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Do social and environmental capabilities improve bank stability?

Evidence from transition countries

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Abstract

Financial institutions have embraced the idea of corporate social responsibility (CSR) over the past decade, particularly in the banking sector, even as they have faced challenges in their core business model and an uncertain economic environment. Has the addition of CSR helped banks in their effort to become more stable via diversification, or has it squandered resources which could be utilized elsewhere? Using a sample of 319 commercial banks from 21 transition countries in Central and Eastern Europe and the former Soviet Union from 2002 to 2014, we find that there is a heterogeneous effect of CSR on bank stability, with total commitment to CSR contributing to the stability the most. Environmental capabilities, on the other hand, appear to influence stability only for those firms which are already the highest performing. We conjecture that, for financial sector firms in a transition environment, CSR is a further commitment for firms which have attained a certain level of stability but can be destabilizing for weaker banks.

JEL classification: G21; G28; P28

Keywords: environmental protection; corporate social responsibility; transition; financial sector stability

1. Introduction

The issue of financial instability remains a seemingly intractable problem for many countries, both developed and emerging; moreover, the examples of the Asian financial crisis (beginning in 1997) and the Global Financial Crisis (from 2007 onward) have shown how financial instability is not just a concern of specific economies, as the instability-fueled contagion does not respect borders. Given this reality, the determinants of financial crises and instability have become an important area for financial sector research over the last decades, especially concentrated in the banking sector (Jokipii and Monin 2013; Pawlowska 2016). This work has focused on bank strategy across a broad panoply of areas (Berardi and Tedeeschi 2017), in conjunction with the effects of financial regulation (Kim *et al.* 2013) and overall economic conditions (Bos and Kool 2006), by explaining how these various factors have impacted bank stability in the longer-term and what the implications are for the environmental agenda that is associated with this.

At the same time, as banks have been refining their fundamental and basic processes, they have been shifting their strategies and taking on additional responsibilities related to corporate social responsibility (CSR), especially in the sphere of environmental protection (Ramzan *et al.* 2021). As part of a broader trend globally towards incorporating CSR into fundamental business processes (Abad-Segura *et al.* 2019), banks, in particular, have embraced this role in the wake of the global financial crisis (Scholtens 2009), participating on a voluntary basis to burnish their image (Miralles-Quirós et al. 2019) and diversify their portfolio of activities (Jain *et al.* 2015). While there is evidence that banks have, indeed, increased their capabilities in the CSR realm and incorporated CSR tenets into their business models (van den Heuvel *et al.* 2014), what is left unresolved is the question of whether this emphasis on the environment, community, or customer service has actually contributed to the stability of banks (and thus the longer-term stability of the financial sector). Three questions

can be asked. Does the addition of CSR capabilities actually help to diversify specific banks and augment their operations, leading to more stability (Gangi *et al.* 2019)? Does the addition of peripheral activities detract from the core financial mission of a bank and lead them to be less stable? Does CSR have little impact either way (Fijałkowska *et al.* 2018)?

This paper explicitly contributes to the Special Issue through examining the issue of CSR, and its various facets, paying special attention to its environmental dimension and its effect on bank stability in a specific context, namely in the transition countries of Central and Eastern Europe (CEE) and the former Soviet Union (FSU). The historical legacies of Communism, such as the pronounced economic inter-dependence of these states in 20th century, multiple trade links developed during the USSR, political ideology of Marxism-Leninism and its impact on society, and patterns of public behavior, make Post-Communist states unique in terms of their socio-economic, cultural and political development (Arpino and Obydenkova 2020; Beissinger and Kotkin eds. 2014; Izotov and Obydenkova 2020; Lankina et. al 2016a; 2016b; Libman and Obydenkova 2014a; 2019; 2020; Nazarov and Obydenkova 2020; Pop-Eleches and Tucker 2017). These historical legacies effected, to some extent, these countries during their transition, while all of their institutions were in flux, and thus the ability to discern *a priori* what was most important for bank stability, makes them an excellent test case for the effects of CSR (and a scenario which is not observable in other emerging and developing economies outside of a post-Communist bloc). Moreover, many of the CEE transition economies have integrated into the EU, either as members or via an extensive partnership or trade agreement, making the issue of bank stability - and the need to respond to a public that is more socially and environmentally conscious as consumers than those in their home countries - relevant for the region (Djalilov and Holscher 2017; Obydenkova and Arpino 2018). The impact of the EU on the economy, democracy, and society was met by a number of mimicking initiatives from a so-called "non-democratic

regional organization" initiated by Russia, Kazakhstan, and, even occasionally, China (Libman and Obydenkova 2013; 2018a; 2018b). This geopolitical competition over the former Soviet Republics left a trace on the political, social and economic stability of the region calling for further attention and analysis.

Given this background, this paper investigates the impact of bank social and environmental strategies on their stability from 2002 to 2014, building on and contributing to the existing literature on CSR and banking in the region, more generally, in several respects. Firstly, it extends the research done by Agoraki et al. (2011), Fang et al. (2014), and Clark et al. (2018), as, according to our knowledge, there are only three studies exploring bank stability in transition economies. We build on this work by looking at more transition countries over a longer time period, and one which includes the pre- and post- global financial crisis observations (incorporating the changes in the global financial system and its regulation post-crisis), while at the same time employing a system GMM approach to address the importance of the dynamic nature and the endogeneity of some important variables. Going beyond this earlier work, we also use a dynamic quantile regression to explore the heterogeneous stability effects of CSR. Finally, and more in line with this special issue, our paper contributes to the wide range of research on the CSR-performance nexus (Brammer and Millington, 2008; Jayachandran et al., 2013) by focusing on the heterogeneity of CSR in practice, emphasizing the various facets of social responsibility and the environmental agenda by testing them separately for their effect on bank stability.

The remainder of the paper is organized as follows. Section 2 presents the theoretical foundations of the paper and develops a testable hypothesis. Section 3 describes the data and methods. Section 4 discusses the results and Section 5 concludes.

2. Literature Review

Over the last three decades, there are many studies exploring the antecedents and the factors affecting bank stability. In particular, the relevant research considers a wide range of stability factors, such as macroeconomic conditions (Louzis et al., 2012), institutions (Fang et al., 2014), bank competition (Beck et al., 2013a; Clark et al., 2018; Fu et al., 2014), regulation (Agoraki et al., 2011; Barth et al., 2004), as well as corporate governance (Abdelbadie and Salama, 2019; Dong et al., 2017; Laeven and Levine, 2009). A different set of literature on the international political economy looks into the origins, motivations, strategy and the effects of multilateral banks, in general, and regional developmental banks, in particular (Ben-Artzi 2016; Obydenkova and Vieira 2020; Barria and Roper 2012).

However, the importance of CSR on bank stability, especially given its prevalence in the past two decades, has been largely ignored, and, thus far, only Cooper et al. (2019) have studied the effects of corporate social responsibility on bank stability (examining only large US banks). This is a significant gap in the literature considering the importance of bank stability, corporate social responsibility, and (as noted above) the unique condition of the transition countries (making the previous studies that are focusing on developed economies of less relevance). Therefore, this review considers the issues that are pertinent to CSR theories and the CSR-stability nexus in order to develop a testable hypothesis regarding the effect of CSR on bank stability.

Researchers have developed and investigated many theories associated with CSR over the last several decades (Cochran and Wood, 1984; Frooman, 1997; Roman et al., 1999; Simpson and Kohers, 2002; Waddock and Graves, 1997), often merging the concept of corporate social responsibility with agency, stakeholders, legitimacy, stewardship, the resources-based view, slack resources, an institutional approach, and political cost theories (McWilliams and

Siegel 2000; Seifert, Morris, and Bartkus 2004; Campbell 2007). According to *agency theory*, corporate social responsibility is a misuse of firms' resources that could be better allocated in supporting value-added corporate projects or returned to their shareholders. Therefore, this is considered to be a procedure whereby corporate revenues are taken away from their owners (McWilliams et al., 2006). Freeman's *stakeholder theory*, on the other hand, suggests that firms must satisfy the needs of various stakeholders in order to survive and flourish in the markets (Freeman, 2010). This particularly implies that addressing the needs of only the shareholders are not sufficient and that firms could benefit from CSR commitments, of which the local community and non-financial stakeholders consider as valuable capabilities (Donaldson and Preston, 1995; McWilliams et al., 2006). Furthermore, *legitimacy theory* highlights that companies are bound by the social contracts needed to engage in CSR commitments, guaranteeing their sustainability (Brown and Deegan, 1998; Deegan, 2002; Reverte, 2009).

Other theories, regarding the effects of CSR, abound, including *stewardship theory*, where managers are responsible players for the firms' CSR and they need to engage in social and environmental activities without considering their effect on company's performances (Donaldson and Davis, 1991). Perhaps more sanguine is *the resource-based view* (RBV), where firms have heterogeneous resources-capabilities, and they are immobile across companies. Therefore, the RBV suggests that firms with valuable, rare, inimitable and non-substitutable resources-capabilities, including social-environmental commitments, tend to achieve a sustained competitive advantage (Barney 1991; McWilliams, Siegel, and Wright 2006). In a similar vein, the theory of *slack resources* is associated with firms' slack resources and their effects on social and environmental commitments – specifically, on firms' philanthropic donations. In particular, the theory states that firms with relatively more slack resources tend to donate comparatively more (Seifert et al., 2004). According to the

institutional CSR theory, the link between firms' behaviour and environmental economic conditions is mediated by institutional conditions (Jones 1995; Campbell 2007). In general, the theory implies that the institutional-economic conditions are antecedents and determinants of firms' social and environmental commitments (Campbell, 2007). Finally, the *political cost* theory implies that firms engage in social and environmental activities to prevent additional costs such as taxes and regulatory restrictions (Gamerschlag et al., 2011).

Given this plethora of theories, we can divide the extant literature on CSR into two distinct groups. Specifically, the first group explores the performance effects of CSR (Brammer and Millington, 2008; Jayachandran et al., 2013), while the second investigates the antecedents and determinants of firms' CSR activities (Chih, Chih, and Chen 2010; Farook, Kabir Hassan, and Lanis 2011; Julian and Ofori-dankwa 2013). However, the exploration of CSR has not taken into account the special case of transition economies, who have begun their journey towards a market economy basically *tabula rasa* in the ways of capitalist banking institutions and in the ways of corporate social responsibility. With no institutional memory regarding banking beyond the savings function that socialist banks performed in the era of communism – and facing the legacy of social and environmental degradation which accompanied the planned economy – there was the possibility that bank stability could have been dependent upon CSR activities in addition to their core competencies. On the other hand, considering the presence of underdeveloped institutions and economic constraints associated with the transition, we might expect that the social and environmental activities of banks could actually harm stability in the banks of transition countries. Indeed, the need for banks to achieve profitability and to cope with increased competition from abroad and the shifting political and economic fortunes may mean that it was likely that the diversion of effort into CSR would not improve banking stability.

To our knowledge, there exist only a handful of studies which explore aspects of banking stability in transition, including Agoraki et al. (2011), Fang et al. (2014) and Clark et al. (2018), but they each suffer some shortcomings from the point of view of coverage; for example, the first two studies, noted above, used older data (1998-2005 and 1997-2008 respectively), while the third from Clark *et al.* (2018) investigates bank stability only in the FSU for the period 2005-2013. Hence, there is a gap in our knowledge on how bank strategies, specifically bank social and environmental activities, are associated with their stability in transition countries.

3. Method

3.1 Sample and data

The sample of this study covers 319 commercial banks representing 21 transition countries of Eastern Europe and the FSU. This is an unbalanced panel sourced from *Bankscope* and it includes only those banks with at least three years of financial statements over the period 2002-2014. The financial data are in current US dollars. The macroeconomic and the regulation data are taken from World Bank World Development Indicators as well as the World Bank Regulation and Supervision surveys, respectively. Furthermore, the data on economic freedom is sourced from the Heritage Foundation, while the legal origin data are obtained from La Porta (1999)[1].

3.2. Measuring bank stability (dependent variable)

In this subsection, we describe the dependent variable, which is constructed in two steps. The first step includes the Z score calculation and in the second we calculate the Z score

[1] Similar data was utilised by Djalilov and Piesse (2019).

efficiency to proxy stability. The Z score has long been established in the literature as a proxy for risk measurement (Agoraki et al., 2011; González et al., 2016; Abdelbadie and Salama, 2019), and is used here to represent bank stability. It is monotonically associated with the probability of bank failure and is expressed as follows:

$$Z_{i,t} = \frac{\text{ROA i,t} + (\frac{\text{E}}{\text{A}})_{i,t}}{\text{SD (ROA)i,t}} \quad (1)$$

where ROA is return on assets, E/A is the equity to asset ratio and SD(ROA) is the standard deviation of ROA. Since the Z score indicates the distance to insolvency, a higher Z score implies that a bank is less risky. As the distribution of the Z score values is highly skewed, we use the natural logarithm, following Beck et al. (2013a).

In the second step, we follow Fang et al. (2011) and Tabak et al. (2012) to define our dependent variable. In particular, Fang et al. (2011) state that the Z score does not reflect the potential banking stability that banks can achieve. They suggest that it is also necessary to consider the deviation of each bank's current stability from the maximum stability that the bank can achieve in the given economic, business, regulatory and institutional environment. This is known as "stability efficiency".

Thus, we employ the stochastic frontier analysis (SFA), proposed by Battese and Coelli (1995), to measure our stability efficiency (stability) variable. While incorporating bank-, industry- and country-specific controls, SFA calculates the inefficiency scores for each bank from the frontier (best-practice banks). Considering banks as financial intermediaries, we select two output and three input prices for our SFA model following Gaganis and Pasiouras (2013), Luo et al. (2016) and Djalilov and Piesse (2019). Specifically, our output prices are the ratio of interest income to loans (y1) and the ratio of non-interest income to other earning assets (y2). Furthermore, we consider the cost of loanable funds (the ratio of interest expenses to total deposits - c1), the cost of physical capital (the ratio of overhead

expenses to fixed assets - c2), and the cost of labour (the ratio of personnel expenses to total assets - c3) as three input prices.

Consistent with Berger and Mester (1997), our specification includes Equity to control for the heterogeneous risk profiles across banks. Moreover, we employ c3 to normalise prices and add a time trend to account for the changes in technology over time. Our frontier additionally includes dummies, distinguishing three groups of transition countries as well as GDP per capita and Economic Freedom variables consistent with Djalilov and Piesse (2019). Thus, our multi-product transcendental logarithmic (translog) specification to measure the frontier is as follows:

$$\begin{aligned}\ln\frac{\text{Z score}}{c_3} = {} & \beta_0 + \beta_1 \ln\frac{y_1}{c_3} + \beta_2 \ln\frac{y_2}{c_3} + \beta_3 \ln\frac{c_1}{c_3} + \beta_4 \ln\frac{c_2}{c_3} + \beta_5 \frac{1}{2}\ln\left(\frac{y_1}{c_3}\right)^2 + \beta_6 \ln\frac{y}{c_3}\ln\frac{y_2}{c_3} + \beta_7 \frac{1}{2}\ln\left(\frac{y_2}{c_3}\right)^2 + \beta_8 \frac{1}{2}\ln\left(\frac{c_1}{c_3}\right)^2 + \beta_9 \ln\frac{y_1}{c_3}\ln\frac{c_1}{c_3} \\ & + \beta_{10} \ln\frac{y_2}{c_3}\ln\frac{c_1}{c_3} + \beta_{11} \frac{1}{2}\ln\left(\frac{c_2}{c_3}\right)^2 + \beta_{12} \ln\frac{y_1}{c_3}\ln\frac{c_2}{c_3} + \beta_{13} \ln\frac{y_2}{c_3}\ln\frac{c_2}{c_3} + \beta_{14} \ln\frac{c_1}{c_3}\ln\frac{c_2}{c_3} + \beta_{15}\ln(\text{equity}) \\ & + \beta_{16}\frac{1}{2}\ln(\text{equity})^2 + \beta_{17}\ln(\text{equity})\ln\frac{y_1}{c_3} + \beta_{18}\ln(\text{equity})\ln\frac{y_2}{c_3} + \beta_{19}\ln(\text{equity})\ln\frac{c_1}{c_3} + \beta_{20}\ln(\text{equity})\ln\frac{c_2}{c_3} \\ & + \beta_{21}\,\text{T} + \beta_{22}T^2 + \beta_{23}\text{T}\ln\frac{y_1}{c_3} + \beta_{24}\text{T}\ln\frac{y_2}{c_3} \\ & + \beta_{25}\text{T}\ln\frac{c_1}{c_3} + \beta_{26}\text{T}\ln\frac{c_2}{c_3} + \beta_{27}\,\text{T}\ln(\text{equity}) + \beta_{28}\text{Controls} + \beta_{29}\text{NZS} - u_{i,t} + v_{i,t} \quad (2)\end{aligned}$$

where $\nu_{i,t}$ is the independent and identically distributed random error N(0, σ_v^2). However, the second error term, $u_{i,t}$, is a non-negative random inefficiency (independent, but not identically distributed) following a truncated-normal distribution with truncation (at zero) of the N($m_{i,t}$, σ_u^2). The mean is defined as $m_{i,t} = z_{i,t}\delta$, where $z_{i,t}$ is a (1 x M) vector of explanatory variables linked to the technical inefficiency effects, while δ is a (M x 1) vector of unknown parameters to be measured in (2)[2].

As (2) requires the natural logarithmic transformation, we include an additional variable, the negative Z score (NZS), to account for those banks with negative Z scores (Bos

[2]Once the point estimates of $u_{i,t}$ (inefficiency) are obtained, estimates of technical (stability) efficiency are defined as Efficiency=exp(-u). A similar specification is used by Djalilov and Piesse (2019).

and Koetter (2011)). Specifically, the Z score is assigned a value of 1 when Z score<0; then, NZS equals 1 when Z score≥0 and equals the absolute value of the Z score when the latter is negative. Tabak et al. (2011), Gananis and Pasiouras (2013), Luo et al. (2016) and Djalilov and Piesse (2019) apply this approach to modeling banks with negative profit.

3.3. Measuring Corporate Social Responsibility

The prior studies exploring *CSR* have adopted mainly two approaches, such as (1) *CSR* ratings measured by the *CSR* rating agencies, or (2) the *CSR* content analysis. This study does not accept the first approach as the CSR ratings have limited coverage of the transition countries of Europe and the FSU. In addition, *CSR* ratings mainly rely on the information by the press and media, which may not always be reliable. Furthermore, Jizi et al. (2014) state that the content analyses of *CSR* (word or page counts) provide limited information on the quality and comprehensiveness of the *CSR* disclosure. Thus, neither of these approaches are suitable for this study as the quality of information in the transition countries of Europe and the FSU is relatively low.

This study, therefore, follows Jizi et al. (2014) to measure *CSR.* Consistent with the CSR literature, we focus on four categories, namely *Community involvement, Environment, Employees* as well as *Product and customer service quality* (Gray et al., 1995). In particular, *Community involvement* includes banks' community activities, such as contributions to charities, sponsoring health, sports and recreational projects. Moreover, *Environment* considers banks' environmental policies-concerns, recycling, energy saving and protection of natural resources. In addition, the category of *Employees* captures the information on employees' safety and health measures, trainings and benefits as well as welfare and equal opportunities. Finally, the category of *Product and customer service quality* considers the

information on the diversity and types of social products, investments on social responsibility activities, loyalty programmes, and customer feedback (Jizi et al. (2014)).

Each category is assessed from zero to three considering the quality and the comprehensiveness of disclosed information. One additional score is added if the content presents quantitative figures and one more score if the comparative analyses of figures are included. So, the scores for each category vary between zero and five, while *Total CSR* ranges between zero and twenty. We assess the content of bank annual reports as the most reliable source to develop the CSR (disclosure) variables (Perego and Kolk, 2012).

3.4. Control variables

Consistent with the literature, this study uses a number of variables to control for bank-, industry- and cross-country heterogeneity (Agoraki et al., 2011; Delis and Kouretas, 2011; Tabak et al., 2012). In particular, we include Capital ratio since banks tend to trade-off higher levels of equity capital for risky assets. As bank ownership may reflect the behaviour of bank management, we use three dummies, such as Foreign, State and Private, where each is associated with the majority of bank shareholders. We also consider Efficiency (non-interest expenses/total assets), Size (natural logarithm of total assets), Liquidity *(*gross loans/total deposits) and Diversification (non-interest income/pre-tax profit), and efficiency, scale, liquidity and diversification of banks may have different stability preferences. Furthermore, this study includes ROA, as profitability is important in contributing to the stability levels of banks (Wu and Shen, 2013).

In addition, we add three industry-specific variables, such as Competition (Boone indicator), Dynamism and Munificence. As the Boone indicator is inversely proportional to competition,

we reverse-coded the indicator (Boone1) to make it positively proportional to competition following Tabak et al. (2012). In this study, Dynamism is associated with the volatility and unpredictability of industries, while Munificence considers the presence of resources supporting the industry growth. Following Chen et al. (2017), we measure Dynamism and Munificence in two steps. In the first step, we regress the natural logarithm of the industry's (banking) total assets and an index variable of years (a time variable), where the latter is serving as an exogenous variable. In the second step, we antilog the standard error of the slope regression coefficient to generate a score for Dynamism. Similarly, we antilog the slope of the regression coefficient, comprising the growth rates of the industry total assets, to measure a score for Munificence.

Furthermore, this study also includes Domestic credit to the private sector and Capital requirements (the banking regulatory index) to control for differences between the cross-country financial sectors (Table 1). We constructed the latter following the bank stability literature (Agoraki et al., 2011; Anginer et al., 2014a; Delis and Kouretas, 2011). Specifically, the index of *Capital requirements* shows initial and overall capital stringency ranging between 0 and 8, where higher scores indicate more capital stringency[3].

Table 1. Description and Source of Data

Variables	Description	Source
A. Main variables of interest		
Stability-efficiency	We measure *Stability-efficiency* through SFA following Battese and Coelli (1995).	Authors' calculations
CSR	Following Jizi et al. (2014), we measure four CSR categories, such *Community involvement, Environment, Employees* as well as *Product and customer service quality*	Banks' annual reports
B. Control variables		
B1. Bank-specific control variables		
Foreign	Based on the major shareholders, we classify the ownership into three categories: (1) *Foreign* – a dummy takes 1 if the major shareholders are foreign family investors and/or foreign organizations, 0 otherwise; (2) *State* – a dummy takes 1 if the major shareholders are domestic states or public authorities, 0 otherwise; (3) *Private* – a dummy takes 1 if the major shareholders are domestic family investors, 0 otherwise.	Banks' annual reports and websites
State		
Private		
Size	Natural logarithm of total assets	*Bankscope*
Capital Ratio	Equity/Total Assets	
Return on Assets (ROA)	Pre-tax profit/Total assets	
Efficiency	Non-interest expenses / Total assets	
Diversification	Non-interest income /Pre-tax profit	

[3] Please see Djalilov and Piesse (2019) for more details.

Liquidity	Gross loans / Total deposit	
B2. Industry-specific control variables		
Capital requirements	Higher scores indicate higher capital stringency	World Bank's surveys on Bank Regulation and Supervision
Domestic credit to private sector	Domestic credit to private sector (% of GDP)	World Bank's World Development Indicators
Dynamism Munificence	Dynamism and Munificence are measured in two steps. In the first step, we regress the natural logarithm of industry's (banking) total assets and an index variable of years (a time variable). In the second step, we antilog the standard error of the slope regression coefficient to generate a score for Dynamism. Similarly, we antilog the slope of the regression coefficient, comprising the growth rates of the industry total assets, to measure a score for Munificence.	Authors' calculations
Boone1	As Boone is inversely proportional to competition (the more negative the Boone is, the more competitive the industry is), we reverse-coded the indicator to make it positively proportional to competition.	World Bank's Global Financial Development
B3. Institutions		
Economic freedom	The index of Economic freedom provides a comprehensive view of economic freedom in a country. The index ranges between 0 and 100, where higher scores indicate higher economic freedom.	The Heritage Foundation
Legal origin	Legal origin indicates the commercial code of each country.	La Porta et al. (1999).
EU membership	This is a dummy showing whether a country is an EU member over the research period.	
B4. Macroeconomic variables		
GDP growth	Annual percentage changes in GDP	World Bank's World Development Indicators
Inflation	Annual percentage changes in consumer prices	

As economic conditions have an effect on bank behaviour, we use GDP growth and Inflation to account for the macroeconomic environment. To further control the cross-country institutional heterogeneity, we include the commercial code of each country (Legal origin) sourcing it from La Porta et al. (1999). The legal origins of the countries in this sample reflect the French Legal origin (Armenia, Azerbaijan, Belarus, Bosnia, Georgia, Kazakhstan, Lithuania, Macedonia, Moldova, Romania, Serbia and Ukraine) or the German Legal origin (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Poland, Slovakia and Slovenia) echoing the approach in the studies of historical legacies. Finally, we also include a dummy to distinguish EU member transition countries from non-EU transition countries.[4] Following the studies on the EU impact, we do not include the control for the level of democracy (political freedom), as it demonstrates high correlation with the EU membership.

[4] A few studies have suggested to control for the level of democracy in the estimation of environmental outcomes, whether it is deforestation or the ratification of international environmental agreements (Libman and Obydenkova 2014b; Obydenkova and Salahodjaev 2017; Obydenkova et. al. 2016). While we are aware of the importance of democracy in environmental policies and implementation, we opt to control for the EU membership instead due to the nature of our analysis. Including both the EU membership and political freedom would result in multicollinearity of these two controls within post-Communist states. However, the importance of democracy for environmental outcomes should stay on the agenda and be addressed as the main focus within different studies.

3.5. Model specification and estimation

We explored our model by using system GMM (Arellano and Bover, 1995; Blundell and Bond, 1998) and dynamic panel quantile regression (Galvao, 2011), while considering the dynamic nature of bank risk and stability (Delis and Kouretas, 2011). This study follows Agoraki et al. (2011), and Männasoo and Mayes (2009) while determining weakly exogenous (or predetermined) and endogenous variables. As banks carefully assess their current performance when making future strategic decisions, we consider bank-specific variables as forward-looking. In particular, contemporary levels of bank performance, including risk and stability, can have an impact on their future levels. Therefore, this study considers bank-specific variables as weakly exogenous (or predetermined) following the literature (Djalilov and Piesse, 2019; Louzis et al., 2012).

Over the last three decades, the transition countries of Europe and the FSU have often experienced financial instability and turbulence while substantially reforming their political and economic infrastructure. Responding to the instability, the state regularly changed their regulation and policy in the same period. Thus, this study considers macroeconomic and regulation variables as endogenous following Agoraki et al. (2011) and Männasoo and Mayes (2009). Since system GMM uses the lags of instrumented variables as the only source of instruments (Roodman, 2009), we assess the validity of instruments by applying the Hansen-test. Thus, our model is specified as follows:

$$\text{Stability}_{i,j,t} = \delta\text{Stability}_{i,j,t-1} + b_1\text{CSR}_{i,j,t} + b_2\text{Controls} + \mu \qquad (3)$$

for bank *i*, in country *j* at time *t*. The coefficient δ ranges between 0 and 1 showing the speed of adjustment. **Stability** is the stability efficiency computed by using the stochastic frontier

analysis. **CSR** includes four different categories of CSR (*Community involvement, Environment, Employees* as well as *Product and customer service quality*) as well as *Total CSR*, while **Controls** considers the bank, institutional and macroeconomic control variables.

3.6. Summary statistics

Table 2 presents the descriptive statistics and correlations for the bank-specific variables. The standard deviations of Size, Liquidity and Diversification indicate that these variables significantly vary across the countries. Also Table 2 shows that Stability-efficiency (or stability) is positively correlated with Foreign and Private ownership as well as Diversification, while this association is negative with Size, State ownership and Efficiency. This implies that more diversified banks as well as banks with foreign and private ownership are more stability-efficient. The opposite is true for the larger banks and the banks with state ownership. All correlations are less than 40% excluding that between Foreign and Private ownership. Therefore, we include Private and State ownership (dropping Foreign) while estimating the regressions.

Table 2. Correlation

	Variables	Mean	St. Dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Stability-efficiency	0.445	0.162							
2.	Size	6.570	1.870	-0.037						
3.	Foreign	0.685	0.465	0.017	0.153					
4.	Private	0.247	0.431	0.042	-0.206	-0.845				
5.	State	0.068	0.252	-0.102	0.071	-0.398	-0.155			
6.	Liquidity	1.012	2.556	0.000	-0.074	-0.016	0.016	0.002		
7.	Diversification	4.311	55.424	0.016	0.015	0.019	-0.015	-0.009	-0.002	
8.	Efficiency	0.056	0.247	-0.161	-0.184	0.025	-0.019	-0.012	0.110	0.023

The table presents those bank-specific variables included in the models.

Finally, Table 3 presents the means of the country-environmental variables (for the period 2002-2014) used in the regression specifications. Specifically, the table includes Stability-efficiency (averaged at the country level), Dynamism, Economic freedom and Boone1. The average means of Stability are similar in EU and non-EU transition countries implying that banking industries have experienced similar levels of stability over the period 2002-2014.

However, the average means for Economic freedom and Boone1 in EU transition countries indicate higher levels of economic freedom and more competitive banking industries in these countries. However, the average means of Dynamism in non-EU transition countries are higher implying relatively more unpredictable and volatile banking industries in these countries.

Table 3. Country-environmental variables

	Stability	Dynamism	Economic freedom	Boone1*
EU				
Bulgaria	0.507	1.008	63.692	0.215
Croatia	0.512	1.012	57.355	0.100
Czech Republic	0.524	1.003	68.937	0.124
Estonia	0.412	1.017	75.555	0.066
Hungary	0.349	1.006	65.859	0.070
Latvia	0.393	1.007	66.753	0.720
Lithuania	0.374	1.022	71.145	-0.008
Poland	0.525	1.010	63.187	0.099
Romania	0.400	1.008	61.72	0.075
Slovakia	0.560	1.003	61.819	0.004
Slovenia	0.346	1.008	67.709	0.322
Average for EU	**0.446**	**1.009**	**65.794**	**0.162**
Non-EU				
Armenia	0.507	1.007	69.35	0.128
Azerbaijan	0.512	1.006	57.871	0.089
Belarus	0.388	1.017	47.59	0.48
Bosnia and Herzegovina	0.512	1.009	53.724	0.022
Georgia	0.405	1.028	68.674	-0.083
Kazakhstan	0.479	1.007	60.791	-0.261
Macedonia (FYROM)	0.483	1.007	63.695	0.067
Republic of Moldova	0.533	1.009	56.304	0.066
Serbia	0.389	1.018	57.669	0.389
Ukraine	0.337	1.015	47.653	0.071
Average for non-EU	**0.455**	**1.012**	**58.332**	**0.097**

*We reverse-coded the Boone indicator (Boone1) so the higher values of Boone1 indicate higher degrees of competition.

4. Estimation and Results

4.1. Results

We followed Klomp and De Haan (2012) while selecting which control variables to include in our models. Specifically, we started estimating (3) including only control variables without

the main variables of interest (*Community involvement*, *Environment*, *Employees*, *Product and customer service quality* as well as *Total CSR*). Next, we re-estimated (3) after removing the least significant variable. Thus, we excluded the least significant control variables from (3) by repeating this procedure. In particular, we dropped Capital ratio, Diversification, Efficiency, Domestic credit to private sector, Munificence and the EU membership. We first present the results from the system GMM (Table 4) and then those from the dynamic quantile regressions (Tables 5-6).

4.1.1. System GMM

The coefficients presented in Table 4 are stable, and the results for the Hansen test confirm the absence of over-identifying restrictions. The presence of the first-order autocorrelation does not indicate that the estimates are inconsistent, but the opposite would be true if second-order autocorrelation was significant (Arellano and Bond, 1991). The results additionally show the absence of second-order autocorrelation.

Table 4 initially presents the results for the control variables (model 1), and then those for the main variables that were individually added in models 2-5, while model 6 includes all of them. The coefficients of the lagged dependent variable show that stability persists; however, it will eventually return to its normal level. The results particularly imply that the speed of adjustment is relatively fast as the values of the lagged dependent variable range between 0.54 and 0.60.

Table 4. Stability effects of CSR (system GMM)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
$Stability_{t-1}$	0.569***	0.555***	0.557***	0.537***	0.600***	0.546***
	(0.151)	(0.143)	(0.147)	(0.151)	(0.139)	(0.136)
Size	-0.038***	-0.045***	-0.041***	-0.043***	-0.038***	-0.044***
	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)
Private	-0.125*	-0.130**	-0.134**	-0.137**	-0.123*	-0.113*
	(0.066)	(0.062)	(0.063)	(0.065)	(0.064)	(0.058)
State	-0.140	-0.100	-0.125	-0.092	-0.108	-0.056
	(0.107)	(0.097)	(0.103)	(0.101)	(0.099)	(0.084)

Liquidity	-0.004	-0.005	-0.004	-0.004	-0.004	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ROA	0.694**	0.830**	0.812**	0.824**	0.841**	0.852***
	(0.349)	(0.323)	(0.330)	(0.352)	(0.327)	(0.300)
GDP growth	-0.009**	-0.010***	-0.009***	-0.009***	-0.010***	-0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Inflation	-0.002	-0.002*	-0.002	-0.002*	-0.002	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dynamism	-3.511**	-3.836**	-3.645**	-3.937**	-3.267**	-3.943***
	(1.554)	(1.494)	(1.507)	(1.591)	(1.421)	(1.432)
Community		0.017**				0.017*
		(0.007)				(0.009)
Environment			0.018*			-0.017
			(0.009)			(0.015)
Employees				0.017**		0.015
				(0.009)		(0.016)
Product and customer					0.017**	0.004
					(0.008)	(0.013)
Number of instruments	53	58	58	58	58	73
Hansen t-test (p-value)	0.464	0.672	0.468	0.608	0.538	0.787
AB test AR(1) (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
AB test AR(2) (p-value)	0.940	0.862	0.886	0.938	0.932	0.958
Observations	1,863	1,863	1,863	1,863	1,863	1,863

* Significant at the 0.10 level, ** significant at 0.05 level, *** significant at the 0.01 level. Windmeijer-corrected standard errors are shown in parentheses. The constant term and year dummies (2003-2014) are included, but not reported. Model 1 comprises only control variables and the main variables of interest are then added individually in models 2-4. The bank-specific variables are treated as weakly exogenous (pre-determined), while the macro variables are endogenous.

Turning to the control variables, the results show that Size, Private, GDP growth and Dynamism are negatively associated with the stability, while the opposite is true for ROA. In particular, a 1% increase in total assets lowers bank stability by about 0.038-0.045 (p-values range between 0.001 and 0.010). Furthermore, the change to Private ownership decreases the stability by approximately 0.113-0.137 (p-values are between 0.034 to 0.057). Surprisingly, the results also show that a one unit increase in GDP growth lowers the stability by 0.009-0.010 (p-values vary between 0.004 and 0.011). However, the results in Table 4 additionally show that a one unit increase in ROA improves the stability by approximately 0.694-0.852 unit.

All four categories of CSR appeared statistically significant with positive signs in models 2-5 (Table 4). However, only the results for *Community* appeared to be stable and statistically significant with a positive sign in model 6. Thus, a one unit increase in *Community* leads to a 0.017 unit increase in the stability (model 6, Table 4). As the average stability is 0.457 (Table 2), this corresponds to an increase in the stability by 3.720%.

4.1.2. Quantile

Next, we discuss the results from the dynamic panel quantile regressions. In particular, we analyze the results for lower (0.10 and 0.10), medium (0.50) and higher (0.70 and 0.90) quantiles. Specifically, Table 5 shows the results for Community and Environment, while Table 6 presents the results for Employees and Product and customer service categories of CSR.

The results in Tables 5-6 indicate that the categories of CSR heterogeneously have an effect on the stability. In particular, *Community*, *Environment* and *Employees* increase the stability at 0.10 and 0.30 quantiles, while *Product and customer service* positively has an effect on stability only at the 0.10 quantile. The results specifically imply that a one unit increase in *Community*, *Environment*, *Employees* and *Product and customer service* improves the 0.10 conditional quantile of the stability by 0.011 (p-value=0.044), 0.013 (p-value=0.006), 0.011 (p-value=0.000) and 0.014 (p-value=0.002), respectively. However, Community, Environment and Product and customer service appeared to be significant with a negative sign at the highest quantile (0.90). That is, a one unit increase in *Community*, *Environment* and *Product and customer service* lowers the 0.90 conditional quantile of the stability by 0.003 (p-value=0.068), 0.004 (p-value=0.091) and 0.005 (p-value=0.021), respectively.

Table 5. Stability effects of Community and Environment (quantile)

	Community					Environment				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	0.10	0.30	0.50	0.70	0.90	0.10	0.30	0.50	0.70	0.90
$Stability_{t-2}$	0.954***	0.939***	0.927***	0.870***	0.738***	0.949***	0.946***	0.926***	0.868***	0.741***
	(0.062)	(0.023)	(0.018)	(0.022)	(0.023)	(0.063)	(0.022)	(0.018)	(0.021)	(0.023)
$Size_{t-1}$	0.001	0.001	-0.000	-0.002	-0.005***	0.004	0.001	-0.001	-0.002	-0.006***
	(0.006)	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.002)	(0.001)	(0.002)	(0.002)
$Private_{t-1}$	0.002	-0.009	-0.011*	-0.012**	-0.012*	0.008	-0.010	-0.011*	-0.012**	-0.013*
	(0.015)	(0.007)	(0.006)	(0.006)	(0.007)	(0.016)	(0.007)	(0.006)	(0.006)	(0.007)
$State_{t-1}$	-0.060*	-0.009	-0.002	-0.000	0.030	-0.056**	-0.009	-0.003	0.002	0.030
	(0.033)	(0.012)	(0.009)	(0.008)	(0.027)	(0.024)	(0.012)	(0.010)	(0.008)	(0.026)
$Liquidity_{t-1}$	0.001	-0.001	0.001*	0.000	-0.000	0.000	-0.001	0.001*	0.000	-0.000
	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.574	0.392***	0.265	0.126	0.027	0.447	0.382***	0.257	0.099	0.020
	(0.675)	(0.128)	(0.162)	(0.147)	(0.126)	(0.344)	(0.135)	(0.159)	(0.154)	(0.125)
$GDP\ growth_{t-2}$	-0.003*	-0.002*	-0.002***	-0.001**	-0.002***	-0.003	-0.001*	-0.002***	-0.001**	-0.002***
	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)
$Inflation_{t-2}$	-0.001	-0.000	-0.000	-0.000**	-0.000	-0.001*	-0.000	-0.000	-0.001**	-0.000
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
$Dynamism_t$	-2.542**	-0.510	-0.127	0.338	0.041	-2.752***	-0.394	-0.276	0.175	-0.072
	(1.225)	(0.653)	(0.415)	(0.346)	(0.481)	(0.985)	(0.662)	(0.396)	(0.366)	(0.467)
Communityt-1	0.011**	0.004**	-0.001	-0.002	-0.003*					
	(0.005)	(0.002)	(0.002)	(0.002)	(0.001)					
$Environment_{t-1}$						0.013***	0.007***	-0.000	-0.001	-0.004*
						(0.005)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569
R-squared	0.722	0.740	0.741	0.739	0.727	0.721	0.741	0.741	0.739	0.727
Parente-Santos Silva test (p-value)	0.003	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
Machado-Santos Silva test (p-value)			0.000					0.000		

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6. Stability effects of Employees and Product and customer service (quantile)

	Employees					Product and customer service				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Variables	0.10	0.30	0.50	0.70	0.90	0.10	0.30	0.50	0.70	0.90
$Stability_{t-2}$	0.962***	0.939***	0.926***	0.869***	0.738***	0.956***	0.945***	0.926***	0.864***	0.740***
	(0.051)	(0.022)	(0.017)	(0.021)	(0.023)	(0.054)	(0.021)	(0.017)	(0.020)	(0.023)
$Size_{t-1}$	0.006	0.001	-0.001	-0.002	-0.006***	0.005	0.001	-0.000	-0.002	-0.005***
	(0.004)	(0.002)	(0.001)	(0.002)	(0.001)	(0.004)	(0.002)	(0.001)	(0.001)	(0.001)
$Private_{t-1}$	0.005	-0.011*	-0.011*	-0.011*	-0.013*	0.003	-0.010	-0.011*	-0.012**	-0.011
	(0.012)	(0.006)	(0.006)	(0.006)	(0.007)	(0.016)	(0.007)	(0.006)	(0.006)	(0.007)
$State_{t-1}$	-0.063**	-0.011	-0.002	0.002	0.035	-0.061***	-0.012	-0.002	0.002	0.036*
	(0.031)	(0.011)	(0.009)	(0.008)	(0.022)	(0.023)	(0.013)	(0.009)	(0.008)	(0.022)
$Liquidity_{t-1}$	-0.000	-0.001	0.001*	0.000	-0.000	0.000	-0.001	0.001*	0.000	-0.000
	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.431	0.389***	0.257	0.093	0.019	0.388	0.385***	0.255	0.115	0.029
	(0.345)	(0.132)	(0.160)	(0.154)	(0.121)	(0.322)	(0.133)	(0.164)	(0.149)	(0.124)
GDP $growth_{t-2}$	-0.003**	-0.001**	-0.002***	-0.001**	-0.002***	-0.003*	-0.001*	-0.002***	-0.001**	-0.002***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
$Inflation_{t-2}$	-0.001*	-0.000	-0.000	-0.001**	-0.000	-0.001*	-0.000	-0.000	-0.001**	-0.000
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
$Dynamism_t$	-2.497***	-0.481	-0.274	0.182	0.020	-2.771***	-0.495	-0.262	0.138	-0.006
	(0.871)	(0.670)	(0.401)	(0.370)	(0.437)	(0.873)	(0.624)	(0.397)	(0.366)	(0.436)
$Employees_{t-1}$	0.011***	0.005**	-0.000	-0.001	-0.001					
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)					
Product and $customer_{t-1}$						0.014***	0.004	-0.001	-0.002	-0.005**
						(0.005)	(0.003)	(0.003)	(0.002)	(0.002)
Observations	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569
R-squared	0.720	0.741	0.741	0.739	0.726	0.722	0.740	0.741	0.739	0.726
Parente-Santos Silva test (p-value)	0.001	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000
Machado-Santos Silva test (p-value)			0.000					0.000		

These results imply that the banks with the lower stability levels significantly benefit from engaging in all four categories of the CSR ultimately leading to the stability improvements. However, as far as the highly stable banks (0.90) are concerned, the costs of CSR (*Community*, *Environment* and *Product and customer service*), perhaps, exceed their benefits.

4.2. Additional analysis and robustness tests

In this section, we present the results of our alternative specifications for system GMM (Table 7) and dynamic panel quantile regressions (Table 8). In the alternative specifications for system GMM, we added Legal origin (models 1-2, Table 7), Capital requirements (model 2, Table 7), Boone1 (model 3) variables, and replaced all CSR categories with Total CSR (model 3, Table 7). However, we replaced all CSR categories with Total CSR only in the alternative specifications for dynamic panel quantile regressions (Table 8).

In system GMM, the results for all control variables appear to be similar to those presented in Table 4. However, as expected, it is only *Community* that enters models 1-2 as statistically significant; therefore, implying that it has positive effects on the stability. Similarly, Total CSR appears to be improving the stability too. Turning to the dynamic panel quantile analyses, our results for the control variables are similar to those presented in Tables 5-6. Furthermore, Total CSR enters the regressions as statistically significant with a positive sign at quantiles 0.10 and 0.30, while the opposite is true for quantile 0.90. This particularly implies that a one unit increase in Total CSR improves a 0.30 conditional quantile of the stability by 0.002 (p-value=0.001), but this lowers a 0.90 conditional quantile of the stability by 0.001(p-value=0.072).

Table 7. Robustness analysis (system GMM)

Variables	(1)	(2)	(3)
$Stability_{t-1}$	0.560***	0.541***	0.515***
	(0.133)	(0.133)	(0.155)
Size	-0.044***	-0.045***	-0.035***
	(0.013)	(0.012)	(0.013)
Private	-0.104*	-0.099*	-0.123**
	(0.057)	(0.058)	(0.059)
State	-0.072	-0.058	-0.061
	(0.087)	(0.086)	(0.104)
Liquidity	-0.004	-0.004	-0.004
	(0.003)	(0.002)	(0.003)
ROA	0.828***	0.838***	0.788**
	(0.303)	(0.283)	(0.328)
GDP growth	-0.009***	-0.009***	-0.006*
	(0.003)	(0.003)	(0.003)
Inflation	-0.002*	-0.002*	-0.002**
	(0.001)	(0.001)	(0.001)
Dynamism	-3.910***	-4.020***	-3.710**
	(1.425)	(1.472)	(1.465)
Legal origin (German)	0.019	0.017	
	(0.013)	(0.014)	
Capital requirements		0.004	
		(0.006)	
Boone1			-0.017
			(0.063)
Community	0.016*	0.015*	
	(0.009)	(0.008)	
Environment	-0.016	-0.014	
	(0.015)	(0.016)	
Employees	0.015	0.017	
	(0.017)	(0.017)	
Product and customer	0.003	0.001	
	(0.013)	(0.015)	
Total CSR			0.005*
			(0.003)
Number of instruments	74	79	63
Hansen t-test (p-value)	0.759	0.773	0.556
AB test AR(1) (p-value)	0.000	0.000	0.000
AB test AR(2) (p-value)	0.988	0.959	0.812
Observations	1,863	1,863	1,810

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table-8. Robustness analysis (quantile)

	(1)	(2)	(3)	(4)	(5)
Variables	0.10	0.30	0.50	0.70	0.90
$Stability_{t-2}$	0.952***	0.938***	0.926***	0.870***	0.742***
	(0.058)	(0.022)	(0.018)	(0.021)	(0.024)
$Size_{t-1}$	0.002	0.001	-0.000	-0.002	-0.005***
	(0.005)	(0.002)	(0.001)	(0.002)	(0.001)
$Private_{t-1}$	0.006	-0.010	-0.011*	-0.012**	-0.012
	(0.014)	(0.007)	(0.006)	(0.006)	(0.008)
$State_{t-1}$	-0.059**	-0.008	-0.002	0.001	0.030
	(0.025)	(0.012)	(0.008)	(0.008)	(0.026)
$Liquidity_{t-1}$	0.000	-0.001	0.001*	0.000	-0.000
	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.461	0.391***	0.262	0.120	0.027
	(0.375)	(0.119)	(0.164)	(0.153)	(0.126)
GDP $growth_{t-2}$	-0.003*	-0.002**	-0.002***	-0.001**	-0.002***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
$Inflation_{t-2}$	-0.001	-0.000	-0.000	-0.000**	-0.000
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
$Dynamism_t$	-2.958***	-0.614	-0.239	0.296	0.165
	(0.798)	(0.623)	(0.404)	(0.360)	(0.508)
Total CSR_{t-1}	0.004***	0.002***	-0.000	-0.001	-0.001*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Observations	1,569	1,569	1,569	1,569	1,569

R-squared	0.721	0.740	0.741	0.739	0.727
Parente-Santos Silva test (p-value)	0.001	0.000	0.000	0.000	0.000
Machado-Santos Silva test (p-value)			0.000		

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

There is a significant body of research that is investigating bank stability, but this work mainly focuses on developed and some developing countries. Over the last three decades, the transition countries of Central and Eastern Europe and the former Soviet Union have undergone various political, economic, social and institutional reforms which have fed directly into their financial sectors, among other issues (Beissinger and Kotkin eds. 2014; Barria and Roper 2012; Obydenkova and Libman 2019; Pop-Eleches and Tucker 2017) . Considering their unique political-economic conditions and their significant impact on the world's economy, it is thus vitally important to explore how these reforms are transmitted to bank stability both from the theoretical and empirical perspectives. This study took a first attempt at this problem by focusing in on the effects of bank social and environmental commitments on bank stability, utilizing a sample of transition countries for the period 2002-2014. Specifically, we considered bank social and environmental commitments, such as *Community involvement*, *Environment*, *Employees*, *Product and customer service quality* as well as *Total CSR*, combining all previous four categories.

Our econometric estimation showed *Community* to be the only CSR activity that is improving bank stability in all models, with *Total CSR* also appearing to be increasing bank stability in a majority of models as well. Turning to the dynamic panel quantile analyses, CSR categories appeared to be heterogeneously impacting on bank stability, with *Community*, *Environment* and *Employees* increasing stability at 0.10 and 0.30 quantiles, while *Product and customer service* positively increase stability only at a 0.10 quantile.

These results further our knowledge of this area both theoretically and empirically. Theoretically, this research shows that not all CSR categories equally improve performance, that is, specifically, bank stability. This study also indicates that the stability effects of CSR are not homogenous. We also believe that the results are important for policymakers. Firstly, they need to craft the environment, especially for those with lower levels of stability, to engage in CSR activities to improve their stability. Secondly, policymakers should conduct a policy which develops institutions and markets which reward banks for their social and environmental activities. It is essential for policymakers to consider local conditions while implementing this policy.

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