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The Impact of Capital on Lending in Economic Downturns and Investor Protection – the Case of Large EU Banks

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Abstract

This paper attempts to find out whether better quality of investor protection matters for the effect of capital ratio on loan growth of large EU banks in 1996-2011. We focus on several measures of the quality of investor protection with a proven track record in the banking literature, i.e.: anti-self-dealing index, ex-ante-control and ex-post-control of anti-self-dealing indices, and creditor protection rights index. Our results show that better investor protection decreases the procyclical impact of capital on lending. This effect is statistically significant for the ex-post-control index. This is consistent with the view that better shareholders rights reduces bank risk-taking, in particular during economic booms, which results in weakened sensitivity of bank lending to capital ratios in economic downturns. This effect holds for both unconsolidated and consolidated data and is robust to sensitivity checks.

Keywords: capital ratio, lending, investor protection, creditor protection, large banks

JEL Classification: E32, G21, G28, G32

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1 Introduction

The link between lending and capital ratios in economic downturns is substantially heterogeneous across different types of banks (Beatty and Liao, 2011 and Carlson et al., 2013; United Kingdom by Mora and Logan, 2011; France by Labonne and Lame, 2014; and US by Kim and Sohn, 2017) as well as across EU countries (Olszak et al., 2015). It is particularly present among European Union (EU) member states in a sample of large banks. This heterogeneity in the EU exists despite the fact that these banks are obliged to conduct their activities in a way which conforms to minimum capital requirements (Basel capital adequacy standards, Basel II and currently Basel III) designed in directives. Those directives aim to create a level playing field in the EU single market, by obliging banks to keep capital adequacy ratios at stable levels. Under the Pillar II of the Basel II and III capital standards, banks are also expected to conduct their risk management following robust corporate governance structures. Despite the common Basel capital standards – and potentially standardized corporate governance structures, the EU countries are diversified in terms of the quality of minority shareholders protection (Djankov et al., 2008) and the quality of creditor rights protection (Djankov et al., 2007).

Previous literature analyzing the nexus between institutions and corporate decisions, which started with research of La Porta et al. (1998, 1999, 2002), shows that investor protection is important determinant of corporate risk-taking (John et al., 2008, Leaven and Levine, 2009, Houston et al., 2010, Acharya et al, 2011, Cole and Turk-Ariss, 2013), capital ratios of large banking organizations (Brewer et al., 2008) and bank capital buffers (Fonseca and González, 2010). The bank capital channel literature stresses the importance of capital ratios for lending extension of banks (Van den Heuvel, 2009; Disyatat, 2011 and Borio and Zhu, 2012). Most recently, the macroprudential literature suggests that banks tend to take excessive credit risk during economic booms, and keep insufficient capital buffers necessary to absorb this risk, making their lending extension vulnerable to loan losses which tend to increase in economic downturns (De Nicoló et al, 2012, Osiński et al., 2013, ESRB, 2014, Galati and Moessner, 2014, Claessens, 2014). Thus the risk-taking of banks, especially during boom periods, affects bank lending in the following busts, because of decreased capital buffers. And the risk-taking is affected by many factors, e.g. monetary policy, risk measurement biases (Borio and Zhu, 2012) and investor protection (John et al., 2008, Cole and Turk-Ariss, 2013).

Our research is related to those three broad streams of literature (institutions literature, bank capital channel literature and macroprudential literature) and aims to bridge a gap between them. In this paper we investigate the effect of institutions (investor protection) on the link between lending and capital ratios in economic downturns. We aim to address this problem empirically by analyzing the EU large banks sample in the period of 1996-2011. To this end we apply the two step robust GMM Blundell and Bond (1998) approach. We conduct our analysis separately for unconsolidated and consolidated data, due to the fact that consolidation is a proxy

for size and diversity of the risks taken by a bank. Consolidated financial statement of a bank covers information on both the banking business activity and other financial sectors activities (investment banking, insurance and real-estate market). To assess the impact of institutions on the link between lending and capital in economic downturns we compile shareholders and creditor rights protection variables, respectively, from Djankov et al. (2008) and Djankov et al. (2007). We test the sensitivity of our results to the choice of the number of instruments, due to the fact that the estimation results in the GMM Blundell and Bond (1998) may be biased if the number is too small or too large (Roodman, 2009).

This paper extends the previous research by including the quality of investor protection as a characteristics that may affect the link between lending and capital in economic downturns, through its impact on risk-taking incentives of banks, the levels of capital private banks maintain in relation to their risky assets, as well as capital buffers of banks. Previous studies on the link between lending and capital have tended to focus on individual countries (United States by Beatty and Liao, 2011 and Carlson et al., 2013; United Kingdom by Mora and Logan, 2011; and France by Labonne and Lame, 2014) and did not consider investor protection as determinant of the link between lending and capital. Although one paper focused on the link between lending and capital across countries (Gambacorta and Marqués-Ibáñez, 2011), it took into account neither the quality of shareholders protection nor the powers of creditors. Our choice of EU large banks is motivated by two reasons. On the hand, in the period under the study the process of harmonization of capital adequacy standards aimed at smoothing functioning of a single market in Europe was gaining momentum, which should potentially result in the similarity of the link between lending and capital. On the other hand, however, several significant differences across those countries were present. In particular, Djankov et al. (2007, 2008) show that all EU countries differed with respect to the quality of investor protection and creditor rights.

The results of our study may have implications for the design of government policies in the area of corporate governance. In particular, if we find that better institutional environment results in the possibility of reduced risk-taking and therefore have the potential to limit the procyclical impact of capital on loan growth, thane would lend empirical support to more restrictive regulations protecting minority investors and better protection of creditor rights. Our study should also inform about the plausible economic effects of post-crisis adjustments in capital standards included in Basel III, and in the EU CRD IV and CRR provisions – in particular those standards which focus on corporate governance.

We obtain two main results that reinforce the importance of institutions in shaping the procyclicality of bank capital. First, banks reporting both unconsolidated and consolidated data exhibit increased importance of bank capital for lending extension in economic upturns in countries in which minority investors rights are better protected, which is consistent with weakened risk-taking by banks during booms. Second, better investor protection proxied with expost-control of anti-self-dealing is related with

weakened impact of capital on lending during economic busts. Therefore we lend empirical support to the view that investor protection reduces the procyclical impact of bank capital in both unconsolidated and consolidated data.
The rest of the paper is organized as follows. Section 2 presents theoretical and empirical background of our research and develops our hypotheses. In Section 3 we describe our sample and research design. In the next section we discuss results and relate them to our hypotheses. In the last section (Section 6) we briefly conclude our work and give some insights on policy implications of the study.

2 A brief review of the relevant literature and hypotheses development

Our study is related to three broad streams of literature, of which two stress the importance of bank capital for lending, and the third relates investor protection and creditor protection to financial decisions of corporations (e.g. investments, borrowing, and in particular risk-taking). The first stream focuses on the role of bank capital in bank lending activity (the so-called capital effects literature, see Borio and Zhu, 2012, Jackson et al., 1999, Van den Heuvel, 2011, Beatty and Liao, 2011, Kim and Sohn, 2017). This literature stresses the importance of capital ratios for the capacity of the bank to grant credit.
The other stream, is the macroprudential policy literature which focuses on two dimensions of systemic risk – procyclicality and interconnectedness enhanced through the too-big-to-fail institutions. Procyclicality (and the related phenomenon of financial cycle) denotes self-reinforcing interactions between perceptions of value and risk, attitudes towards risk and financing constraints, translating into booms which cause the following busts (Borio, 2013, p.183). As Borio stresses these interactions have the potential to amplify economic fluctuations and may lead to financial distress (or frictions) and economic dislocations. Considering this, procyclicality of the banking sector may be defined as gradual changes in risk perceptions and risk-taking decisions of banks (and also non-banks, e.g. bank borrowers), which follow the pattern of increasing risk taking during booms and excessive aversion to risk during busts. Under this pattern, during booms banks undertake too many risky investments (e.g. they extend loans at financing conditions which are favorable for borrowers) and create insufficient capital buffers needed to cover losses when these investments will be damaged, i.e. in economic downturns. Facing excessive loan losses in economic downturns, banks are not willing to grant credit to nonfinancial borrowers. Such financing frictions result in reduced economic growth. The macroprudential literature thus highlights the importance of bank capital for bank lending, and suggests that the role of capital as a loan supply constraint in economic downturns may be reduced if banks have sufficient capital buffers (Osiński et al., 2013, ESRB, 2014, Cerutti et al., 2015). This literature also stresses that excessive risk-taking in booms is

not only specific to the banking sector, but also to non-financial borrowers (CGFS, 2012, ESRB, 2014), whose demand for external financing and therefore leverage is significantly increasing (Borio and Zhu, 2012).

The lending activity of banks during the business cycle is affected by both demand side and supply side factors. However, their relative significance for the actual lending is diversified, and differs between booms and busts. During economic booms banks envisage risk as low as negligible, have strong capital ratios and thus supply factors usually do not matter for the credit extension activity. What matters more is such periods is the demand for bank lending. The demand for lending (and thus for external financing) is related to risk-taking and corporate financial decisions of bank borrowers and is affected by the investor protection (John et al., 2008; Francis et al., 2007). Banks respond to this increased demand by extending more loans, whose lending terms are however relaxed (see Rajan, 1994), which creates the risk of increased fragility of banks in the subsequent downturn due to poor quality of lending portfolio. The opposite is true in busts, when supply side factors (such as weakened capital position of banks) influence banks' capacity to extend lending. These supply constraints are however a side effect of credit granting decisions which increased the number of poor quality borrowers and the volume of high credit risk loans.

Current empirical research linked to macroprudential policy stresses the role of corporate governance for bank risk-taking (IMF, 2014). Changing patterns in risk-taking over the business (and financial) cycle are also important for the effect of bank capital on lending, in particular in large banks (Beatty and Liao, 2011, Carlson et al., 2013, Borio and Zhu, 2012, Borio, 2013). And the law-and-finance literature lends support to the view that corporate governance – proxied by the rules of investor protection - affects risk-taking and debt contracting of non-financial corporations (Booth et al., 2001, Claessens et al., 2001, Giannetti, 2003, John et al., 2008, Francis et al., 2007, and Fan et al. 2012) and of banks (Cole and Turk-Ariss, 2013). There are two types of institutions which may matter for the sensitivity of bank lending to capital in economic downturns: shareholders' and creditors' rights protection.

Shareholders rights protection and its relevance in setting good corporate governance practices has received a great deal of attention in the literature (see Turk, 2015 for a review). Francis et al. (2007) using cross-country firm-level indicators of corporate governance across 14 emerging markets, report that better corporate governance matters for the supply of banks loans and for bank loan contracting terms (see also Francis et al., 2012). This is also suggested by La Porta et al. (2006) who state that when shareholders rights protection is strong and the risk of expropriation is diminished, shareholders become more confident that managers will exercise due diligence in meeting the firm's debt obligations, ant the firms access to external finance is increased.

Shareholders rights protection might either increase or decrease firm risk- taking (see John et al., 2008, for a theoretical background). On the one hand, John el al. (2008) suggest that better investor protection could lead corporations to undertake riskier but

value enhancing investments. Insiders may avoid risky investments to protect private benefits extracted from the corporation. Better investor protection mitigates the taking of private benefits and consequently the degree of risk-avoidance. On the other hand, some arguments suggest a negative relationship between the degree of investor protection and the riskiness of corporate choices. One such argument posits that as investor protection improves, there is less fear of expropriation by managers and thus the benefits of having dominant shareholders serve as monitors of managerial behavior decrease (Burkart et al. 2003). Consequently, dominant shareholders become less prevalent across firms and their cash flow rights in firms also decline. Such reduction in dominant shareholding allows managers greater discretion to reduce risk-taking, potentially giving rise to a negative relationship between investor protection and corporate risk-taking (John et al., 2008, p. 1684). John et al. (2008) test these predictions using a cross-country panel and a US-only sample and find that corporate risk-taking and firm growth rates are positively related to the quality of investor protection.
Therefore, we formalize two hypotheses related to the role of shareholder rights protection for the link between lending and capital:

> *Hypothesis 1: All else equal, better shareholders rights protection induces bank borrowers to take more loans and to engage in more risk-taking, in particular during economic booms, which results in greater sensitivity of bank lending to capital ratios in economic downturns.*

As there are also predictions that better investor protection decreases corporate risk taking, we hypothesize that:

> *Hypothesis 2: All else equal, better shareholders rights protection induces bank borrowers to engage in less risk-taking, in particular during economic booms, which results in weakened impact of bank capital on lending in economic downturns.*

The weakened impact of banks capital on lending may also be attributed to the role of better shareholders protection in improved risk management of credit portfolio due to greater transparency. Demirgüç-Kunt and Detragiache (2002) have shown that a sound legal system with proper enforcement of rules reduces the adverse effects of deposit insurance on bank risk-taking. This lower risk-taking in countries with strong institutional environments would also result in higher average capital buffers and should be associated with weakened role of capital ratios. For example, Brewer et al. (2008) suggest and lent empirical support to hypothesis that greater external governance leads to higher capital ratios as risks would be both recognized and managed more effectively. Therefore, we formalize our next hypothesis as follows:

> *Hypothesis 3: All else equal, better shareholders protection reduces risk-taking incentives of large banks and results in better risk management of credit portfolio*

(and other investments of banks), which results in weakened impact of bank capital on lending.

Economic theory suggests that power of creditors may be a determinant of how much credit a financial system (or the banking sector) would extend to firms and individuals. When lenders can more easily get repayment, grab collateral or gain control of the borrower, they are more willing to extend credit (Djankov et al., 2007). Formal theoretical background for the role of creditor powers in credit extension has been designed by Townsend (1979), Aghion and Bolton (1992), and Hart and Moore (1994, 1998). Recently, Boyd and Hakenes (2013) have presented a theory which relates the power of creditors with risk taking incentives. Their model suggests that stronger creditor rights are associated with greater risk-taking.

In empirical setting, Djankov et al. (2007), using a cross-section of countries as well as time series in changes in creditor rights, find that strong creditor rights encourage aggregate lending, and that the relationship between creditor protection and private credit (measured as private credit to gross domestic product) is statistically and economically significant. Several studies report firm-level evidence supporting a positive link between strong creditor rights and corporate reliance on debt financing. Giannetti (2003) shows that access to lending is easier in countries with good creditor protection. Qian and Strahan (2007) examine how creditor rights affect the design of price and non-price terms of bank loans in almost 60 countries. They find that loans made to borrowers in countries where creditors can seize collateral (i.e. with better creditor rights protection) in case of default are more likely to be secured, have longer maturity, and have lower interest rates. Haselmann et al. (2010) report that a strengthening of creditor rights through the creation of a collateral registry in Central and Eastern European countries also improved firm lending.

A few studies focus on the nexus between creditor rights protection and corporate risk-taking. Houston et al. (2010), using a sample of nearly 2,400 banks in 69 countries, find that stronger creditor rights tend to promote greater bank risk taking. Consistent with this finding, they also show that stronger creditor rights increase the likelihood of financial crisis. On the plus side, we find that stronger creditor rights are associated with higher growth. Acharya et al. (2011) study the effect of creditor rights in bankruptcy on corporate risk-taking. In particular, they are interested in what effect does the strength of creditor rights have on firms' investment decisions. They find that stronger creditor rights induce greater propensity of firms to engage in diversifying acquisitions, which result in poorer operating and stock-market abnormal performance. Additionally, in countries with strong creditor rights, firms also have lower cash flow risk and lower leverage, and there is greater propensity of firms with low-recovery assets to acquire targets with high-recovery assets. Thus their results question the value of strong creditor rights as they have an adverse effect on firms by inhibiting management from undertaking risky investments. In contrast to effects of creditor rights on corporate risk-taking, Cole and Turk-Ariss (2013) provide evidence that banking firms take on more operating risk (in the form of credit risk) when their

interests are better protected by the judiciary.
In summary, we provide two channels through which creditor rights protection may affect the link between lending and capital in economic downturns. The first is the credit extension channel, in which average bank lending is greater in countries with better creditor rights protection. The other is the risk taking channel, where banks take more risk if creditor rights are better protected. This increased credit extension and risk-taking is usually more prevalent during economic boom, which in the subsequent bust results in strong supply side pressures on bank lending, related to weakened capital ratios of banks. Therefore we hypothesize:

> *Hypothesis 4: All else equal, better creditor protection increases risk-taking incentives of large banks and results in more credit extension in economic booms, which makes the relationship between lending and capital stronger in economic downturns.*

3 Data and research methodology

3.1 Data

We perform our analysis using the panel data set of individual banks' balance sheet items and profit and loss accounts from 23 (21) EU countries for consolidated (unconsolidated) data and country-specific macroeconomic indicators for these countries, over a period from 1996 to 2011. We choose to limit our study to 2011 only, because the investor protection indices have been developed in the mid 2000's, and thus we cannot extrapolate their economic role for years 2012-2014. In particular, the anti-self-dealing indices cannot be reconstructed without access to specific information obtained by Schleifer et al. (2008) from Lex Mundi law firms. Our main data source for the bank balance sheet and profit and loss account data is the Bankscope database. This database standardizes financial statements data to adjust for variations in accounting and auditing rules and thus they are (at least reasonably) comparable. The macroeconomic data were accessed from the EUROSTAT and the IMF. To define large banks in each country we identify the 30% of banks with the largest assets. All financial statements are annual data. To remove the effects of outliers (resulting from misreporting and other data problem), we discard bank balance sheet and profit and loss account ratios with implausible values (e.g. capital ratios taking negative values or values higher than 49%). We end up with some 657 banks (6058 observations) in the case of unconsolidated data and 144 banks (2091 observations) in the case of consolidated financial data (the banks are consolidated at the country level).
We look at both unconsolidated and consolidated data in a separate analysis to address the problem of potential difference in the effect of investor protection on the loan-capital link in banks consolidating financial statements and thus being larger ("too big to fail" or "too interconnected to fail", see Schooner and Taylor 2010; Stiglitz 2010, De Haan and Poghosyan 2012). Such banks may be more prone to moral hazard

problems, and consequently the economic theory predicts that such banks undertake too many risky investments (see also Freixas et al. 2007). However, better investor protection can decrease the scope of moral hazard, and thus reduce the impact of bank capital on lending in economic downturns.

Shareholders rights variables

To measure the quality of institutions we use two variables: the anti self-dealing index, drawn from Djankov et al. (2008), and the creditor protection index. The anti self-dealing index (ANTI-SELF-DEALING), and its two subindices (ex-ante-control and ex-post-control), constitute a new measure of the legal protection of minority shareholders against expropriation by corporate insiders. This index specifically addresses the protection of minority shareholders against self-dealing transactions benefiting controlling shareholders (Djankov et al. 2008:461). As such it addresses a corporate self-dealing transactions, in which controllers of companies make choices that could benefit them at the expense of other investors but that follow the law regarding disclosure and approval of procedures. The anti self-dealing index comprises ten variables and ranges from 0 (weak investor protection) to 10 (strong investor protection). As in Djankov et al. (2008) we use the first principal component of this variable.

EXANTE-CONTROL keeps track of the disclosure and approvals required by the law before the disinterested shareholders are legally obliged to enter the potentially damaging transaction, and defines the quality of the approval process. In particular, it measures the extent to which disinterested minority shareholders may influence the transactions, which include conflict of interests on the side of controlling shareholder and therefore may not be beneficial to the business of their firm. It also keeps track of the extent of disclosure by parties involved in the transaction (i.e. the controlling shareholder and the company's representative) before the transaction goes through. Additionally, it informs on the legal requirements specifying the need of the independent review by third parties (e.g. financial experts) who prepare and publish a report on the transaction. Therefore it is a check on the opportunism of the insiders. This index ranges from 0 to 4, with higher values indicating stronger protection of minority investors. In the case of EXANTE-CONTROL we also use the first principal component of measures included in this index.

EXPOST-CONTROL index takes into account the fact that minority shareholders may not be sufficiently sophisticated, and therefore incapable of conducting ex ante effective private control. It measures the ease with which minority shareholders can prove that the transactions were damaging their interests. This index covers the information on the ease with which the minority shareholders can access evidence necessary to prove that the transactions were not beneficial for them and the ease of proving the damages in court as well as chances of rescinding the transaction. In particular, this index informs about: (1) the disclosure requirements in annual reports and periodic filings; (2) the obstacles (e.g., high ownership requirements)

faced by minority shareholders to gain standing to sue on behalf of the company's representative, who is entitled to fix the transaction; (3) the obstacles faced by the plaintiffs (i.e. minority disinterested shareholders) when rescinding the transaction; e.g. whether the plaintiffs need to prove bad faiths on the part of controlling shareholder or directors, or if they are merely required to show that the transaction involved a conflict of interest; (4) the access to evidence; extensive access to evidence is determines the chances which the plaintiffs have to prevail in the court. EXPOST-CONTROL values range between 0 and 6, with higher values indicating better protection of disinterested investors (e.g. minority shareholders). Following Djankov et al. (2008) we apply first principal components of measures included in construction of the EXPOST-CONTROL.

Creditor rights variables

Creditor rights protection index (CREDITORP) is an index aggregating creditor rights and was constructed by La Porta et al. (1998), and updated by Djankov et al. (2007). CREDITORP shows the extent to which regulations in a country protect creditors' rights. This index ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and measures four powers of secured lenders in bankruptcy: (1) whether there are restrictions, such as creditor consent, when a debtor files for reorganization; (2) whether secured creditors are able to seize their collateral after the petition for reorganization is approved, that is, whether there is no automatic stay or asset freeze imposed by the court; (3) whether secured creditors are paid first out of the proceeds of liquidating a bankrupt firm; and (4) whether an administrator, and not the management, is responsible for running the business during the reorganization.

3.2 Empirical model

The most problematic issue in the measurement of the impact of bank capital on loan extension is the identification of supply and demand factors, which affect lending activity. Kashyap and Stein (2000) and Carlson et al. (2013) review the difficulties in determining whether bank capital affects the supply of bank loans when controlling for changes in loan demand. The problem is that the same conditions that lead to reduced bank capital, such as the macroeconomic conditions, also reduce the demand for bank loans and in effect create alternative link between capital and lending. As Carlson et al. (2013) posit, such a link makes assessment of the size and significance of any relationship more difficult. In our study we apply contemporary versions of the 1990-ties empirical models that addressed the question of whether a bank-capital induced credit crunch was hindering the recovery (Berrospide and Edge, 2010; Beatty and Liao, 2011; Gambacorta and Marqués-Ibáñez, 2011; Carlson et al., 2013; Labonne and Lame, 2014; Kim and Sohn, 2017). Our basic equation is a reduced loan growth model, which takes into account both supply and demand side of loan market. We

define the base regression model as follows:

$$\begin{aligned} l\Delta Loan_{i,t} = {} & \alpha_1 \Delta Loan_{i,t-1} + \alpha_2 \Delta Loan_{i,t-2} + \\ & + \alpha_3 Downturn + \alpha_4 CAP_{i,t-1} + \alpha_5 Downturn \times CAP_{i,t-1} + \\ & + \alpha_6 DepBorrowers_{i,t} + \alpha_7 DepBanks_{i,t} + \alpha_8 \Delta CAP_{i,t} + \\ & + \alpha_9 QLP_{i,t} + \alpha_{10} size + \alpha_{11} \Delta UNEMPL_{j,t} + \\ & + \alpha_{12} ProtectionIndex_j + \alpha_{13} ProtectionIndex_j \times CAP_{i,t-1} + \\ & + \alpha_{14} ProtectionIndex_j \times Downturn \times CAP_{i,t} + \vartheta_{i,t} + \\ & + \varepsilon_t \end{aligned} \tag{1}$$

where:

i - the number of the bank; j-the number of country; t - the number of observation for the i-th bank; N – the number of countries;

$\Delta Loan$ – annual real loan growth rate;

Downturn – is a binary variable, taking value of 1 during economic downturns, and 0, otherwise; we predict a negative coefficient on *Downturn* if loan supply declines during Downturns for reasons other than capital and liquidity constraints (see Beatty and Liao, 2011, p. 7);

CAP – capital ratio, i.e. equity capital divided by total assets (lagged by one period); we focus on this ratio only, instead of applying capital adequacy ratio, because of huge number of missing data on capital adequacy in the Bankscope database; if external financing is not frictionless, and banks are concerned that they might violate capital requirements, then the coefficient on *CAP* is expected to be positive; that is banks with higher capital ratio will extend more loans; such relationship implies that banks are capital constrained in their lending activity;

Downturn x CAP – the impact of capital ratio on lending during economic downturns; the coefficient on the interaction term between *Downturn* and *CAP* indicates the presence of capital crunch effect; a positive coefficient implies that lending may be constrained by capital during economic downturns; a negative coefficient would indicate that capital may be exert significant impact on lending extension during downturns, at least at the country level;

DepBorrowers – deposits of non-financial borrowers divided by total assets; this ratio measures individual banks' reliance on stable retail funding; positive regression coefficient on this ratio indicates that the lending of banks may be sensitive to decreases in availability in retail funding;

DepBanks – deposits from banks divided by total assets; this ratio measures the individual banks' reliance on wholesale market funding; positive regression coefficient

on this ratio indicates that the lending of banks may be sensitive to interbank market frictions;

ΔCAP – annual change in capital ratio;

QLP – is quality of lending portfolio (it equals loan loss provisions divided by average loans);

size – logarithm of total assets;

$\Delta UNEMPL$ - annual change in unemployment rate; this is our measure of the demand side of loan market (see Gambacorta and Mistrulli, 2004, Berrospide and Edge, 2010, Beatty and Liao, 2011);

ProtectionIndex– one of indices measuring quality of investor protection, i.e. *ANTI-SELF-DEALING, EXANTE-CONTROL, EXPOST-CONTROL* and *CREDITORP*;

ProtectionIndex x CAP – interaction term measuring the effect of capital ratio on lending in economic upturns in countries which differ in investor protection; a positive coefficient on this double interaction term implies that in countries with better investor protection, banks constrain their lending if capital ratio is relatively low; the opposite holds true if the coefficient is negative;

ProtectionIndex x Downturn x CAP – interaction term between index measuring the quality of investor protection and capital doing economic downturns; it highlights the impact of investor protection on the link between capital and loan growth;

ϑ are unobservable bank-specific effects that are not constant over time but vary across banks.

ε is a white-noise error term.

To investigate the impact of the quality of investor protection on the capital crunch effect we interact institutional environment indices with capital during downturns (*Downturn x CAP*). As suggested in previous studies on the role of country characteristics in financial phenomena, we include each interaction term separately rather than incorporating the interaction terms of all country variables at once (see e.g. Barth et al., 2006 and Fonseca and González, 2010).
To incorporate the empirical importance of investor protection, i.e. *ANTI-SELF-DEAING, EXANTE-CONTROL, EXPOST-CONTROL* and *CREDITORP*, the model will be estimated in four versions separately for unconsolidated and consolidated data. The positive coefficient on the interaction term between *ProtectionIndex* and capital during downturns (*Downturn x CAP*), informs that increased investor protection is related with strengthened impact of capital on lending in economic downturns. If the opposite is found, i.e. the relationship between lending

and *ProtectionIndex x Downturn x CAP* is negative, than the increased investor protection is associated with reduced link between lending and capital in economic downturns.

In our study we apply the system of Generalized Method of Moments (GMM) proposed by Blundell and Bond (1998) with Windmeijer correction (2005). The GMM model is advantageous in our study because it corrects for the biases introduced by endogeneity problems, in particular those present is bank specific variables. We control for this potential endogeneity of CAP, LIQGAP, DEPBANKS, ΔCAP and QLP in the two-step system GMM estimation procedure by the inclusion of up to four lags of explanatory variables as instruments. The UNEMPL, as well as the country and the time dummy variables are the only variables considered exogenous. We consider two specification tests, traditionally applied in GMM modelling to check the consistency of GMM estimator. The first is the test verifying the hypothesis of absence of second-order serial correlation in the first difference residuals (AR(2)) and the absence of first-order serial correlation in the differentiated residuals (AR(1)). The other is the Hansen's J statistic for over-identifying restrictions, which tests the overall validity of the instruments sets (see Roodman, 2009, p. 141). Our baseline model without interactions including investor protection measures will also be estimated with robust ordinary least squares (OLS) and random effects (RE) estimators. To test the sensitivity of results obtained with 2-step GMM approach to the choice of estimation method, we also use the OLS and RE robust estimators. We present these results in the robustness checks section.

Our regression models given by equation (1) include dynamic interaction between the lending and capital ratio in different business cycle stages, in particular during economic downturns. As there is no standardized dataset including information on the business cycle stages in the EU member states, we had to empirically assess the business cycle fluctuations for the whole set of countries. To do this, we estimated frequencies and amplitudes of the Almost Periodically Correlated (APC) stochastic process describing deviations from the long term trend of the GDP growth observed quarterly in the period of 1st quarter of 1995 up to the 4th quarter of 2012 (other applications of this approach are shown in Parzen and Pagano, 1971; Frances and Dijk, 2005). Using these data we have estimated the cyclical component (as in Lenart and Pipień, 2013), and applied it to assess whether in a particular year the economy of a given country was in a downturn or not. We defined Downturn period in the case when at least two quarters in a year can be characterized by a slowdown or recession, by which we mean that in those quarters deviation from the long term growth trend may be positive or negative but the changes as compared to the previous quarter should be negative. In an opposite case we marked appropriate year as no Downturn period.

4 Empirical results

Tables 1 and 2 report selected descriptive statistics of the sample and Table 3 shows the correlation coefficients from the pooled estimation. Consistent with prior research on capital effects on bank lending we find positive and significant correlation coefficient of 0.09 (p-value below 0.01) between $\Delta LOANS$ and *CAP*, indicating that on average loan growth of banks in the EU is positively related to capital ratio. The correlation between capital and lending in economic downturns is also positive and statistically significant. The negative correlation coefficient between CAP and size suggests that banks with higher assets have lower capital ratios. Therefore, following Carlson et al. (2013) we expect that lending of large banks will be more affected by capital ratio, in particular in those banks which have lower capital ratios will extend less loans.

In Tables 1 and 2 we also show indices of investor protection. The best institutional environment in terms of *ANTI-SELF-DEALING* index features in the UK, whereas the worst in Austria and Greece. The *EXANTE-CONTROL* index shows that the role of private control before the transactions are fixed is very strong in the UK and Bulgaria, and weak in Austria and Slovakia. The *EXPOST-CONTROL* index takes values implying that very good quality of regulations affecting the ease with which minority shareholders can prove that the transactions were damaging their interests are in Belgium, Finland, Portugal and the UK, whereas poor quality is in Greece and Poland. The strongest power of creditor rights – measured with *CREDITORP* – is present in the UK, and the weakest in France.

Before discussing the main regression results, we present the baseline regressions which examine the relationship between bank lending and bank-specific characteristic variables without including the interaction terms of the capital ratio and measures of investor protection. Table 4 reports these results.

First, looking at the full sample results estimated with robust GMM 2-step approach, OLS and FE we find that the coefficients of the capital ratio are positive and statistically significant at the 1% level or 5% in the sample of unconsolidated data, and negative in unconsolidated data (and significant only in the case of OLS and RE estimations). As for unconsolidated data, the effect of capital ratio on lending varies between 0.343 and 0.383 (see columns 1-3 in Table 4), suggesting empirically significant role of capital ratio for lending. In contrast, loans growth of banks reporting consolidated data does not seem to be affected by capital ratio in non-recessionary periods, because decreases in capital ratio generally are related with increases in loans growth. The negative effect of capital ratio on lending varies between -0.286 and -0.558 (see columns 4 - 6).

The capital ratio in downturns does not seem to induce procyclicality of lending in unconsolidated data, because the coefficient on *Downturn x CAP* is negative in all regressions, and in OLS and RE regressions statistically significant (see columns 1-3). However, the relative level of capital ratio of a bank matters for the effect of capital ratio on lending in downturn periods in the case of consolidated data. In this sample the regression coefficients are positive (but not statistically significant, which

Table 1: Mean values of key regression variables in the EU countries (in percentage points) and heterogeneity of indices measuring shareholders protection rights and creditor protection variables: unconsolidated data

Country	ΔLOANS	Downturn	CAP	Downturn* CAP	ΔUNEMPL	DepBorrowers	DEPBANKS	ΔCAP	QLP	size	No. of banks (ΔLOANS)	No. of obs (ΔLOANS)	ANTI-SELF-DEALING	EXANTE-CONTROL	EXPOST-CONTROL	CREDITORP
Austria	3.06	0.56	6.11	3.30	-0.01	74.52	17.22	0.09	0.84	15.03	37	473	0.21	0.00	0.43	3
Belgium	3.61	0.44	3.77	1.65	-0.18	87.77	11.28	0.10	0.19	16.78	9	81	0.54	0.39	0.70	2
Bulgaria	5.40	0.44	13.83	6.46	0.02	78.80	9.51	0.00	1.55	13.95	4	56	0.65	0.83	0.48	2
Czech Republic	5.16	0.44	8.59	4.22	0.22	79.92	10.55	0.34	1.34	16.04	2	28	0.33	0.17	0.50	3
Denmark	3.98	0.50	10.76	5.11	-0.02	73.85	12.74	-0.16	0.78	15.12	21	288	0.46	0.25	0.68	3
Finland	6.41	0.50	8.54	4.19	-0.45	51.63	19.45	-0.79	0.07	18.68	1	9	0.46	0.14	0.78	1
France	4.71	0.50	5.76	3.09	-0.14	82.57	18.86	0.17	0.31	16.95	46	590	0.38	0.08	0.68	0
Germany	2.87	0.50	5.12	2.72	-0.20	87.26	16.65	0.13	0.87	14.85	378	5160	0.28	0.14	0.43	3
Greece	4.02	0.63	6.35	3.58	0.51	82.94	13.55	0.31	1.19	17.67	2	28	0.22	0.08	0.35	1
Italy	5.10	0.56	9.99	6.04	-0.18	62.59	6.97	-0.14	0.73	14.68	153	1930	0.42	0.17	0.68	2
Latvia	15.55	0.38	9.39	3.53	-0.30	85.42	11.27	-0.16	2.82	13.91	5	69	0.32	0.14	0.50	3
Lithuania	9.55	0.44	9.15	4.25	0.05	86.02	14.05	0.05	1.30	14.61	2	26	0.36	0.14	0.58	2
Luxembourg	4.56	0.44	3.91	1.84	0.16	80.22	19.86	0.22	0.41	16.93	14	189	0.28	0.17	0.40	.
Poland	5.62	0.50	8.83	4.65	-0.17	83.59	11.59	0.05	1.19	15.66	8	103	0.29	0.25	0.33	1

Table 1 continued: Mean values of key regression variables in the EU countries (in percentage points) and heterogeneity of indices measuring shareholders protection rights and creditor protection variables: unconsolidated data

Country	ΔLOANS	Downturn	CAP	Downturn* CAP	ΔUNEMPL	DepBorrowers	DEPBANKS	ΔCAP	QLP	size	No. of banks (ΔLOANS)	No. of obs (ΔLOANS)	ANTI-SELF-DEALING	EXANTE-CONTROL	EXPOST-CONTROL	CREDITORP
Portugal	7.18	0.56	6.59	3.52	0.37	76.58	18.98	0.05	0.77	17.82	3	37	0.44	0.14	0.75	1
Romania	4.71	0.31	12.44	4.89	-0.02	79.80	9.04	-0.50	1.16	14.65	4	44	0.44	0.33	0.55	2
Slovakia	4.09	0.38	9.81	4.67	-0.17	84.45	10.28	0.34	3.07	14.38	2	26	0.29	0.06	0.53	2
Slovenia	2.51	0.50	8.62	4.71	0.09	82.09	12.82	-0.07	1.59	15.13	3	40	.	.	.	3
Spain	5.80	0.56	6.38	3.99	-0.04	80.90	11.88	-0.11	0.53	17.06	22	290	0.37	0.22	0.53	2
Sweden	12.86	0.50	11.08	6.06	-0.13	79.85	7.90	-0.03	0.20	14.73	18	187	0.33	0.17	0.50	1
United Kingdom	8.68	0.56	13.81	8.44	-0.01	59.56	12.22	-0.12	0.37	15.89	7	91	0.95	1.00	0.90	4
Mean	4.03	0.51	6.75	3.71	-0.15	80.07	13.93	0.05	0.80	15.11						
sd	19.60	0.50	3.95	4.53	0.97	14.13	8.36	1.22	1.37	1.39						
No of obs	9773	11876	10452	10451	10955	10567	8042	9602	10145	10575						

Notes: Downturn*CAP - Interaction between Downturn and capital ratio; ΔCAP – annual change in capital ratio; DepBanks - Deposits from banks to total assets; DepBorrowers – deposits from non-financial borrowers; size - logarithm of total assets; QLP - Loan loss provisions divided by average loans ; ΔUNEMPL – change in annual unemployment rate. ANTI-SELF-DEALING is the measure of overall quality of investor protection. EXANTE-CONTROL is the measure of the quality of investor protection indicating the disclosure and approvals required by law before the transactions are fixed. EXPOST-CONTROL measures the ease with which minority shareholders can prove that the transactions were damaging their interests. CREDITORP is an index aggregating creditor rights.

Table 2: Mean values of key regression variables in the EU countries (in percentage points) and heterogeneity of indices measuring shareholders protection rights and creditor protection variables: consolidated data

Country	ΔLOANS	Downturn	CAP	Downturn* CAP	ΔUNEMPL	DepBorrowers	DEPBANKS	ΔCAP	QLP	size	No. of banks (ΔLOANS)	No. of obs (ΔLOANS)	ANTI-SELF-DEALING	EXANTE-CONTROL	EXPOST-CONTROL	CREDITORP
Austria	3.24	0.50	4.45	2.17	0.01	32.40	27.79	0.24	0.39	7.87	6	82	0.21	0.00	0.43	3
Belgium	2.02	0.43	3.78	1.58	-0.09	44.02	23.95	0.06	0.12	8.51	7	88	0.54	0.39	0.70	2
Czech Republic	1.66	0.50	7.42	3.67	0.24	71.38	8.02	0.10	0.77	7.33	3	45	0.33	0.17	0.50	3
Denmark	3.40	0.52	4.90	2.44	0.12	34.29	25.47	-0.09	0.29	7.55	7	98	0.46	0.25	0.68	3
Finland	2.64	0.46	7.50	3.31	-0.57	47.76	9.01	0.11	0.11	7.93	2	24	0.46	0.14	0.78	1
France	3.55	0.48	4.92	2.29	-0.13	31.12	26.00	0.08	0.23	8.00	21	285	0.38	0.08	0.68	0
Germany	1.78	0.49	2.96	1.44	-0.16	30.97	24.32	0.04	0.19	8.50	6	88	0.28	0.14	0.43	3
Greece	5.79	0.57	7.35	4.34	0.19	62.91	9.87	0.03	0.72	7.53	5	74	0.22	0.08	0.35	1
Hungary	2.54	0.29	8.14	2.41	0.07	61.74	15.89	0.29	0.78	6.98	3	45	0.18	0.00	0.36	1
Ireland	-1.67	0.42	5.06	2.09	0.24	46.22	16.66	-0.19	0.76	7.85	4	56	0.79	0.78	0.80	1
Italy	3.71	0.55	7.24	4.00	-0.20	42.07	18.13	0.01	0.44	7.58	14	193	0.42	0.17	0.68	2
Latvia	37.52	0.43	7.98	3.46	0.34	58.31	21.44	-0.35	1.62	6.39	2	23	0.32	0.14	0.50	3
Lithuania	-26.89	0.40	8.15	3.09	-0.47	53.05	30.53	-0.05	0.38	6.42	2	27	0.36	0.14	0.58	2
Luxembourg	3.91	0.41	5.59	2.42	0.18	39.38	20.13	0.44	0.18	7.73	3	44	0.28	0.17	0.40	.
Netherlands	2.35	0.57	4.56	2.54	-0.13	39.06	12.75	-0.19	0.16	8.35	7	96	0.20	0.06	0.35	3
Poland	3.53	0.55	9.56	5.26	-0.20	62.06	17.33	0.15	0.73	7.22	3	33	0.29	0.25	0.33	1

Table 2 continued: Mean values of key regression variables in the EU countries (in percentage points) and heterogeneity of indices measuring shareholders protection rights and creditor protection variables: consolidated data

Country	ΔLOANS	Downturn	CAP	Downturn* CAP	ΔUNEMPL	DepBorrowers	DEPBANKS	ΔCAP	QLP	size	No. of banks (ΔLOANS)	No. of obs (ΔLOANS)	ANTI-SELF-DEALING	EXANTE-CONTROL	EXPOST-CONTROL	CREDITORP
Portugal	4.07	0.48	6.07	2.91	0.24	55.23	13.68	0.17	0.45	7.61	6	86	0.44	0.14	0.75	1
Romania	1.80	0.33	13.39	4.67	-0.19	64.96	11.79	-0.74	1.14	6.90	2	24	0.44	0.33	0.55	2
Slovakia	1.72	0.42	7.06	3.25	-0.03	76.32	8.75	0.28	0.22	6.97	2	30	0.29	0.06	0.53	2
Slovenia	3.24	0.55	7.59	4.19	0.02	64.35	7.20	-0.06	0.80	6.65	3	42	.	.	.	3
Spain	3.44	0.58	6.56	3.97	-0.18	47.46	9.57	-0.03	0.40	7.92	10	148	0.37	0.22	0.53	2
Sweden	6.01	0.41	4.14	1.71	-0.13	30.56	15.56	0.04	0.11	8.29	4	52	0.33	0.17	0.50	1
United Kingdom	7.03	0.57	4.80	2.59	0.00	48.44	13.26	0.02	0.47	8.47	17	242	0.95	1.00	0.90	4
Mean	3.80	0.51	5.74	2.99	-0.03	44.75	18.08	0.03	0.41	7.83						
sd	21.18	0.50	2.70	3.42	1.30	18.83	13.09	1.08	0.76	0.75						
No. of obs	1925	2224	2015	2015	2202	2016	2014	1874	1946	2017						

Notes: Downturn*CAP - Interaction between Downturn and capital ratio; ΔCAP – annual change in capital ratio; DepBanks - Deposits from banks to total assets; DepBorrowers – deposits from non-financial borrowers; size - logarithm of total assets; QLP - Loan loss provisions divided by average loans ; ΔUNEMPL – change in annual unemployment rate. ANTI-SELF-DEALING is the measure of overall quality of investor protection. EXANTE-CONTROL is the measure of the quality of investor protection indicating the disclosure and approvals required by law before the transactions are fixed. EXPOST-CONTROL measures the ease with which minority shareholders can prove that the transactions were damaging their interests. CREDITORP is an index aggregating creditor rights.

Table 3: Correlations of key regression variables

	ΔLOANS	Downturn	CAP	Downturn*CAP	ΔUNEMPL	DepBorrowers	DEPBANKS	ΔCAP	QLP	size	ANTI-SELF-DEALING	EXANTE-CONTROL	EXPOST-CONTROL	CREDITORP
UNCONSOLIDATED														
ΔLOANS	1													
Downturn	0.02 *	1												
CAP	0.09 ***	0.02 **	1											
Downturn x CAP	0.06 ***	0.75 ***	0.52 ***	1										
ΔUNEMPL	0.03 ***	0.26 ***	-0.03 ***	0.17 ***	1									
DepBorrowers	-0.05 ***	-0.02 **	-0.42 ***	-0.20 ***	-0.02 *	1.								
DEPBANKS	-0.06 ***	-0.02 **	-0.42 ***	-0.22 ***	0.02 *	0.37 ***	1							
ΔCAP	-0.10 ***	0.00	0.08 ***	0.03 ***	0.04 ***	0.04 ***	0.04 ***	1						
QLP	0.01	0.03 ***	-0.06 ***	0.01	0.14 ***	0.05 ***	0.01	-0.07 ***	1					
size	0.03 **	0.00	-0.28 ***	-0.14 ***	0.06 ***	-0.10 ***	0.24 ***	0.02 *	-0.08 ***	1				
ANTI-SELF-DEALING	0.04 ***	0.00	0.34 ***	0.17 ***	0.01	-0.23 ***	-0.21 ***	-0.05 ***	-0.04 ***	0.10 ***	1			
EXANTE-CONTROL	0.03 ***	0.00	0.31 ***	0.16 ***	0.01	-0.25 ***	-0.25 ***	-0.05 ***	-0.02 **	0.04 ***	0.93 ***	1		
EXPOST-CONTROL	0.01	0.00	-0.05 ***	-0.03 ***	-0.03 ***	0.16 ***	0.15 ***	0.00	-0.01	0.00	0.19 ***	-0.06 ***	1	
CREDITORP	-0.05 ***	-0.01	-0.20 ***	-0.11 ***	-0.02 *	0.23 ***	0.23 ***	0.02 **	0.10 ***	-0.32 ***	-0.12 ***	0.00	0.08 ***	1

Table 3 continued: Correlations of key regression variables

	ΔLOANS	Downturn	CAP	Downturn*CAP	ΔUNEMPL	DepBorrowers	DEPBANKS	ΔCAP	QLP	size	ANTI-SELF-DEALING	EXANTE-CONTROL	EXPOST-CONTROL	CREDITORP
CONSOLIDATED														
ΔLOANS	1													
Downturn	-0.01	1												
CAP	-0.01	-0.03	1											
Downturn x CAP	0.00	0.83 ***	0.37 ***	1										
ΔUNEMPL	-0.03	0.15 ***	-0.03	0.11 ***	1									
DepBorrowers	0.01	-0.01	0.34 ***	0.13 ***	-0.07 ***	1								
DepBanks	0.00	-0.01	-0.13 ***	-0.07 ***	0.02	-0.46 ***	1							
ΔCAP	-0.01	0.00	0.17 ***	0.10 ***	0.10 ***	0.05 **	-0.02	1						
QLP	0.08 ***	0.04	0.15 ***	0.09 ***	0.29 ***	0.13 ***	0.04	-0.02	1					
size	-0.02	0.02	-0.50 ***	-0.20 ***	0.10 ***	-0.39 ***	-0.05 **	0.00	-0.16 ***	1				
ANTI-SELF-DEALING	0.04 *	0.01	-0.12 ***	-0.04 *	-0.01	0.10 ***	-0.12 ***	-0.02	0.04 *	0.29 ***	1			
EXANTE-CONTROL	0.04 *	0.01	-0.08 ***	-0.02	-0.02	0.12 ***	-0.14 ***	-0.03	0.04 *	0.29 ***	0.98 ***	1		
EXPOST-CONTROL	0.05 **	-0.03	-0.11 ***	-0.06 ***	-0.02	0.00	0.03	0.00	0.03	0.15 ***	0.69 ***	0.60 ***	1	
CREDITORP	0.04 *	0.03	-0.10 ***	-0.03	0.00	0.12 ***	-0.16 ***	-0.03	0.04 *	0.14 ***	0.50 ***	0.55 ***	0.15 ***	1

Notes: *Downturn x CAP* - Interaction between *Downturn* and capital ratio; ΔCAP – annual change in capital ratio; *DepBanks* - Deposits from banks to total assets; *DepBorrowers* – deposits from non-financial borrowers; *size* - logarithm of total assets; *QLP* - Loan loss provisions divided by average loans ; $\Delta UNEMPL$ – change in annual unemployment rate. *ANTI-SELF-DEALING* is the measure of overall quality of investor protection. *EXANTE-CONTROL* is the measure of the quality of investor protection indicating the disclosure and approvals required by law before the transactions are fixed. *EXPOST-CONTROL* measures the ease with which minority shareholders can prove that the transactions were damaging their interests. CREDITORP is an index aggregating creditor rights; sd denotes standard deviation; No. of obs denotes number of observations; *, **, *** denote significance at the 10%,5% and 1% level, respectively.

Table 4: Baseline results (without investor protection and creditor protection indices)

	Robust GMM 2 step lag 1-4	OLS robust	Random effects robust	Robust GMM 2 step lag 1-4	OLS robust	Random effects robust
	Unconsolidated			*Consolidated*		
	1	***2***	***3***	***4***	***5***	***6***
$\Delta loan(-1)$	-0.091**	-0.132**	-0.132**	-0.019	0.002	0.002
	(-2.46)	(-2.51)	(-2.51)	(-0.43)	(0.05)	(0.05)
CAP(-1)	0.343**	0.384***	0.384***	-0.286	-0.558**	-0.558**
	(1.94)	-3.020	(3.02)	(-0.61)	(-1.99)	(-1.99)
Downturn	4.501***	5.044***	5.044***	-0.987	-2.326	-2.326
	(4.53)	(4.93)	(4.93)	(-0.39)	(-0.91)	(-0.91)
CAP(-1) x Downturn	-0.204	-0.280*	-0.280*	0.124	0.502	0.502
	(-1.10)	(-1.64)	(-1.64)	(0.23)	(1.27)	(1.27)
$\Delta UNEMPL$	0.413	-0.092	-0.092	-1.755***	-1.371***	-1.371***
	(0.94)	(-0.39)	(-0.39)	(-2.72)	(-2.99)	(-2.99)
DepBorrowers	-0.087**	-0.062	-0.062	0.003	-0.016	-0.016
	(-2.31)	(-1.23)	(-1.23)	(0.06)	(-0.43)	(-0.43)
DepBanks	0.181	0.037	0.037	-0.012	-0.035	-0.035
	(1.36)	(0.99)	(0.99)	(-0.1)	(-0.73)	(-0.73)
ΔCAP	-1.916**	-1.601*	-1.601*	0.072	-0.08	-0.08
	(-2.43)	(-1.73)	(-1.73)	(0.1)	(-0.16)	(-0.16)
QLP	-0.508	-0.680***	-0.680***	4.466	3.842***	3.842***
	(-1.29)	(-3.10)	(-3.10)	(0.86)	(4.7)	(4.7)
Size	0.573	1.304***	1.304***	0.058	-0.658	-0.658
	(1.49)	(2.61)	(2.61)	(0.02)	(-0.75)	(-0.75)
Intercept	-3.426	-14.255*	-14.255*	3.27	11.596	11.596
	(-0.60)	(-1.61)	(-1.61)	(0.14)	(1.34)	(1.34)
AR(2) p-value	0.00			0.26		
Hansen test p-value	0.00			1.00		
No. of observation	6526	6526	6526	1778	1778	1778
No. of banks	635	635	635	144	144	144

Notes: The models are given by equation (1) without investor protection indices. Coefficients for the country and time dummies are not reported. The models have been estimated using the GMM estimator with robust standard errors. T-statistics are given in brackets. Data range 1996-2011; *, **, *** denote significance at the 10%,5% and 1% level, respectively; No. of denotes the number of banks or observations

is probably the effect of huge diversity of the link between loan growth and capital ratio in economic downturns) in models presented in columns 4-6 in Table 4.

4.1 Role of investor protection

Before we go on with interpretation of our results, we look at specification tests, i.e. Hansen OIR test p-value and AR(2) p-value. We find that in the case of unconsolidated data, the Hansen OIR test is not satisfactory, because the p-value is significant at 1%. However, if we look at the same test in consolidated data, we find the Hansen J-statistics is not statistically significant. Therefore, we cannot infer that the instruments selected in regressions 1-4 are correct. As for the AR(2), we cannot reject the null hypothesis of serial correlation of order 2 in regression 1-4 because the p-value is definitely below 1 %. In regression 5-8, in which we test the effects in consolidated data, we find that OIR test p-value is statistically insignificant, thus we infer that the instruments are correct. As for the AR(2), the p-value is also insignificant in unconsolidated data. We therefore reject the null hypothesis of serial correlation of order 2 in all regressions estimated with the use of consolidated data. This diversity of specification tests between unconsolidated and consolidated data prompts us to re-run the models presented in Table 5 with additional methods, i.e. OLS and RE. These results will be presented in the next subsection.

The results in Table 5 are consistent with an expectation that investor protection has two opposite effects on capital ratios and thus on the link between lending and capital in economic downturns, i.e. there is difference between consolidated and unconsolidated data. The positive coefficients on the interaction term between *Downturn x CAP* and *ANTI-SELF-DEALING* as well as *EXANTE-CONTROL* in consolidated data, suggests that higher levels of investor protection enhance the capital effect on bank lending during downturns. This is consistent with hypothesis 1, that better minority shareholders rights protection induces bank borrowers to take more loans and to engage in more risk-taking, in particular during economic booms, which results in greater sensitivity of bank lending to capital ratios in economic upturns. However, this effect is not statistically significant, thus we should be cautious about the implications of this result. The negative coefficients on *ANTI-SELF-DEALING x CAP x Downturn* and on *EXANTE-CONTROL x CAP x Downturn* present in unconsolidated data imply that better quality of investor protection decreases the economic importance of capital in downturns. This is consistent with lower risk-taking of large banks in countries with sound institutional environment, which has been suggested by Brewer et al. (2008). Such a result thus lends empirical support to hypothesis 2 that better shareholders rights protection induces bank borrowers to engage in less risk-taking, in particular during economic booms, which results in weakened impact of bank capital on lending in economic downturns. In the case of consolidated data this effect is also not statistically significant.

The negative coefficient on *EXPOST-CONTROL x CAP x Downturn* in both unconsolidated and consolidated data – and statistically significant in unconsolidated

data - gives empirical support to hypothesis 2 and hypothesis 3, that better minority shareholders protection reduces risk-taking incentives of large banks and results in better risk management of credit portfolio (and other investments of banks), which again results in weakened impact of bank capital on lending. Thus our results highlight the importance of the access to evidence necessary to prove that the transactions were not beneficial for disinterested minority investors and the ease of proving the damages in court as well as chances of rescinding the transaction. In particular, looking at unconsolidated data, the coefficient on triple interaction term of *EXPOST-CONTROL x CAP x Downturn* is -2.61 (see column 3 in Table 5), implying that a 1% increase in capital ratio results in 2.6% decrease in loans growth, i suggesting further weakened effect of capital ratio on lending in downturns of -2.66 (=-2.61-0.049). As for consolidated data, the overall effect is stronger and equals -6.618 (=-6,656+0.038). Generally, are results give justification to rejection of hypothesis 1, that better shareholders rights protection induces bank borrowers to take more loans and to engage in more risk-taking, in particular during economic booms, which results in greater sensitivity of bank lending to capital ratios in economic downturns.
Moreover, more restrictive regulations protecting creditor rights (*CREDITORP*) – although important for aggregate lending of the banking sector (see Djankov et al. 2007) – do not seem to be a statistically significant determinant of the strength of impact of capital ratio on lending of individual banks in economic downturns in the case of unconsolidated data. However, as the impact is positive in both unconsolidated and consolidated data, we infer that to some extent greater powers of creditors are linked to greater risk-taking by non-financial borrowers during economic booms, which results in increased impact of capital on lending. Thus, at least in the case of consolidated data, we find some empirical support to hypothesis 4, according to which better creditor protection increases risk-taking incentives of large banks and results in more credit extension in economic booms. Consequently, the relationship between lending and capital is stronger in economic downturns. However, we shall test the sensitivity of this result to change of estimation method to make sure whether the effect of creditor protection on the link between lending and capital ratio is robust.

5 Sensitivity analysis

To build more confidence into our main findings, we employ robustness checks, to determine whether our results remain unchanged. In this respect, we test the sensitivity of results presented in Table 5 to change in the estimation technique. We apply two techniques , i.e. robust OLS estimator and robust RE estimator.
In Tables 6 and 7 we present the robustness check of our estimation given in Table 5 obtained with robust OLS and robust RE, respectively.
Analyzing the results obtained with OLS (see Table 5) as well as with RE (see Table 7), we find consistent and statistically strong effect of *EXPOST-CONTROL* investor

Table 5: Effect of investor protection and creditor rights protection on the link between loans growth and capital ratio

	Unconsolidated				Consolidated			
	ANTI - SELF-DEALING	EXANTE - CONTROL	EXPOST - CONTROL	CREDITORP	ANTI - SELF - DEALING	EXANTE - CONTROL	EXPOST - CONTROL	CREDITORP
	1	*2*	*3*	*4*	5	*6*	*7*	*8*
$\Delta loan(-1)$	-0.089***	-0.091***	-0.095***	-0.09**	-0.04	-0.04	-0.032	-0.016
	(-2.50)	(-2.62)	(-2.49)	(-2.43)	(-0.9)	(-0.95)	(-0.79)	(-0.36)
CAP(-1)	0.459	0.49	0.338*	0.92	-0.34	-0.34	-0.305	0.866
	(1.37)	(1.55)	(1.85)	(0.93)	(-0.85)	(-0.69)	(-0.51)	(1.46)
Downturn	9.034**	7.31***	2.959*	22.401**	-0.242	-0.132	0.116	18.996*
	(2.27)	(3.04)	-1.86	-2.31	(-0.09)	(-0.05)	(0.04)	(1.67)
CAP(-1) x Downturn	-0.469*	-0.41*	-0.049	-0.826	0.04	-0.024	0.038	-3.149*
	(-1.64)	(-1.64)	(-0.21)	(-0.92)	(0.07)	(-0.04)	(0.06)	(-1.9)
$\Delta UNEMPL$	0.41	0.439	0.385	0.495	-1.739***	-1.673***	-1.694***	-1.835***
	(0.94)	(0.97)	(0.83)	(1.2)	(-2.63)	(-2.67)	(-2.83)	(-2.63)
DepBorrowers	-0.085**	-0.085**	-0.093**	-0.079**	-0.041	-0.033	-0.017	-0.012
	(-2.10)	(-2.25)	(-1.96)	(-1.65)	(-0.75)	(-0.64)	(-0.26)	(-0.26)
DepBanks	0.254	0.245	0.205	0.213	-0.04	-0.033	-0.032	-0.011
	(1.46)	(1.4)	(1.48)	(1.33)	(-0.38)	(-0.3)	(-0.25)	(-0.1)
ΔCAP	-1.915***	-1.907***	-1.925**	-1.874**	0.104	0.134	-0.032	0.363
	(-2.48)	(-2.47)	(-2.42)	(-2.30)	(0.14)	(0.17)	(-0.03)	(0.49)
QLP	-0.523	-0.526	-0.488	-0.62	4.781	4.793	4.649	4.805
	(-1.23)	(-1.27)	(-1.19)	(-1.57)	(0.89)	(0.09)	(0.86)	(0.91)
Size	0.395	0.483	0.616	0.541	-1.149	-1.211	-0.083	-0.197
	(0.97)	(1.15)	(1.62)	(1.22)	(-0.36)	(-0.37)	(-0.03)	(-0.09)
Intercept	-3.118	-4.363	-3.809	-12.209	15.235	15.354	5.337	-2.85
	(-0.41)	(-0.64)	(-0.69)	(-1.04)	(0.53)	(0.52)	(0.19)	(-0.16)
ProtectionIndex	0.306	-0.964	-8.356	2.682	13.733	17.832	-24.315	4.155
	-0.02	(-0.08)	(-0.56)	(1.24)	(1.1)	(1.19)	(-0.99)	(1.58)
ProtectionIndex x CAP(-1)	-0.682	-0.577	**0.441**	-0.156	-1.703	-2.757	**7.158**	-0.561
	(-0.63)	(-0.61)	(0.47)	(-0.51)	(-0.7)	(-1.06)	(1.27)	(-1.64)
ProtectionIndex x Downturn	35.823	28.002	36.169	-5.925*	-24.016	-28.755	16.425	-10.032*
	(1.2)	(1.23)	(1.37)	(-1.74)	(-1.18)	(-1.05)	(0.67)	(-1.74)
ProtectionIndex x CAP(-1) x Downturn	-1.169	-0.879	**-2.61***	0.1	4.314	5.587	**-6.656**	1.689**
	(-1.02)	(-0.76)	(-1.64)	-0.31	(1.3)	(1.14)	(-1.33)	(2.08)
AR(2) p-value	0.00	0.00	0.00	0.00	0.09	0.09	0.90	0.22
Hansen test p-value	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
No. of observations	6484	6484	6484	6468	1674	1674	1674	1673
No. of banks	630	630	630	625	136	136	136	136

Notes: The models are given by equation (1). Coefficients for the country and time dummies are not reported. The models have been estimated using the GMM estimator with robust standard errors. T-statistics are given in brackets. Data range 1996-2011; *, **, *** denote significance at the 10%,5% and 1% level, respectively; No. of denotes the number of banks or observations.

Table 6: Sensitivity checks of results – the use of robust OLS estimator

	Unconsolidated				Consolidated			
	ANTI - SELF - DEALING	EXANTE - CONTROL	EXPOST - CONTROL	CREDITORP	ANTI - SELF - DEALING	EXANTE - CONTROL	EXPOST - CONTROL	CREDITORP
	1	*2*	*3*	*4*	5	*6*	*7*	*8*
$\Delta loan(-1)$	-0.133***	-0.13***	-0.13***	-0.13***	-0.003	-0.003	0.003	0.001
	(-2.51)	(-2.51)	(-2.52)	(-2.55)	(-0.09)	(-0.09)	(0.08)	(0.02)
CAP(-1)	0.394***	0.4***	0.36***	0.51	-0.671**	-0.669**	-0.677**	-0.234
	(2.78)	(2.86)	(2.85)	(0.78)	(-2.2)	(-2.21)	(-2.24)	(-0.47)
Downturn	5.131***	4.81***	4.11***	2.69	-3.362	-3.192	-3.004	0.447
	(3.09)	(3.51)	(3.56)	(0.55)	(-1.23)	(-1.17)	(-1.09)	(0.09)
CAP(-1)	-0.278	-0.27	-0.19	0.41	0.662	0.626	0.644	0.075
x Downturn	(-1.33)	(-1.31)	(-1.05)	(0.61)	(1.54)	(1.46)	(1.5)	(0.09)
$\Delta UNEMPL$	-0.057	-0.06	-0.08	-0.04	-1.201**	-1.2**	-1.258**	-1.26**
	(-0.23)	(-0.27)	(-0.35)	(-0.15)	(-2.42)	(-2.41)	(-2.55)	(-2.55)
DepBorrowers	-0.059	-0.06	-0.06	-0.06	-0.026	-0.026	-0.025	-0.022
	(-1.17)	(-1.17)	(-1.12)	(-1.09)	(-0.66)	(-0.66)	(-0.65)	(-0.55)
DepBanks	0.037	0.03	0.04	0.03	-0.047	-0.046	-0.057	-0.042
	(0.94)	(0.9)	(0.91)	(0.74)	(-0.91)	(-0.9)	(-1.11)	(-0.81)
ΔCAP	-1.617*	-1.62*	-1.65*	-1.65*	-0.07	-0.084	-0.188	-0.033
	(-1.70)	(-1.70)	(-1.74)	(-1.71)	(-0.13)	(-0.15)	(-0.35)	(-0.06)
QLP	-0.693***	-0.68***	-0.66***	-0.7***	4.12***	4.125***	4.116***	4.08***
	(-3.04)	(-2.98)	(-2.88)	(-3.23)	(4.7)	(4.71)	(4.72)	(4.68)
Size	1.307***	1.3***	1.28***	1.34**	-1.35	-1.369	-1.077	-0.966
	(2.49)	(2.52)	(2.62)	(2.41)	(-1.33)	(-1.33)	(-1.11)	(-1.01)
Intercept	-14.52	-14.2	-13.9	-16.9	18.247*	18.406*	16.092*	11.048
	(-1.56)	(-1.60)	(-1.57)	(-1.32)	(1.85)	(1.86)	(1.7)	(1.17)
ProtectionIndex	3.151	5.01	-12	0.7	5.132	3.715	-12.65	1.873
	(0.32)	(0.6)	(-1.60)	(0.44)	(0.62)	(0.46)	(-1.29)	(1.36)
ProtectionIndex	-0.588	-0.7	**0.88**	-0.04	-0.624	-0.298	**3.822****	-0.211
x CAP(-1)	(-0.74)	(-0.95)	(1.27)	(-0.14)	(-0.4)	(-0.2)	(2.28)	(-0.85)
ProtectionIndex	1.304	-4	27***	1.01	-3.926	-1.369	22.321	-1.67
x Downturn	(0.16)	(-0.52)	(2.51)	(0.62)	(-0.32)	(-0.11)	(1.54)	(-0.75)
ProtectionIndex x	-0.035	0.35	**-2.68*****	-0.29	1.3	0.764	**-5.218****	0.269
CAP(-1) x Downturn	(-0.05)	(0.38)	(-3.27)	(-1.25)	(0.56)	(0.33)	(-2.09)	(0.66)
No. of observations	6484	6484	6484	6468	1674	1674	1674	1673
No. of banks	630	630	630	625	136	136	136	136

Notes: The models are given by equation (1). The models have been estimated using the OLS estimator with robust standard errors. T-statistics are given in brackets. Data range 1996-2011; *, **, *** denote significance at the 10%,5% and 1% level, respectively; No. of denotes the number of banks or observations.

Table 7: Sensitivity checks of results – the use of robust RE estimator

	Unconsolidated				Consolidated			
	ANTI - SELF - DEALING	EXANTE - CONTROL	EXPOST - CONTROL	CREDITORP	ANTI - SELF - DEALING	EXANTE - CONTROL	EXPOST - CONTROL	CREDITORP
	1	*2*	*3*	*4*	5	*6*	*7*	*8*
$\Delta loan(-1)$	-0.133***	-0.133***	-0.131***	-0.129***	-0.003	-0.003	0.003	0.001
	(-2.51)	(-2.51)	(-2.52)	(-2.55)	(-0.09)	(-0.09)	(0.08)	(0.02)
CAP(-1)	0.394***	0.399***	0.359***	0.509	-0.671**	-0.669**	-0.677**	-0.234
	(2.78)	(2.86)	(2.85)	(0.78)	(-2.2)	(-2.21)	(-2.24)	(-0.47)
Downturn	5.131***	4.807***	4.114***	2.689	-3.362	-3.192	-3.004	0.447
	(3.09)	(3.51)	(3.56)	(0.55)	(-1.23)	(-1.17)	(-1.09)	(0.09)
CAP(-1)	-0.278	-0.265	-0.189	0.414	0.662	0.626	0.644	0.075
x Downturn	(-1.33)	(-1.31)	(-1.05)	(0.61)	(1.54)	(1.46)	(1.5)	(0.09)
$\Delta UNEMPL$	-0.057	-0.063	-0.08	-0.038	-1.201**	-1.2**	-1.258**	-1.26**
	(-0.23)	(-0.27)	(-0.35)	(-0.15)	(-2.42)	(-2.41)	(-2.55)	(-2.55)
DepBorrowers	-0.059	-0.06	-0.058	-0.059	-0.026	-0.026	-0.025	-0.022
	(-1.17)	(-1.17)	(-1.12)	(-1.09)	(-0.66)	(-0.66)	(-0.65)	(-0.55)
DepBanks	0.037	0.034	0.035	0.028	-0.047	-0.046	-0.057	-0.042
	(0.94)	(0.9)	(0.91)	(0.74)	(-0.91)	(-0.9)	(-1.11)	(-0.81)
ΔCAP	-1.617*	-1.617*	-1.652*	-1.651*	-0.07	-0.084	-0.188	-0.033
	(-1.70)	(-1.70)	(-1.74)	(-1.71)	(-0.13)	(-0.15)	(-0.35)	(-0.06)
QLP	-0.693***	-0.684***	-0.658***	-0.699***	4.12***	4.125***	4.116***	4.08***
	(-3.04)	(-2.98)	(-2.88)	(-3.23)	(4.7)	(4.71)	(4.72)	(4.68)
Size	1.307***	1.297***	1.282***	1.342**	-1.35	-1.369	-1.077	-0.966
	(2.49)	(2.52)	(2.62)	(2.41)	(-1.33)	(-1.33)	(-1.11)	(-1.01)
Intercept	-14.52	-14.246	-13.894	-16.874	18.247*	18.406*	16.092*	11.048
	(-1.56)	(-1.60)	(-1.57)	(-1.32)	(1.85)	(1.86)	(1.7)	(1.17)
ProtectionIndex	3.151	5.007	-12.009	0.696	5.132	3.715	-12.65	1.873
	(0.32)	(0.6)	(-1.60)	-0.44)	(0.62)	(0.46)	(-1.29)	(1.36)
ProtectionIndex	-0.588	-0.695	**0.878**	-0.039	-0.624	-0.298	**3.822****	-0.211
x CAP(-1)	(-0.74)	(-0.95)	(1.27)	(-0.14)	(-0.4)	(-0.2)	(2.28)	(-0.85)
ProtectionIndex	1.304	-3.995	26.976***	1.013	-3.926	-1.369	22.321	-1.67
x Downturn	(0.16	(-0.52)	(2.51)	(0.62)	(-0.32)	(-0.11)	(1.54)	(-0.75)
ProtectionIndex x	-0.035	0.346	**-2.676*****	-0.294	1.30	0.764	**-5.218****	0.269
CAP(-1) x Downturn	(-0.05)	(0.38)	(-3.27)	(-1.25)	(0.56)	(0.33)	(-2.09)	(0.66)
No. of observations	6484	6484	6484	6468	1674	1674	1674	1673
No. of banks	630	630	630	625	136	136	136	136

Notes: The models are given by equation (1). The models have been estimated using the RE estimator with robust standard errors. T-statistics are given in brackets. Data range 1996-2011; *, **, *** denote significance at the 10%,5% and 1% level, respectively; No. of denotes the number of banks or observations.

protection on the link between loans growth and capital ratio in economic downturns, in both unconsolidated and consolidated data. As for unconsolidated data, the coefficient on triple interaction term of *EXPOST-CONTROL x CAP x Downturn* equals -2.680 (see column 3 in Table 6) and -2.676 (see column 3 in Table 7) and is statistically significant at 1%. Such a result implies that better investor protection decreases risk-taking by banks, which is in line with hypotheses 2 and 3, and thus gives place to a weakened impact of bank capital on lending in economic downturns. Therefore, our alternate hypothesis 1 is not supported. Basically, we do not find empirical evidence for the view that better shareholders rights protection induces bank borrowers to take more loans and to engage in more risk-taking, in particular during economic booms, which results in greater sensitivity of bank lending to capital ratios in economic downturns (see hypothesis 1).
Looking now at consolidated data, we find that the coefficient on triple interaction term of *EXPOST-CONTROL x CAP x Downturn* is significant at 5% and equals -5.218 (see column 7 in Table 6 and Table 7). This result is also in line with hypothesis 3, that all else equal, better shareholders protection reduces risk-taking incentives of large banks and results in better risk management of credit portfolio (and other investments of banks), which results in weakened impact of bank capital on lending. With such a result, our alternate hypothesis 1 is not supported.
The results for the tests of hypothesis 4, that better creditor protection increases risk-taking incentives of large banks and results in more credit extension in economic booms, which makes the relationship between lending and capital stronger in economic downturns, in consolidated data are sensitive to the change of estimation method. As we can infer from regression 8 in Tables 6 and 7, the effect of CREDITORP on the link between loans growth and capital ratio positive, but not statistically significant. Moreover, the coefficient on the triple interaction of *CREDITORP*Cap(-1)*downturn* is of 0.269 in column 8 in Tables 6 and 7 is definitely weaker, then the respective coefficient in Table 5 (which equals 1.689). This implies that at least in our sample we do not find convincing evidence for the procyclical effects of capital ratio on lending in countries with increased investor protection.

6 Conclusions

This paper investigates the effect of institutions (investor protection) on the link between lending and capital ratios in economic downturns. We address this problem empirically by analyzing the EU large banks sample in the period of 1996-2011and applying the two step robust GMM Blundell and Bond (1998) approach and testing robustness of results with robust OLS and RE effects estimators. We conduct our analysis separately for unconsolidated and consolidated data, due to the fact that consolidation is a proxy for size and diversity of the risks taken by a bank, which consolidates financial statements. We apply four measures of the quality of investor protection available in previous studies, i.e. the anti-self-dealing index, the index of

ex ante-control of self-dealing and the index of ex post-control of self-dealing (which measure the private control of minority investor protection) and creditor protection index, showing the role of the protection of the interests of lenders. Using these measures we obtain two results which highlight the role of the quality of investor protection on the link between lending and capital.

First, we find that better investor protection is related with weakened impact of capital on lending during economic downturns. Such a result lends empirical support to two theoretical notions. On the one hand, better shareholders rights protection may induce bank borrowers to engage in less risk-taking, in particular during economic booms. On the other hand, better minority shareholders protection may reduce risk-taking incentives of large banks and result in better risk management of credit portfolio (and other investments of banks). Generally, our results highlight the importance of the access to evidence necessary to prove that the transactions were not beneficial for disinterested minority investors and the ease of proving the damages in court as well as chances of rescinding the transaction. The easiest the access, the lower are the risk-taking incentives of large banks, and in effect the less procyclical effects of capital ratio on lending.

Second, our research does not support the view that better creditor protection induces greater risk-taking by both banks and borrowers, because in unconsolidated data if affects the link between lending and capital ratio in statistically insignificant way. As for bank reporting consolidated data, we find some evidence that better creditor protection may result in strengthened effect of capital ratio on bank lending. However, this effect is not robust to change in estimation method, and turns statistically insignificant if we use alternate approaches.

With our research we contribute to two streams in the finance literature. The first is the literature on the link between lending and capital ratio, because we show that this link is affected by investor protection scheme characteristics. The other, is the literature on the economic role of investor protection. With our study, we give theoretical support and empirical evidence that investor protection should be considered as a determinant of the capital ratio effect of bank lending.

Our analysis has three basic implications for public policy. First, regulations designed to protect minority shareholders or other minority investors may be important for financial stability and therefore for macroprudential policy, and may either increase or decrease the role of bank capital for loan growth.

Second, our results feed into the current policy implementation of Basel III guidelines for enhanced capital adequacy rules (BCBS, 2011). They highlight the importance of better corporate governance structures, which reduce the potential for conflicts of interests within large banks, and are strongly linked to better investor protection. Therefore, it seems vital for the effectiveness of countercyclical capital standards which are in force in many countries or have just been introduced in 2018, that their implementation will take place with increased quality of corporate governance, through enhanced role of Pillar 2 and Pillar 3 of the Basel III.

Third, our results lend empirical support to EU directives which aim to reduce potential conflicts of interests within banks, such as those resulting from badly structured executive pay and compensation practices. Better standards in this area may be essential for reduced procyclicality of capital requirements. This is particularly true of banks deemed too big to fail, such as financial conglomerates.

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