerance in each country is measured by the percentage of people selecting "Tolerance and respect for other people" as an important quality that children should learn at home. We expect people in ex-communist countries to have more limited morality (and less tolerance and respect for individuals outside their small network).

The third characteristic is control: "Some people feel they have completely free choice and control over their lives, while other people feel that what we do has no real effect on what happens to them." Please use this scale (from 1 to 10) where 1 means "none at all" and 10 means "a great deal" to indicate how much freedom of choice and control in life you have over the way your "life turns out." This cultural value was also affected by communism. It deals with the expectation of whether or not one's individual effort will pay off. If people believe that they have control over their lives, then they will work hard, innovate, invest in their future. If they do not have much control, they become idle, complacent, and passive towards their future. We use the average score for each country and we expect people from the ex-communist countries to feel less in control over their own lives, after so many years of government interference.

Following Tabellini (2010), we use these three cultural values to construct a new variable, culture, by extracting the first principal component. Control is the only indicator ranging from 1 – 10 (the other two are from 0 to 100). As principal component analysis (PCA) is sensitive to scale differences, we multiply control by 10 (hereafter, control*10) when constructing the culture variable. Bartlett's test of sphericity rejects the null hypothesis that the correlation matrix is the identity matrix, at the 1% level (with a χ^2 of 38.21), so we can safely perform PCA. Moreover, the Kaiser-Meyer-Olkin measure of sampling adequacy is 0.7 (above the recommended minimum value of 0.6). Our composite variable culture explains a robust 66.24% of the variation in the original variables. All three variables have large, positive loadings (all of them are around +0.8), indicating that all three variables have a strong effect on the first principal component. We consider PCA only to facilitate the interpretation of the overall cultural aspects in a country[7]. In other words, culture is the variable underlying the three cultural values considered in this study.

The descriptive statistics for our main independent variables are reported in Table 3. The differences between the CEE and WE groups of countries are as expected: The latter dominates the former in all four measures of culture. Figure 2 shows the regional patterns of the cultural measures, with filled rectangles for each country ranging from very dark (values below the first quartile) to very light (values above the third quartile).

Again, as we move from East to West, we can generally see the shades getting lighter.

3.3. Theoretical and Empirical Models

In any market transaction, according to Coase (1960), there are costs involved, for instance, with finding the persons to deal with, informing those people of your wishes, negotiating with them, writing a contract, inspecting the contract, etc. Assuming that transaction costs are zero is unrealistic. Coase (1960) observes that higher costs decrease the number of transactions performed and that governments can lower these costs by imposing regulations. However, Pejovich (2003) notices that formal institutions are able to reduce transaction costs and raise total wealth only when they are in harmony with informal institutions. Consequently, we argue that culture and formal institutions are related to financial development through transaction costs.

7 Culture is highly correlated with each of the three individual cultural traits (around 0.80 correlation coefficients), while the three individual cultural traits are only moderately correlated, with the highest coefficient being 0.51 between trust and tolerance.

Table 3: Culture by country and region

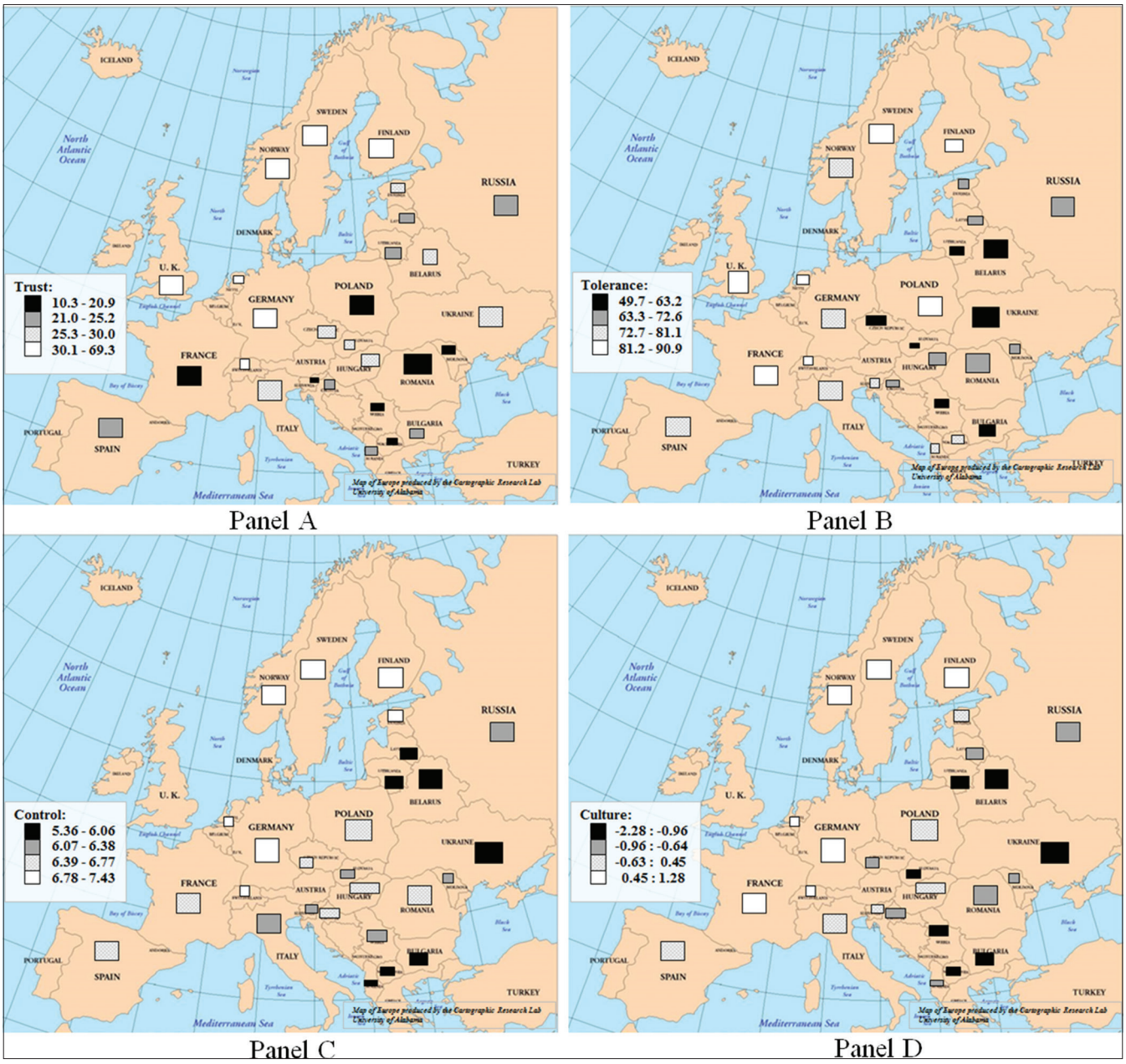
Country	Mean±SD			
	Trust	Tolerance	Control	Culture
Albania	23.75±0.78	80.55±0.78	5.37±0.90	−0.71±0.67
Belarus	27.80±6.79	60.20±0.71	5.70±0.70	−1.31±0.85
Bulgaria	21.65±2.90	49.70±4.67	5.42±0.23	−2.28±0.32
Croatia	22.80	64.30	6.49	−0.64
Czech Republic	27.20	60.00	6.50	−0.68
Estonia	30.05±12.66	72.05±17.61	6.17±0.26	−0.25±1.54
Finland	52.95±7.14	84.60±2.97	7.19±0.69	2.03±0.16
France	18.70	86.80	6.68	0.49
Germany	36.83±6.78	76.53±10.93	6.81±0.12	0.74±0.45
Hungary	25.60±4.38	69.80±8.91	6.47±0.13	−0.28±0.71
Italy	27.50	73.90	6.15	−0.27
Latvia	23.90	72.50	5.56	−0.95
Lithuania	21.30	54.10	6.06	−1.55
Macedonia, FYR	10.30±3.96	72.95±3.32	5.94±0.23	−1.11±0.12
Moldova	17.83±3.86	69.27±7.64	6.07±0.32	−0.91±0.34
Netherlands	54.35±16.62	85.90±0.14	6.79±0.16	1.82±0.73
Norway	69.25±6.29	78.65±18.03	7.20±0.03	2.33±1.15
Poland	19.07±2.78	83.00±1.73	6.39±0.40	0.16±0.35
Romania	14.97±6.33	65.30±6.75	6.76±0.97	−0.64±0.67
Russian Federation	25.20±2.36	67.20±3.24	6.13±0.83	−0.70±0.70
Serbia	20.10±7.56	59.53±8.09	6.14±0.17	−1.26±0.18
Slovak Republic	25.80	57.10	6.38	−0.98
Slovenia	17.57±2.30	76.07±4.69	7.29±0.52	0.42±0.74
Spain	25.05±6.73	74.60±2.27	6.63±0.27	0.07±0.38
Sweden	61.40±3.85	90.88±2.90	7.43±0.15	2.84±0.27
Switzerland	44.50±9.48	85.50±8.77	6.86±0.64	1.50±0.26
Ukraine	25.47±2.97	58.77±2.56	5.93±0.71	−1.27±0.42
United Kingdom	30.20±0.28	85.50±0.57		
WE Countries	43.70±17.15	82.28±8.30	6.93±0.43	1.40±1.14
CEE Countries	21.58±6.23	67.26±10.13	6.18±0.66	−0.80±0.79
Europe	29.92±15.77	72.92±11.94	6.46±0.68	0.00±1.41
	Difference in means	Standard error	Difference in means	Standard error	Difference in means	Standard error	Difference in means	Standard error
CEE-WE	−22.12***	3.72	−15.02***	2.39	−0.75***	0.14	−2.20***	0.28

This table presents descriptive statistics for three cultural variables and for their first principal component, by country and region, and the difference in the means between the CEE and WE countries, together with its statistical significance in the last row. *,**, and *** represent significance levels of 10, 5, and 1%, respectively. Missing values for standard deviations indicate that there is only one observation point for that particular country. CEE: Central and Eastern European, WE: Western European, SD: Standard deviation

In analyzing the relationship between our measures of culture and the financial development of a country, we examine how each of the three measures of culture affects the number of transactions performed in an economy and, consequently, the number of financial transactions. The most frequently used cultural value in the literature is, by far, trust. Lehmann and Neuberger (2001) find that the relationships between banks and households or businesses do not end when the contract ends, as the two parties build trust in one another. Trust lowers moral hazard and hence monitoring costs and loan rates. Fukuyama (1995) shows that a lack of trust creates additional transaction costs, which in turn encumber flexibility and growth. Gulati and Sytch (2008) find negative relationships of trust with negotiation costs and levels of conflict and positive relationships with levels of cooperation, information sharing, and organizational performance. Shane (1992) shows that less trusting nations perceive transaction costs as being higher. Furthermore, Fisman and Khanna (1999) find a negative association between the level of trust and information costs, as less trusting individuals require more information to reduce opportunism. Guseva and Rona-Tas (2001) show that in Russia, where good formal institutions are absent, credit card companies rely on trust to determine risk. Nguyen et al. (2006) also find that in Vietnam, when risk is hard to assess, banks rely on trust. Taylor (1982) shows that centralized economies (e.g., CEE countries under communism) lower cooperation by destroying trust in other individuals and, as Raiser et al. (2002) notice, trust among people is still weak in these countries. The literature is unanimous in showing that trust is paramount in conducting transactions. At the micro level, Hardin (1992) shows that bad experiences lead to lower levels of trust and subsequently to fewer transactions. A child can grow as an optimistic or a pessimistic truster. Culture changes very slowly, so a child born in an ex-communist country most likely is and continues to be a pessimistic truster[8]. Based on this characteristic, she enters fewer relationships, gains less data on who should be trusted, and becomes even less optimistic about

8 Guiso et al. (2006) observe that cultural values in a country are slow moving as they are taught to children by their parents and by organizations such as state, church, and academia. Consequently, if parents have low levels of trust, then they will also teach their children not to trust other people. Moreover, Becker (1996) shows that people do not have control over their culture. They are born and raised with a certain family history, ethnicity, religion, and race and, throughout their lives, they can change only one or two of these characteristics.

Figure 2: Cultural map. This figure shows the regional patterns of cultural values, with filled rectangles ranging from very dark (the countries with measures below the first quartile) to very light (the countries with measures above the third quartile). Panels A, B, C, and D report trust, tolerance, control, and culture, respectively



others. As trust is important in situations of risk and uncertainty, it is also paramount for the existence and for the efficient operation of a financial system.

The other side of the coin is trustworthiness, which we measure using the variable tolerance. Hardin (1992) believes that the literature often omits trustworthiness, or incorrectly interprets trustworthiness as trust. He thinks that trustworthiness is even more important for transactions than trust. Agreements with trustworthy individuals are reached even in the absence of robust contracts, which tends to increase the number of transactions in the economy (Guiso et al., 2006). Breuer and McDermott (2010) note that trust cannot exist without the expectation that the other party is trustworthy. Therefore, trustworthiness is at least as important as trust in explaining economic development. Trustworthiness has the same effects on transaction costs, hence on financial development, as trust. Florida (2003) also shows that tolerance (along with talent and technology) leads to higher levels of innovation and economic growth.

Regarding our third cultural value, control, Pejovich (2003) notices the differences between centrally-planned and free-market economies. Free-market economies are individualistic systems, in which individuals bear the consequences of their own actions (positive and negative). These economies function as merit-oriented, performance-rewarding societies, which promotes entrepreneurship and fewer market frictions. From a psychological point of view, Rotter (1966) separates individuals into "internals"

(those who believe they have control over their own lives) and "externals" (those who believe that fate is determined by external forces). Twenge et al. (2004) find that changes in history shape the perceptions of control, explaining why we notice that most people in the CEE countries are still "externals." Vecernik (2003) also observes that CEE countries continue with the legacies of the communist regime, in which people expect pervasive social protection, low job mobility, and low productivity of labor. In other words, these people still think that they have little control over their own lives. Dollinger et al. (1997) find that "internals" are more likely to trade because they tend to suppress negative information. Inversely, in a society prevalently "external," there will be fewer transactions because the cost of enforcing fairness is higher.

As trust, tolerance, and control all affect the number of transactions performed in an economy, they will also affect the number of financial transactions, hence the financial development of a nation. Therefore, our econometric models are specified as follows:

$$FD_{it} = \alpha + \beta \cdot Culture_{it} + \gamma \cdot Institutions_{it} + \delta \cdot Macroeconomic\_Conditions_{it} + \varepsilon_{it},$$

Where, FD represents the financial development of a country. Since Aggarwal and Goodell (2010) reveal that culture affects equity and debt financing differently, we use SMC and private credit by banks (PCB) as alternative measures of financial development.

The dependent and the independent variables (with the exception of culture) are computed as five-year averages to match the WVS waves.

We use polity2 as our institutions variable. The data is available in the polity IV Country Report Series published by the Center for Systemic Peace. It takes values from −10 to 10. If a country has a score of 6 or above, it is considered a democracy. A country with a score lower than −6 is considered an autocracy. This measure gauges the extent to which citizens can express preferences about alternative policies and leaders, the existence of institutionalized constraints on the power of the executive, and the guarantees of civil liberties to all citizens[9]. For the macroeconomic conditions of a country, we consider the trade openness, the rate of inflation, and the Gini coefficient. The data come from the World Development Indicators of the World Bank.

The correlations between the pairs of independent variables can be observed in Table 4.

Table 4: Correlation matrix

	Gini	Trade	Inflation	Polity2	Culture
Panel A.					
Europe					
Gini	1				
Trade	−0.13	1			
Inflation	0.01	0.10			
Polity2	0.02	−0.17	−0.48	1	
Culture	−0.31	−0.13	−0.49	0.44	1
Panel B. WE					
Countries					
Gini	1.00				
Trade	−0.42	1.00			
Inflation	0.19	−0.20	1.00		
Polity2	−0.08	0.29	0.10	1.00	
Culture	−0.85	0.47	−0.30	0.18	1.00
Panel C. CEE					
Countries					
Gini	1.00				
Trade	−0.09	1.00			
Inflation	0.00	−0.01	1.00		
Polity2	0.04	−0.07	−0.42	1.00	
Culture	−0.18	−0.23	−0.51	0.26	1.00

This table reports the correlation coefficients for the independent variables in this study. Panel A presents these coefficients for the entire sample, while Panels B and C analyze two different regions of Europe. CEE: Central and Eastern European, WE: Western European

4. RESULTS

4.1. Multivariate Regressions

Our two measures of financial development (SMC and PCB) are alternately regressed, using ordinary least squares (OLS), on the independent variables specified in the previous section. We present the results in Table 5, in two separate panels.

In both panels, the first model excludes cultural values as independent variables. One can notice that, in these cases, the estimated coefficients for formal institutions (polity2) are statistically significant and bear the expected sign. When we include informal institutions, the impact of the formal ones significantly decreases. Trust, tolerance, and control*10 are statistically significant at the 1% level, with one exception (5% for control*10 in Panel A). Our index of culture also has a positive (and significant) effect on financial development. As a robustness check, we also compute sum culture as the sum of trust, tolerance, and control*10 (following Tabellini, 2010) and we find its impact to be positive and statistically significant. These results are in line with the literature. For instance, Tabellini (2010) finds these variables to have a positive effect on economic development, while Dutta and Mukherjee (2012) reveal a positive effect of trust and culture (the first principal component of trust, uncertainty avoidance index [UAI], and individualism) on stock market development, with legal institutions statistically significant only in some cases[10].

9 As a proxy, we have also used, with no significant change in results, the law and order index, published in the International Country Risk Guide by the PRS Group.

10 As most of the literature notices, the transition from centrally-planned to market economies was very heterogeneous (see, for instance, Fischer and Sahay, 2000; Stone et al., 2014). One of the reasons for the differences in macroeconomic performance among the CEE countries is the way their governments handled stabilization policies and structural reforms (especially privatization). We acknowledge that this could be a factor in explaining the differences in financial development. In order to address this issue, we have used a transition indicator published by the EBRD, which takes values from 1 (indicating little or no change from a centrally-planned economy) to 4+ (representing the standards of industrialized countries). Most of the CEE countries in our sample started with scores close to 1 in 1989, but some reached 4.3 while others are still at 2.0 in 2012. When running the regressions including this transition index (not reported in this paper), our results hold. However, we have decided not to use it in our paper for two reasons. Firstly, the correlation coefficient between this index and polity2 is 0.80, so our institutions variable is a good proxy for transitional reforms. Secondly, there is no transition index for WE countries, so, if we add this index, we limit our analysis to CEE countries only.

Table 5: Multivariate regressions

Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Stock market capitalization to GDP (%)						
Trust		1.71***				
		4.97				
Tolerance			2.17***			
			4.00			
Control*l0				3.44**		
				2.51		
Culture					23.15***	
					5.35	
Sum culture						1.08***
						5.50
Polity2	5.92**	3.07	2.19	3.80	1.56	1.65
	2.49	1.45	0.93	1.53	0.74	0.80
Gini	0.87	2.42*	1.45	3.44**	2.93**	2.54**
	0.73	1.95	1.10	2.04	2.39	2.13
Trade	−0.21	−0.22	0.07	0.18	0.04	−0.04
	−1.51	−1.30	0.41	0.87	0.25	−0.24
Inflation	−0.54*	−0.40*	−0.13	−0.17	−0.03	−0.11
	−1.89	−1.69	−0.46	−0.56	−0.13	−0.47
Adj-R^2	0.11	0.44	0.35	0.21	0.47	0.48
Observations	87	47	47	45	45	45
Panel B: Private credit by deposit money banks to GDP (%)						
Trust		1.60***				
		3.48				
Tolerance			1.82***			
			2.71			
Control*10				3.72***		
				2.87		
Culture					23.21***	
					4.21	
Sum culture						1.04***
						4.02
Polity2	3.81**	3.54*	3.64*	3.12	2.65	2.86
	2.52	1.80	1.76	1.57	1.45	1.55
Gini	−0.12	0.45	−0.44	0.91	0.78	0.43
	−0.09	0.29	−0.27	0.54	0.52	0.29
Trade	−0.06	−0.06	0.16	0.21	0.12	0.08
	−0.39	−0.32	0.77	1.05	0.67	0.41
Inflation	−0.49*	−0.38	−0.18	−0.11	−0.04	−0.13
	−1.73	−1.30	−0.55	−0.36	−0.15	−0.46
Adj-R^2	0.14	0.31	0.25	0.27	0.39	0.37
Observations	89	51	51	49	49	49

This table reports the results of the OLS regressions for the following equation: $FD_{it} = \alpha + \beta \cdot Culture_{it} + \gamma \cdot Institutions_{it} + \delta \cdot Macroeconomic\_Conditions_{it} + \varepsilon_{it}$. Financial development (FD) is measured using the stock market capitalization in Panel A and the private credit by banks in Panel B. We use five alternative measures for culture (trust, tolerance, control*10, culture, and sum culture), and polity2 as a proxy for institutions. The last three explanatory variables in the table represent the macroeconomic conditions. We report the t-statistics in italics. *, **, and *** represent significance levels of 10, 5, and 1%, respectively. GDP: Gross domestic product, OLS: Ordinary least squares

4.2. Interaction Factors

The results in the previous subsection are not surprising. Moreover, variation in culture does exist in the different European regions (as one can notice in Figure 2) and the various cultural profiles could have influenced financial development differently. Therefore, we run a separate set of regressions using interaction factors, as follows[11]:

$$FDit = \alpha + \beta1 \cdot Cultureit + \beta2 \cdot Cultureit\ CEEit + \beta3 \cdot CEEit + \gamma \cdot Institutionsit + \delta \cdot Macroeconomic\_Conditionsit + \varepsilon it$$

Where CEE is a dummy variable taking a value of one if the country is a CEE country, and 0 otherwise. The other variables are as defined in Section 4.1. Even though we find a positive relationship between culture and financial development, it is possible that the impact of the former varies depending on its sign (most of the CEE countries have a negative value of culture), which justifies using interaction factors.

In Table 6, financial development is measured through SMC in Panel A and PCB in Panel B. Models 1-3 consider the three individual measures of culture, while Model 4 gauges the effect of the overall culture. In Panel A, Model 4, β_1 and β_3 are

11 Some papers include lagged GDP per capita as a control variable, in order to account for existing wealth in a country. We do not include this variable for two reasons. Firstly, using it would mean employing the time period 1990-1994, when all the CEE countries were at the very beginning of their transition to market economies, fighting macroeconomic instability. Hence, the spread in GDP between East and West may be artificially large. Secondly, as we are interested in separating the two regions of Europe by using the dummy variable CEE, we can safely assume that this dummy is a good proxy for a country's wealth. The point-biserial correlation between CEE and the average real GDP per capita for our sample period is −0.89.

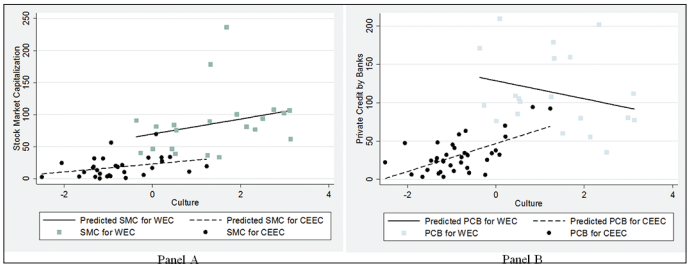
Table 6: Regressions with interaction term

Explanatory variables	(1)	(2)	(3)	(4)
Panel A: Stock market capitalization to GDP (%)				
Trust	0.64			
	1.38			
Trust*CEE	−4.05			
	−0.25			
Tolerance		3.55***		
		4.31		
Tolerance *CEE		−45.60***		
		−3.72		
Control*10			0.82	
			0.39	
Control*10*CEE			6.63	
			0.42	
Culture				15.05**
				2.21
Culture*CEE				−7.57
				−0.72
CEE	−57.60***	−35.20***	−66.10***	−44.45***
	−3.57	−2.83	−5.07	−3.00
Polity2	0.36	0.90	−0.29	0.13
	0.18	0.52	−0.14	0.06
Gini	1.55	2.15**	1.94	1.98*
	1.33	2.25	1.47	1.73
Trade	−0.01	−0.04	0.18	0.04
	−0.06	−0.33	1.09	0.25
Inflation	−0.22	−0.25	−0.04	−0.11
	−1.03	−1.31	0.10	−0.49
Adj-R^2	0.56	0.69	0.54	0.58
Observations	47	47	45	45
Panel B. Private credit by deposit money banks to GDP (%)				
Trust	−1.05**			
	−2.22			
Trust*CEE	34.45**			
	2.25			
Tolerance		−1.27		
		−1.23		
Tolerance*CEE		17.92		
		1.21		
Control*10			−2.58	
			−1.09	
Control*10*CEE			33.06*	
			1.96	
Culture				−14.05**
				−2.05
Culture*CEE				33.51***
				3.32
CEE	−94.88***	−104.23***	−91.81***	−95.93***
	−6.20	−7.01	−7.66	−6.85
Polity2	1.55	1.07	0.66	1.05
	1.12	0.75	0.50	0.82
Gini	−1.34	−0.88	−0.12	−0.89
	−1.25	−0.79	−0.11	−0.85
Trade	0.21	0.21	0.26*	0.31**
	1.50	1.47	1.96	2.38
Inflation	−0.23	−0.19	−0.03	0.02
	−1.20	−0.87	−0.16	0.10
Adj-R^2	0.70	0.66	0.70	0.71
Observations	51	51	49	49

This table reports the results of the OLS regressions for the following equation: $FD_{it} = \alpha + \beta_1 \cdot Culture_{it} + \beta_2 \cdot Culture_{it} \cdot CEE_{it} + \beta_3 \cdot CEE_{it} + \gamma \cdot Institutions_{it} + \delta \cdot Macroeconomic\_Conditions_{it} + \varepsilon_{it}$, where financial development (FD) is measured using the stock market capitalization in Panel A, and the private credit by banks in Panel B. We report the *t*-statistics in italics. *,**, and *** represent significance levels of 10, 5, and 1%, respectively. GDP: Gross domestic product, CEE: Central and Eastern European

statistically significant, but β_2 is not. More precisely, an increase in culture is associated with an increase in SMC. At the same time, being located in Central and Eastern Europe decreases the SMC. Nevertheless, the effect of culture is virtually the same for the two regions of Europe. This result is evident in Figure 3, Panel A, which shows the expected and the actual SMC for CEE

Figure 3: Predicted and actual financial development for Central and Eastern European (CEE) versus Western European countries (WEC). This figure shows the actual financial measures for the WEC in light grey squares and the actual financial measures for the CEE countries in black circles. The solid line represents the predicted line for the WEC, while the dashed line depicts the predicted line for CEEC. We use the stock market capitalization in Panel A and the private credit by banks in Panel B, as measures of financial development



versus WE countries. One can notice that the slopes are roughly the same, while the intercepts are different. This effect seems to be due to only one component of culture, which is tolerance, as trust and control*10 lose their statistical significance when the dummy variable CEE is included in the regression. It makes sense for the intercept to be different, as the level of stock market development of the CEE countries in 1989 is comparable to that of the UK in the 19th century (Hermes and Lensink, 2000).

A different story can be told when quantifying the financial development through PCB. In Panel B, Model 4, the interaction term is statistically significant and positive this time. That is, as can also be seen in Figure 3, Panel B, culture has a more substantial effect in the CEE than in the WE countries. Most of this effect is due to trust.

One possible explanation for the difference in slopes can be that bank financing exhibits diminishing marginal returns to culture. If this is the case, a "better" culture is associated with a higher rate of change in bank financing in CEE countries compared to WE countries (i.e., a version of the catch-up effect). The literature supports this explanation. For instance, Guseva and Rona-Tas (2001) find that, in the absence of good institutions, credit card companies use trust to assess risk in Russia. However, for the US, where formal institutions have evolved gradually and are now well enforced, trust is no longer such an important mediator between credit card companies and credit applicants. The same can be argued about the WE countries.

Interestingly, for both measures of financial development, adding the interaction term increases the explanatory power of the model, as measured by the adjusted-R^2.

4.3. Determinants of Culture

So far, we can safely conclude that there is an association between different cultural traits and financial development in Europe, in that a "better" culture is related to superior financial development. However, our results do not prove causation. It is possible that there are some exogenous factors which affect both culture and finance.

In order to remove the potential bias due to omitted variables and to deal with reverse causality, we use instrumental variables (IVs) for culture. Based on the literature, we know that history affects culture. Our contention is that one particular historical experience, which is communism, has affected culture the most.

One vastly used IV for culture is religion, which is considered to be a good proxy for different cultural values such as work ethic, trust, and tolerance (see the seminal work by Weber, 1970). Most of the papers in the literature do not include transition economies in their samples and, consequently, treat Catholicism as a "bad" religion, as opposed to Protestantism (see, for instance, La Porta et al., 1999; Tabellini, 2010, Herger et al., 2008). As Katchanovski (2000) notices, CEE countries are different. Religion matters for their cultures, but possibly not as much. The generations born under communism had their rights to religious beliefs severely limited. Therefore, they might not have absorbed the religious values of their parents and grandparents. Additionally, being a predominantly Protestant or Catholic country means that people are more exposed to the "western" culture than being in a predominantly Orthodox country. Based on that, we use the percentage of the population that is Protestant and Catholic as an IV for culture (following Katchanovski, 2000).

Alternatively, one might argue that differences in economic, financial, or institutional development were already in place before the emergence of communism in Central and Eastern Europe. Is it possible that old institutions affect today's financial development? Or maybe old institutions have affected the culture of a country, which in turn affects the financial development? We know that institutions and culture go hand in hand. For that, we consider the polity2~1910 (read as polity2 around the year 1910) as IV for old institutions.

A third explanation (to which we subscribe) is that the communist regime changed the cultural profiles of the CEE countries, which is in line with Schwartz and Bardi's (1997) findings. We expect to observe differences between CEE and WE countries, and also within the CEE group of countries (depending on the length of time under communism).

Therefore, we select three IVs for culture: The percentage of Catholics and Protestants to total population, the formal institutions around 1910, and the number of years of communism that the country experienced. The data on the percentage of Catholics and Protestants is taken from the CIA World Factbook, United Nations Data, and various national statistics databases. Due to the nature of our IVs, we run cross-sectional regressions for these robustness checks, using averages for all the other variables over the entire sample period. If there are factors that influence culture, which in turn influences financial development, then those factors should also have a significant impact both on financial development and on culture. The results for the simple OLS, as well as the first and second stage two-stage least squares (2SLS) regressions are presented in Table 7.

As mentioned above, we expect to find that, out of the three major exogenous factors, experiencing communism has the biggest

Table 7: 2SLS regressions

Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
	Trust	Tolerance	Control*10	Culture	Stock market capitalization	Private credit by banks
Panel A: OLS and first-stage 2SLS						
Dependent variable						
Communism	−0.36***	−0.27***	−0.13***	−0.04***	−1.41***	−1.65***
	−2.66	−2.68	−2.91	−3.78	−3.18	−5.18
Polity2~1910	0.59	0.42	0.29	0.06	1.81	0.50
	1.09	1.05	1.70	1.60	1.02	0.40
Religion	−0.06	0.00	−0.02	0.00	−0.24	−0.18
	−0.53	−0.01	−0.43	−0.25	−0.60	−0.63
Adj-R^2	0.42	0.41	0.46	0.59	0.41	0.63
Observations	23	23	22	22	22	23

Panel B: Second-stage 2SLS								
Explanatory variables	**Stock market capitalization**				**Private credit by banks**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trust	3.72***				3.93***			
	3.25				3.27			
Tolerance		4.07***				4.65***		
		4.26				3.93		
Control*10			8.90***				8.81***	
			3.50				3.63	
Culture				30.49***				32.17***
				4.25				4.31
Wald χ^2	10.54	18.14	12.26	18.09	10.66	15.41	13.18	18.57
Sargan χ^2	0.04	1.04	0.43	0.34	0.68	1.35	2.18	1.85
Sargan P value	0.98	0.60	0.80	0.84	0.71	0.51	0.34	0.40
Observations	22	22	21	21	23	23	22	22

Panel A reports the results for the simple OLS and the first-stage of 2SLS regressions, while Panel B presents the results for the second-stage 2SLS procedure. The IVs for culture are the number of years under communism (communism), Polity 2 around 1910 (polity2~1910), and the percentage of people with Catholic or Protestant religion (religion). We report the t-statistics in italics. *,**, and *** represent significance levels of 10, 5, and 1%, respectively. OLS: Ordinary least squares, 2SLS: Two-stage least squares

impact on a country's set of values and beliefs. Panel A reports the first-stage (Models 1-4) and the simple OLS (Models 5-6) findings. They reveal that only the number of years under communism has statistically significant effects. It decreases trust, tolerance, and control*10, and worsens the culture in a country, validating our expectations. Note that Models 5 and 6 provide evidence that the number of years under communism is also the only variable with a significant impact on financial development. Panel B presents the second-stage findings. The 2SLS regressions provide values for the Sargan test of over identification ranging from 0.04 (Model 1) to 2.18 (Model 7), indicating that we cannot reject the validity of our instruments for any of the models under consideration. This seems to provide a strong-enough argument for the causal effects of our cultural measures, including our constructed variable culture, on financial development.

These results confirm that, even when using IVs to remove endogeneity, informal institutions remain paramount in explaining financial development. Moreover, we can conclude that national beliefs and attitudes in Europe have been shaped to a large extent by the type of economic and political systems that the countries experienced before 1990.

4.4. Robustness Checks

Some of the literature on culture uses the Hofstede's (2001) measures of cultural characteristics. For instance, Aggarwal and Goodell (2010) find that the UAI, the power distance index (PDI) and the index of individualism (IDV) affect the financial architecture of a country, while Dutta and Mukherjee (2012) use UAI and IDV to show that culture affects the SMC. Hofstede (2001) assumes that culture is stable and consequently the survey conducted in the late 1960s and early 1970s would have the same results today. Our main analysis is based on the WVS cultural values, as this allows us to assert that communism has changed the culture in the CEE countries. To further check the robustness of our findings, we use Hofstede's (2001) alternative indices of culture.

The UAI measures the degree to which people feel uncomfortable with uncertainty and risk. A higher UAI means that people are more concerned about ambiguity and uncertainty and have lower tolerance for new ideas, and therefore the society has rigid rules that need to be followed. A higher UAI does not encourage innovation and involves more bureaucracy hence increasing transaction costs and, consequently, is associated with lower financial development. The PDI gauges the degree to which people accept and expect power to be distributed unequally, as well as the degree of legitimacy of the government as perceived by the people. Husted (1999) shows that a high PDI is associated with higher levels of corruption, and therefore with higher transaction costs. IDV compares individualism with collectivism in a society. A more individualistic society has a higher value of IDV and it encourages competition, therefore it should be more conducive to financial development.

Using Hofstede's (2001) measures of culture, we run the following cross-sectional regression:

$$FD_i = \alpha + \beta_1 \cdot + Culture_i + \gamma \cdot Institutions_i + \varepsilon_i$$

The results, presented in Table 8, are in line with the expectations and show that our main findings, that culture affects financial development in the CEE countries, are indeed robust.

5. CONCLUSIONS

By using panel data and cross-sectional analyses, we find strong evidence that cultural attitudes and beliefs are important in explaining financial development in Europe. We are particularly interested in grouping the European countries based on their exposure to communism. Our main contribution is to show that communism shaped the cultural values of the CEE countries, and those in turn have affected the different levels of financial development.

We consider different cultural values (trust, tolerance, control*10, as well as a composite index of culture, constructed using PCA) and we find that a "better" culture is associated with superior financial development. As a robustness check, we also use Hofstede's (2001) cultural indices and our results hold. One of the possible channels is the decrease in transaction costs for countries with "better" culture. Otherwise, without trusting other people, without having tolerance and respect towards others, and without feeling that one has control over their own life, there can only be a low level of financial development.

We are in agreement with researchers such as Inglehart and Baker (2000), who find that ex-communist countries tend to stick together in terms of cultural values. And yet, it is difficult to explain how a country such as Bulgaria (which was under a communist regime for 43 years) has a "worse" culture than, for instance, Estonia (with 51 years of communism). Unfortunately, we cannot find data on the cultural values existent in the CEE countries before communism in order to control for the starting status quo. However, the data on culture in CEE countries are very similar to those on the quality of institutions, as in Stone et al. (2014), which indicates the very close relationship between formal and informal institutions. So, we use the quality of formal institutions at the beginning of the 20th century, as well as religion and communism as IVs for culture and, performing a 2SLS analysis, we find that communism is the driving force behind culture, which, in turn, affects financial development.

One shortcoming when analyzing culture and its effects on economic variables is that it is usually viewed as a slow-moving institution, formed over centuries of human development (see, for instance, Roland, 2004). Beugelsdijk and Maseland (2010) and Khalil (2012) claim that culture is stable over time, while Beugelsdijk et al. (2015) hypothesize that culture might change slightly, but the differences between countries are stable. However, our results show that, in "only" about 45 years, nations affected by communism changed considerably. We do not argue that cultural persistence is nonexistent, but rather, like Nunn (2012), we assert that, in some cases, historical shocks have long-term effects on culture.

Table 8: Robustness check

Explanatory variables	(1)	(2)	(3)
Panel A: Stock market capitalization to GDP (%)			
UAI	−1.24**		
	−2.17		
PDI		−1.37**	
		−2.57	
IDV			1.32*
			2.02
Polity2	3.53	−1.66	0.57
	0.51	−0.22	0.07
Adj-R^2	0.21	0.27	0.19
Observations	21	21	21
Panel B: Private credit by deposit money banks to GDP (%)			
UAI	−0.87*		
	−1.78		
PDI		−1.04**	
		−2.29	
IDV			1.18**
			2.21
Polity 2	8.96	4.65	5.08
	1.51	0.73	0.79
Adj-R^2	0.27	0.34	0.33
Observations	21	21	21

This table reports the results of the OLS regressions for the following equation: $FD_i = \alpha + \beta \cdot Culture_i + \gamma \cdot Institutions_i + \varepsilon_i$. As measures of culture, we use Hostede's (2001) uncertainty avoidance index (UAI), power distance index (PDI), and individualism index (IDV). Financial development is measured using the stock market capitalization in Panel A and the private credit by banks in Panel B. We report the t-statistics in italics. *,**, and *** represent significance levels of 10, 5, and 1%, respectively. GDP: Gross domestic product, OLS: Ordinary least squares

We also claim that communism was implanted exogenously in most of the CEE countries, so their people had to change their beliefs and values quickly in order to survive. Guiso et al. (2008) show that trust is an intergenerational characteristic of a nation and this leads to multiple equilibria in the economic activity. One equilibrium involves high levels of trust which is then associated with "trade," while another is mistrust associated with "no trade." A relatively temporary shock can permanently move the society from one equilibrium to another. They find that a shock which decreases trust and lasts for three generations (about 75 years) has permanent effects of "no trade" in about one fifth of the family lines. Communism, in the majority of CEE countries, was a two-generation negative shock on trust (and other cultural values). Then, we wonder about the extent of the permanent damage on economic and financial development.

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