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Banking Reform, Risk-Taking, and Accounting Quality: Evidence from Post-Soviet Transition States

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ABSTRACT: The drastic banking reform within Central and Eastern Europe following the collapse of the Soviet Union provides an ideal quasi-experimental design to examine the causal effects of institutional development on accounting quality (AQ). We find that banking reform spurs significant improvement in predictive power of earnings and reductions in earnings smoothing, earnings-inflating discretionary provisions, and avoidance of reporting losses. These effects hold under alternative model specifications and after considering concurrent institutional developments. In contrast, corporate reform shows no such effects, refuting the alternative explanation that unobserved factors affect both reform speed in general and the quality of financial reporting. We further identify four specific reformative actions that are integral to the drastic banking reform process where prudential regulation contributes the most to the observed AQ improvement. It supports the conjecture that banking reform improves AQ by reducing banks' risk-taking behaviors and, as a result, their motive behind accounting manipulation.

JEL Classifications: G21: G28; K20; M40; M48.

Keywords: bank reform; earnings management; accounting quality; institutional developments; prudential regulation; transition countries.

I. INTRODUCTION

A country's institutional developments that do *not* directly target accounting issues can still end up influencing accounting behaviors. Considerable accounting research explores such an externality of those institutions. A constant argument emerging from those studies is that institutional developments can diminish the motives behind accounting manipulation because they tackle issues or misbehaviors that managers would otherwise use accounting manipulation to hide.

In spite of their significant contributions to the literature, those studies are limited by the fact that their sample countries usually have long-established market economies and have barely witnessed any significant changes in legal institutions, economic status, and political systems over the past few decades. Even more troubling is that countries in their samples are often widely different in social factors such as tradition, religion, culture, and history, causing concerns about confounding effects. Establishing causal relationships in those empirical settings can be challenging (Djankov, Mcliesh, and Shleifer 2007; Haselmann, Pistor, and Vig 2010).

To infer the impact of an institution, an ideal research setting would involve a relatively homogenous group of countries that experienced drastic but uneven development in that institution due to an exogenous shock. We take advantage of one such exogenous event, the collapse of the former Soviet Union, which led to the rapid institutional development in Central and Eastern Europe (CEE). Every CEE country embarked on a journey of transformation, from a centrally planned economy to a market-based one, led by pressures from external organizations, including the European Union (EU), the European Bank for Reconstruction and Development (EBRD), and the United States Agency for International Development (USAID). The variations in the timing and depth of those developments help us overcome the endogenous nature of institutional *status quo* in other empirical studies. Also, those CEE countries make a relatively homogeneous group in many aspects other than the focused institutional developments, allowing us to create a cleaner test.

The transformation was bound to be drastic in the banking sector. After the collapse of the system, banks quickly changed from acting as mere bookkeepers implementing the government's planned resource allocation to providers of modern banking services (Fries and Taci 2005; Bailey 1995). The ensuing overhaul of the banking systems involved several interrelated tasks, including establishing a two-tier banking system, liberalizing interest rates, strengthening prudential regulation and supervision, implementing explicit deposit insurance, privatizing state-owned banks, allowing foreign bank entry, and removing political influences. Accounting information immediately gained an economic content from the new system because the monetary information flowing into the accounting systems under the old regime is based on little more than centrally controlled, or even contrived, commodity prices and lacks economic basis (Bailey 1995). Progress has been made with the implementation of the core principles of the Basel Committee on Banking Supervision. Along with the banking reforms, there was also a series of structural changes in the enterprise sector to promote market competition and improve the investment environment. For example, governments established project groups to remodel secured transactions laws, company laws, and insolvency laws. Securities exchanges were formed and a rudimentary legal and regulatory framework for the issuance and trading of securities was established.

Defining and assessing AQ can be subjective. We draw, from previous banking research, four important AQ models and test our hypotheses repeatedly in each one. This is a more robust approach than relying on a single AQ measure or having multiple measures rolled into one. The convergence of results from multiple AQ models gives us more confidence on the conclusion drawn. We use the bank reform index by EBRD to gauge the overall status of institutional reforms in the banking sector. Using a sample of 16 CEE countries between 1997 and 2008, we find that banking reform spurs substantial improvement in AQ. One standard deviation increase in *Bank Reform* leads to a 71.16 percent increase in *predictive power of earnings,* 23.77 percent decrease in earnings smoothing, a 55.95 percent decrease in *earnings-inflating DLLP,* and a 57.09 percent decrease in the likelihood of *avoidance of reporting losses,* when compared to the sample averages. The main finding comports with the view that strong institutions constrain managers' misbehaviors, so their motives to manipulate accounting information decline with the strengthening of those institutions (Leuz, Nanda, and Wysocki 2003; Haw, Hu, Hwang, and Wu 2004).

Our DID models automatically eliminate confounders that are country or year-specific. We also control for multiple concurrent factors, including economic status, accounting standards, creditor rights, auditor effectiveness, European Union (EU) membership, and corporate reform. While those factors also experienced rapid changes during the sample period, we find that banks' AQ improvement is largely due to banking reform.

We further identify four specific reforms in the financial sector that may have contributed to the observed improvement in AQ. They are (1) bank stabilization due to prudential regulation and supervision; (2) increase/decrease in foreign/state ownership through bank privatization; (3) independence of the banking industry from political influences; and (4) implementation of deposit insurance (DI). We find that those specific reforms positively influence AQ but to various degrees. The most significant and consistent positive effect comes from (1).

Different from many other international accounting studies, we zero in on a special group of countries during a significant period of time, which allows us to examine an important issue using more robust tests in a much cleaner setting. Academic research on transition economies (e.g., Brissimis, Delis, and Papanikolaou 2008; Fang, Hasan, and Marton 2014; Haselmann et al. 2010) and reports from government agencies (e.g., EBRD publications) have provided some valuable insights into the structural changes in CEE countries, with a focus on their economic and financial impacts. Our study contributes to this literature not only because it broadens the perspective by looking at the accounting ramifications of those institutional developments. We reveal an impact that is not the intended target of those institutional developments. International accounting

research can have a significant influence on policies (Barth 2018). Our finding of a positive externality of the reform can thus provide additional support for policy makers considering initiating institutional changes.

The rest of the paper is structured as follows. Section II discusses the literature and constructs the hypotheses. Section III discusses our data and the sources. Section IV explains the four AQ models and the DID estimators. Section V reports the results. Section VI explores alternative approaches to answer the research question. Section VII concludes.

II. LITERATURE REVIEW AND HYPOTHESES

Institutional Development and AQ

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) find that common-law countries offer stronger investor protections than civil-law countries. Leuz et al. (2003) suggest that managers use EM to hide and protect their private benefits of control. Therefore, EM is less severe in common-law countries because the stronger protection there makes it more difficult to acquire private control benefits. Such a positive relationship between the strength of the institutional environment and accounting quality (AQ) is also evident in many other cross-country studies (e.g., Ball, Kothari, and Robin 2000; Burgstahler, Hail, and Leuz 2006; Lang, Smith Raedy, and Wilson 2006). There are many notable comparative research studies about EM in the financial sector as well. Fonseca and González (2008) argue that strong institutions alleviate the moral hazard problem of risk-taking and find less earnings smoothing in countries with stronger institutions. This may explain why empirical studies (e.g., Beatty, Chamberlain, and Magliolo 1995; Ahmed, Takeda, and Thomas 1999) find weak or mixed evidence on banks' earnings smoothing in the U.S., a country with strong institutions. Kanagaretnam, Lim, and Lobo (2014a) find less EM and stronger predictive power in earnings from banks in countries with stronger legal, extra-legal, and political institutions. A common argument from all those studies is that institutional development reduces the problems that managers would resort to EM to cover up. As banking reform in CEE countries brings convergence of local banking laws and regulations with Bank for International Settlements (BIS) standards, we argue that it reduces such motives behind EM too and thus helps improve AQ (H1).

H1: Banking reform improves AQ.

The prediction in H1 is built on a broad argument. We then analyze the specific mechanisms through which banking reform improves AQ.

Risk Decline Due to Prudential Regulation and Supervision (PR&S)

Strengthening PR&S is an important part of banking reform to ensure financial stability. As the banking systems gradually emerged from the initial effort of liberalization, the later reforms in CEE countries emphasized establishing prudential regulation guidelines to provide effective supervisory framework for banking institutions. The progress in PR&S led to the fast decline in banks' risk-taking in CEE countries (Fang et al. 2014; Franch, Nocciola, and Żochowski 2021). If hiding excessive risk is an important motive behind banks' EM, the significant risk decline can reduce EM and improve AQ. We believe risk hiding is indeed an important motive, a position supported in the related banking literature (Cordella and Yeyati 1997; Bushman and Williams 2012; Dal Maso, Kanagaretnam, Lobo, and Mazzi 2020; Moratis and Sakellaris 2021). We predict in *H2a* that banks' AQ improves with the strengthening of PR&S in banking reform.

H2a: Banks' AQ improves as PR&S in banking reform reduces bank risk.

Ownership Reform

Privatization is another major step in CEE's banking reform. Following the collapse of the Soviet Union, CEE countries witnessed a fast decline in state ownership and an influx of foreign banks (see Appendix A). This privatization process generates a demand for accounting information that is decision-useful. Privatization in other transition countries is shown to benefit corporate governance and firm performance (Ho, Yang, and Li 2011).

State-controlled banks have severe agency problems, and their state-appointed managers often lack financial expertise (Barisitz 2007). They inherited their governance and culture from the old regime, so the accounting process is susceptible to manipulation. By contrast, foreign banks, usually subsidiaries of banks in developed countries, come with greater corporate governance and knowledge of financial markets. They are usually held to higher standards in financial reporting because their parent companies face the consolidation requirement in home countries. We thus create the following two hypotheses in juxtaposition:

H2b: AQ improves with the exit of state ownership in banking reform.

H2c: AQ improves with the entrance of foreign banks in banking reform.

Enhanced Bank Political Independence

Bank supervisors' independence from political influence contributes to banking system soundness and financial transparency (Osma, Mora, and Porcuna-Enguix 2019). However, the supervisor is not always independent from the government or legally protected from the banking industry. This is the case even in the U.S. (Papadimitri, Pasiouras, Pescetto, and Wohlschlegel 2021). At the beginning of the transition, banks in CEE countries were under strong political pressures to sustain large state-owned enterprises (EBRD 1998). This is largely because bank supervision lacks independence, and regional governments are sensitive to unemployment and its fiscal implications. Many banks were hesitant about foreclosing on state-owned enterprises even after they repeatedly defaulted on debt repayment.

Political lending impairs financial reporting because managers would intentionally keep accounting information opaque just to hide such lending activities. Lack of political independence hurts AQ also because politically connected bank managers face lax enforcement of rules on corporate governance and financial reporting. Due to banking reform, the *political independence* in the financial sector gradually strengthened in transition countries. We predict a positive impact of the strengthened political independence on AQ.

H2d: Banks' AQ improves as political independence strengthens in banking reform.

Implementation of Explicit Deposit Insurance

Explicit deposit insurance (DI) is a part of modern financial safety nets. Its implementation is frequently recommended by outside experts to countries undergoing banking reform (Demirgüç-Kunt, Detragiache, and Tressel 2008). Without DI, depositors (creditors) need to closely monitor bank information to protect their own interests and demand an interest rate commensurate with the risk. This monitoring creates market pressure that pushes managers to the use of accounting manipulation (Graham, Harvey, and Rajgopal 2005; Bushman and Williams 2012). As government DI takes away the incentive of such monitoring, bank managers face less market pressure and thus engage in less EM. Therefore, we predict in H2e a positive effect of DI implementation on AQ.

H2e: Banks' AQ improves with the implementation of DI in banking reforms.

III. DATA

Bank-level financial information is retrieved from BankScope published by Bureau van Dijk. The final sample includes 434 commercial banks from 16 CEE countries. The sample runs from 1997 to 2008.[1] Table 1 reports the number of observations by country and AQ model in Panel A and by year and AQ model in Panel B. Sample size varies across AQ models because of different control variables and model specifications.

Broad Index for Banking Reform

The reform indicators are developed by EBRD's research groups. Indicator values reflect their opinions on sectoral progress using industrialized market economies as benchmarks. Two indexes are available for the financial sector: *banking reform* and *reform of non-bank financial institutions*. The former is our main variable of interest (*Bank Reform*). Its value ranges from 1, indicating little progress beyond establishment of a two-tier system, to 4.3, indicating full convergence of banking laws and regulations with Bank for International Settlements (BIS) standards. This EBRD index has been used in prior studies to measure the progress of banking reform (e.g., Brissimis et al., 2008; Koutsomanoli-Filippaki, Margaritis, and Staikouras 2009; Fang et al., 2014). The index exhibits large cross- and within-country differences (Figure 1), which is desirable for research purposes. Our dominance analyses (see Appendix A) also show that *Bank Reform* is the dominant driver of the other specific reformative changes in the banking sector, providing further support for the validity of this index.[2]

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[1] We start our sample from 1997 because the data is limited before that year. Banking reform gradually slowed down over time. EBRD stopped providing the reform index after 2010 due to lack of changes. Our sample period ends after 2008 because of the CEE crisis period 2009–2010.

[2] We use *general dominance statistics* to discern the relative importance of independent variables in an estimation model based on each variable's contribution to overall model fit statistics (see Grömping [2007] for a discussion).

TABLE 1

Number of Observations

Panel A: Number of Observations by Country and AQ Test

Country	AQ1 Predictive Power of Earnings Sample I	AQ2 Earnings Smoothing Sample II	AQ3 Earnings Inflation Sample III	AQ4 Avoidance of Reporting Losses Sample IV
Albania	26	14	3	58
Bosnia and Herzegovina	15	10	4	59
Bulgaria	41	36	16	110
Croatia	228	187	131	343
Czech Republic	69	43	27	180
Estonia	31	27	21	72
Hungary	45	31	9	150
Latvia	190	80	37	248
Lithuania	79	62	36	103
Macedonia (FYROM)	61	38	20	101
Montenegro	0	4	0	34
Poland	104	29	14	231
Romania	106	59	42	202
Serbia	34	25	10	134
Slovakia	69	57	28	124
Slovenia	87	81	43	134
Total	1,185	783	441	2,283

**Panel B: Number of Observations by Year and AQ Test**

Year	AQ1 Predictive Power of Earnings Sample I	AQ2 Earnings Smoothing Sample II	AQ3 Earnings Inflation Sample III	AQ4 Avoidance of Reporting Losses Sample IV
1997	72	34	20	152
1998	51	35	9	141
1999	65	38	18	160
2000	81	50	23	170
2001	91	52	29	158
2002	98	56	36	177
2003	110	69	49	198
2004	112	70	53	237
2005	123	83	50	255
2006	129	99	59	260
2007	146	112	65	234
2008	107	85	30	141
Total	1,185	783	441	2,283

Prudential Regulation and Supervision

Risk control is the main target of PR&S. Fang et al. (2014) provide evidence of its success in CEE countries: bank risk fast declined throughout the reform. We use the risk measure Z-score used in Laeven and Levine (2009), Kanagaretnam, Lim, and Lobo (2014b), and Fang et al. (2014):

$$Z\text{-}score = (ROA + E/A)/\sigma(ROA) \tag{1}$$

FIGURE 1
Bank Reform Index by Country and Year
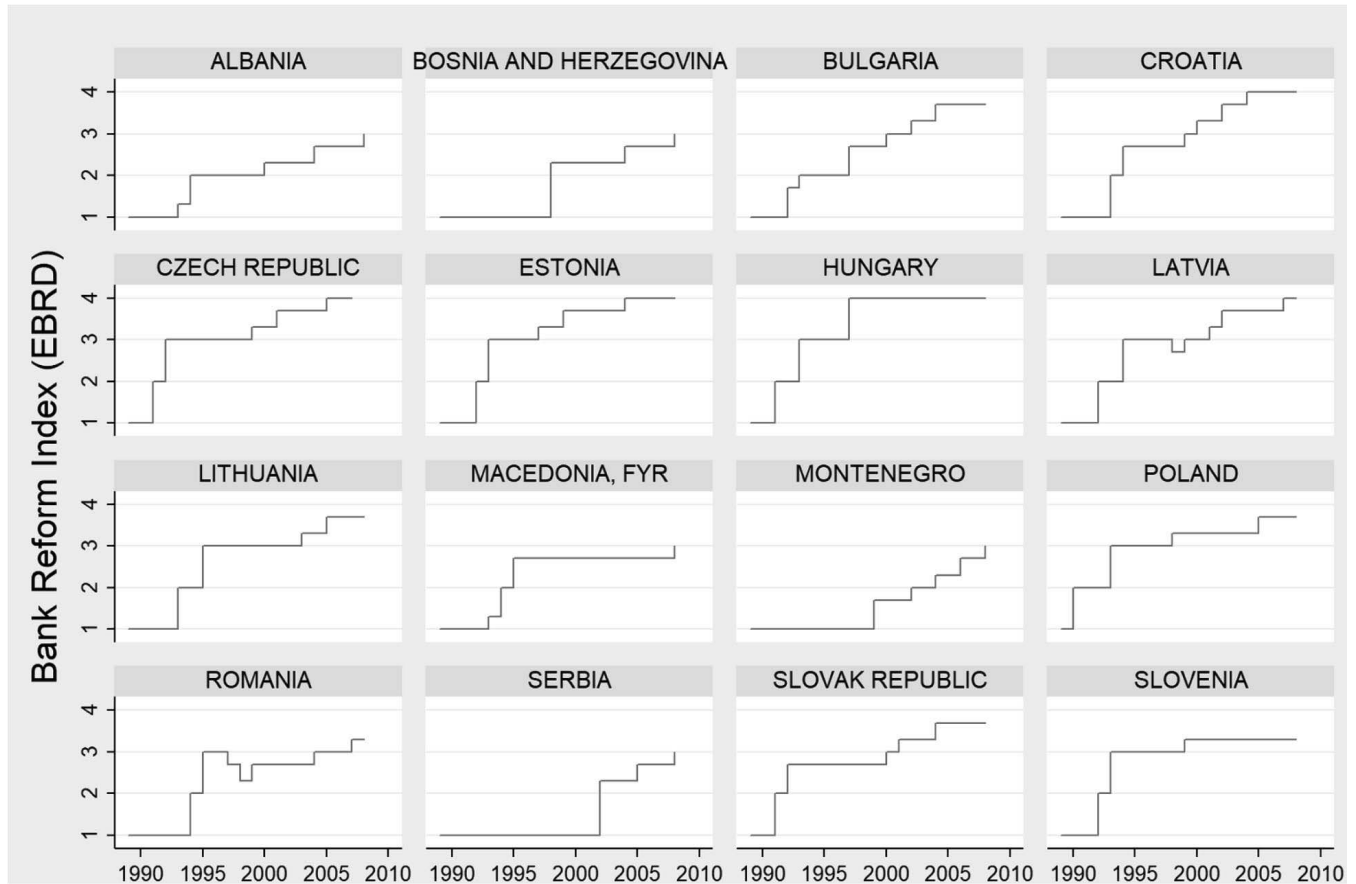
where *ROA* is return on assets; *E/A* is equity-to-asset ratio; $\sigma(ROA)$ is the standard deviation of *ROA,* computed over a three-year window $[t-2, t]$ in a rolling fashion.[3] *Z-score* measures a bank's distance to insolvency (Roy 1952), with a higher value indicating lower risk. Following Laeven and Levine (2009), we use the natural logarithm to adjust for skewness and then multiply it by (−1) so a higher value means greater risk.

$$Risk = -\log_e \text{Z-Score} \tag{2}$$

The predictive model (3) extracts the portion of *Risk* that is due to banking reform.

$$Risk = \alpha_0 + \beta_1 Bank\ Reform + \beta_2 NPL\ Resolution + \beta_3 Capital\ Requirement + \varepsilon \tag{3}$$

We supplement *Bank Reform* index with *Capital Requirement* and *NPL resolution* as predictors of *Risk*. Setting the capital adequacy ratio and resolving non-performing loans are important reformative actions taken as a part of PR&S in CEE countries.[4] By including those additional predictors, we also avoid creating a $\widehat{Risk}$ that is just a re-scaled *Bank Reform* index. In an alternative specification, we use *Risk* as is and the results are reported as well. Country-level NPL and capital requirement are available in EBRD reports. NPL level is multiplied by (−1) to measure the progress of *NPL Resolution*. We expect $\beta_1 < 0$, $\beta_2 < 0$, and $\beta_3 > 0$ in (3).

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[3] A short time window (three years here) is appropriate for the rapidly changing landscape of transition economies. For robustness checks, wider windows were used, and the results remain qualitatively the same.

[4] The government's effort to resolve non-performing loans (NPLs) was essential for lowering bank risk in CEE countries. Those bad loans were inherited from the centrally planned economy. In response, authorities soon took up-front rehabilitation measures, replacing bad loans held by state banks across-the-board by government bonds. The credits were transferred to a public "hospital bank" or debt recovery agency (Barisitz 2007).

Ownership Reform, Political Independence, and Explicit Deposit Insurance

We use bank-level data for ownership in our main tests, as it is more precise than country-level ownership data. The data is collected from BankScope, bank websites, and other publications. We identified 58 foreign banks ("greenfield banks") and 27 government-controlled domestic banks. We use the variable *bank supervisor independence* from the BCL dataset as a proxy for political independence in our analyses. We choose this dataset because it pertains to the banking sector and covers all 16 CEE countries in our sample. The index is calculated as the sum of three variables: *Sup_Ind_Political, Sup_Ind_Banks,* and *Sup_Ind_Fixed,* which capture the degrees to which the supervisory authority is (1) independent within the government from political influence; (2) protected by the legal system from the banking industry; and (3) able to make decisions independently of political consideration. BCL has provided only four years of data for those variables (1999, 2002, 2006, and 2011). We fill in the gaps between every two values based on linear trend. Demirgüç-Kunt et al. (2008) have created a dataset that tracks the adoption and design of deposit insurance (DI) systems across all countries that offer explicit DI. We draw from this dataset the indicator variable *DI,* which is equal to 1 when a country has explicit deposit insurance in a given year, and 0 otherwise.

Other Institutional Variables

During our sample period, CEE countries gradually adopted IFRS, a milestone toward financial reporting convergence. Accounting standards can have a complex and multifaceted impact on AQ (Cussatt, Huang, and Pollard 2018; Dinh, Schultze, List, and Zbiegly 2020; Felski 2017; Hellman 2011). Results in Aharony, Barniv, and Falk (2010) show that IFRS adoption improved value relevance for investors in equity securities in the EU. To identify the IFRS adoption time, we search for information about significant historical events and regulations related to accounting standards and the actual practices. We create an IFRS variable that captures the distance between accounting standards in practice and IFRS. A higher value of *IFRS* indicates accounting standards in practice being closer to IFRS. Ten out of the 16 sample countries obtained EU membership during the sample period. The EU accession dates are available at the official website of EU. We obtain *Auditor Effectiveness* from the BCL data. The added complexity in bank supervision due to bank reform is likely to benefit from effective external auditors (Masciandaro, Peia, and Romelli 2020). Following Haselmann et al. (2010), we use *Creditor Rights* to measure both the protection of individual creditor's claims outside bankruptcy (*Collateral*) and the collective enforcement the legal system offers for bankruptcy (*Bankruptcy*). *Creditor Rights,* calculated as the sum of *Collateral* and *Bankruptcy,* is taken from Pistor, Raiser, and Gelfer (2000) for the earlier years and further extended with the data from Haselmann et al. (2010). Economic growth spurs institutional developments, so including *GDPPC* in the model essentially controls for institutional developments that are dependent on economic status (Leuz et al. 2003). We use *GDPPC* in 2005 constant USD, as obtained from World Bank.

Corporate Reform

We take a further step to address the endogeneity concern that unobserved factors (e.g., other concurrent reforms, human developments, capability of political elites) can influence both AQ measures and banking reform, thereby causing a positive correlation between the two. Specifically, we construct a general reform measure, *Corporate Reform,* which is related to but distinct from *Bank Reform*. Because it is larger in scope than *Bank Reform, Corporate Reform* should be even more subject to those unobserved country-level influences (or directly capturing certain aspects of them). If the impact we find from *Bank Reform* results from those unobserved factors, then adding *Corporate Reform* to the model should take away or significantly dilute the significance of *Bank Reform*. Therefore, we run our AQ models with and without *Corporate Reform* and compare the results. Fang et al. (2014) use a *Corporate Reform* variable constructed on three EBRD indexes of the progresses in the non-financial sector: the privatization of small-size enterprises, the privatization of large-size enterprises, and the sufficiency of corporate laws to promote the adoption of modern governance. To broaden the scope of this variable, we also tap into the Worldwide Governance Indicators (*Kaufmann governance indexes*), which were frequently used in cross-country studies to assess country-level corporate governance. We create *Corporate Reform* based on all those indicators using factor analysis.[5] The variable is further rescaled to make the results comparable to those from *Bank Reform*.

IV. EMPIRICAL METHODOLOGY

We use four AQ models: predictive power of earnings, earnings smoothing, earnings-inflating discretionary *LLP,* and avoidance of reporting losses. Following Haselmann et al. (2010), we create DID estimators through double fixed effects. This

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[5] Our factor analysis yields only one factor that has an eigenvalue larger than 1 (6.675). This is also the one and only factor that shows consistent positive loadings of all the nine indexes (three of the EBRD's and six Kaufmann's). Year and country fixed effects have also been removed from this variable as they are controlled for in the DID model.

FIGURE 2
Varying Progression Speeds
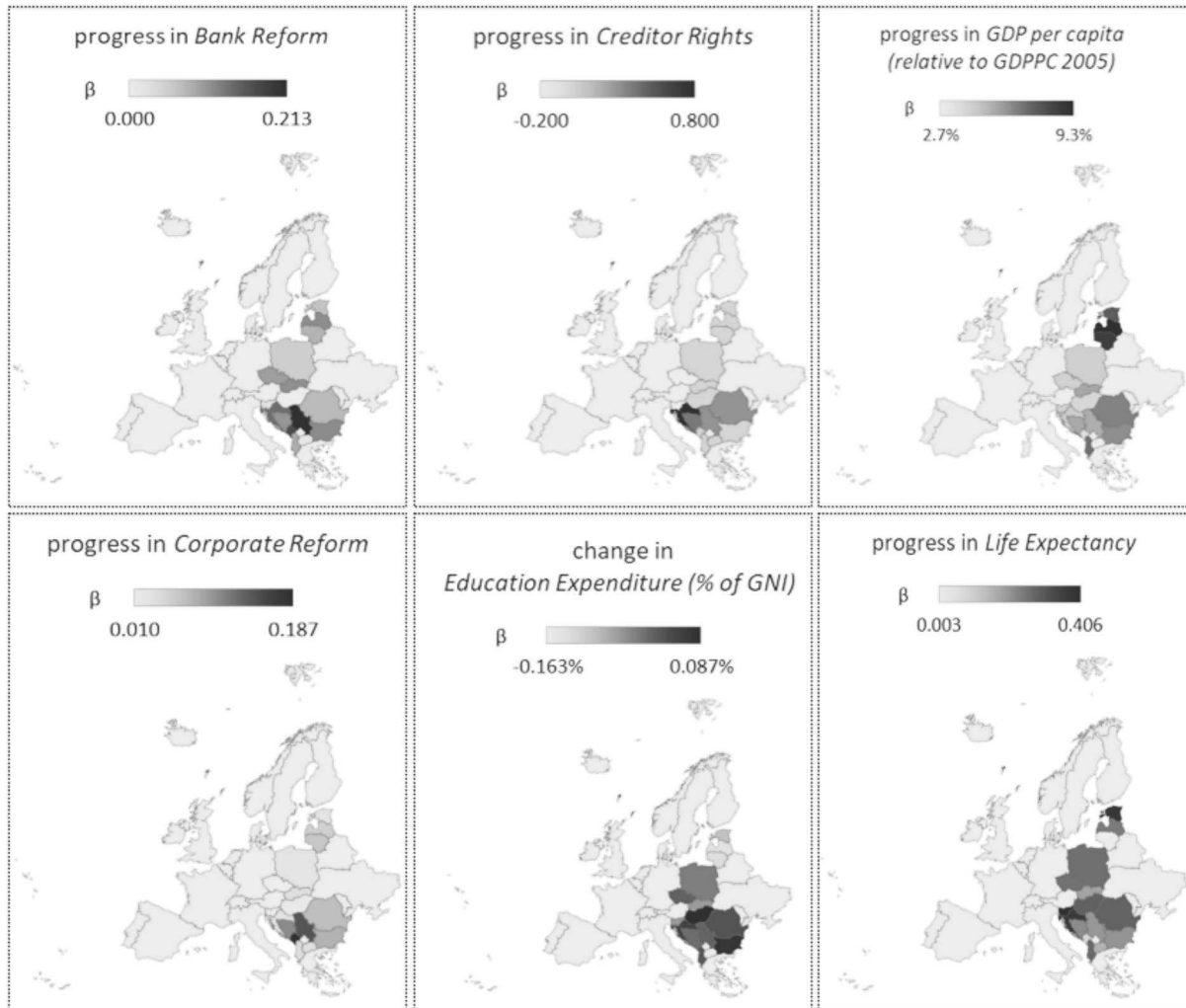
is different from the approach under a traditional DID setting with two subjects (treated and control) and two periods (before and after). The double fixed effects approach is applicable when there are multiple subjects (countries) over multiple periods (years). Those subjects belong to both the treated and the control group but at different times.

One constant criticism of cross-country studies comes from the fact that many country-level institutions are simply highly correlated. With DID models, we use changes to explain changes. Institutional changes are usually not as highly correlated as institutional levels. We find that CEE countries vary in their development speeds across different institutions. For illustration, we use the following variables: *Bank Reform, Corporate Reform, Creditor Rights, GDP per capita,* and, as examples of other social developments, *Education Expenditures* (percent of GNI), and *Life Expectancy*. We regress each one on the time variable *Year* and the coefficient (β) represents the amount of progress a country made per year. Figure 2 summarizes the varying progression speeds and provides a picture of asynchronous developments across various institutions and countries.

Methodology: Predictive Power of Earnings (AQ1)

AQ1 is built on the assumption that earnings with higher quality have stronger predictive power for future cash flows. We follow Altamuro and Beatty (2010) and Kanagaretnam et al. (2014a) by estimating predictive power of earnings as the coefficient before current earnings ($EBT_{i,t}$) from Equation (4), in which the dependent variable is future cashflows.

$$EBTLLP_{i,t+1} = \alpha_0 + \beta_1 EBT_{i,t} + \beta_2 Bank\ Reform_{j,t} + \beta_3 Bank\ Reform_{j,t} \times EBT_{i,t}$$
$$+ \sum \beta(Bank\ controls)_{i,t} + \sum \beta(Macro.\ controls)_{j,t}$$
$$+ \sum \beta(Macro.\ controls)_{j,t} \times EBT_{i,t} + DID\ Extension + \varepsilon_{i,t} \tag{4}$$

where:

$$DID\ Extension = \sum \beta(Country\ Indicators)_j + \sum \beta(Year\ Indicators)_t + \sum \beta(Country\ Indicators)_j \times EBT_{i,j}$$
$$+ \sum \beta(Year\ Indicators)_t \times EBT_{i,t} \tag{5}$$

Subscripts *i*, *j*, and *t* denote banks, countries, and years; H1 predicts a positive β_3, which captures the impact of banking reform on *AQ1*. Haselmann et al. (2010) create their DID estimator through double fixed effects on country and year. Another notable example of this application is in Bertrand and Mullainathan (2003). To create a complete DID extension in Equation (4), we need to further add 15 interaction terms between country and $EBT_{i,t}$ and 11 interaction terms between year and $EBT_{i,t}$. The coefficients before those interaction terms represent the average *predictive power of earnings* at the country and year levels. *Bank variables* include firm size (*Size*), standard deviation in ROA (*Volatility*), the deposit ratio (*Deposit*), the *Capital Ratio*, corporate loans (*CORP*), and public status (*Public*).

Methodology: Earnings Smoothing (AQ2)

LLP is banks' largest accounting accruals and subject to significant discretions. *Earnings smoothing* measures the degree to which dictionary *LLP* is used to smooth out earnings surprises. It is gauged by the positive coefficient on *earnings before LLP* (*EBTLLP*) in Equation (6).

$$LLP_{i,t} = \alpha_0 + \beta_1 EBTLLP_{i,t} + \sum \beta(Bank\ variables)_{i,t} + \sum \beta(Country\ Indicators)_j + \sum \beta(Year\ Indicators)_t + \varepsilon_{i,t} \tag{6}$$

To test H1, we interact *EBTLLP* with *Bank Reform* in Equation (7). A negative coefficient before this interaction term supports H1. We include the following control variables from Fonseca and González (2008), Kanagaretnam et al. (2014a), and Ahmed et al. (1999): *Size, Deposit*, beginning loan loss allowance (*BEGLLA*), total loans outstanding (*Loans*), change in total loans outstanding (*CHLoans*), non-performing loans (*NPL*), the change in NPL (*CHNPL*), and corporate loans (*CORP*). Interactions between $EBTLLP_{i,t}$ and country and year indicators are added to Equation (7) to make β_3 a DID estimator.

$$LLP_{i,t} = \alpha_0 + \beta_1 EBTLLP_{i,t} + \beta_2 Bank\ Reform_{j,t} + \beta_3 Bank\ Reform \times EBTLLP_{i,t} + \sum \beta(Bank\ variables)_{i,t}$$
$$+ \sum \beta(Macro.\ variables)_{j,t} + \sum \beta(Country\ Indicators)_j + \sum \beta(Year\ Indicators)_t$$
$$+ \sum \beta(Country\ Indicators)_j \times EBTLLP_{i,t} + \sum \beta(Year\ Indicators)_t \times EBTLLP_{i,t} + \varepsilon_{i,t} \tag{7}$$

Methodology: Earnings Inflation (AQ3)

Managers may signal private information through *earnings smoothing,* resulting in better earnings quality (Tucker and Zarowin 2006; Subramanyam 1996). Following the lead of Kanagaretnam et al. (2014a), we further examine earnings-inflating discretionary *LLP,* which better identifies self-serving behaviors of managers than *earnings smoothing*. We run a two-stage estimation. First, we estimate Equation (6) using the entire sample and keep the residuals as *discretionary LLP* (*DLLP*). Then, we test the hypotheses in model (8) using observations with negative *DLLP* (earnings-increasing). The dependent variable is *DLLP* in its absolute value, so a higher value means more inflation. H1 predicts $\beta_1 < 0$.

$$|DLLP|_{i,t} = \alpha_0 + \beta_1 Bank\ Reform_{j,t} + \sum \beta(Macro.\ controls)_{j,t} + \sum \beta(Country\ Indicators)_j + \sum \beta(Year\ Indicators)_t$$
$$+ \varepsilon_{i,t} \tag{8}$$

Since bank variables have already been controlled for in the first stage, Equation (8) only controls for macro variables. We include country and year indicators to create an DID estimator.

Methodology: Avoidance of Reporting Losses (AQ4)

Empirical studies and surveys show that firms avoid losses and earnings declines through accounting manipulation (Hayn 1995; Burgstahler and Dichev 1997; Beatty, Ke, and Petroni 2002; Graham et al. 2005; Shen and Chih 2005). For them to be

indicators of EM in our study, there must be discontinuity around those earnings benchmarks. As reported in Section V, small profits ($0 \leq ROA < 0.25\%$) are reported much more frequently than small losses ($-0.25\% \leq ROA < 0$) in the sample (7.9 percent versus 1.1 percent). We find no such disparity (13.8 percent versus 14.0 percent) between small increases in profit ($0 \leq \Delta ROA < 0.25\%$) versus small decreases in profit ($-0.25\% \leq \Delta ROA < 0$). The difference suggests that banks in transition countries place an emphasis on the appearance of survival rather than growth. We thus use the frequency of *small profit* as our fourth AQ measure. To tease out the impact of business fundamentals, we use earnings intervals around the *small profit* as the nearby control intervals (NCIs) (from -0.01 to 0.01 in *ROA*).

We use a multinomial logistic model (Equation (9)) to predict the likelihoods that (1) ROA falls into the small positive interval (outcome 1) as opposed to the NCIs (outcome 0) and (2) ROA falls into other intervals (outcome 2) as opposed to the NCIs. H1 predicts that the likelihood of (1) decreases with banking reform. Maximum likelihood estimation of logistic models is well-known to suffer from small-sample biases, especially for rare events. Our sample is relatively small and outcome (1) makes up only a tiny portion of it. We thus test H1 using the *general sample* that does not require bank control variables, except for *Size* and *Public*. Burgstahler et al. (2006) find that public companies report fewer small positive earnings than private companies.

$$\ln\left(P_{i,t,m}/P_{i,t,0}\right) = \alpha_m + \beta_{1,m}Bank\ Reform_{j,t} + \beta_{2,m}Size_{i,t} + \beta_{3,m}Public_{i,t}$$
$$+ \sum \beta(Macro.\ controls)_{j,t} + \sum \beta(Country\ Indicators)_j + \sum \beta(Year\ Indicators)_t + \varepsilon_{i,t} \qquad (9)$$

where subscript m denotes outcome 1 and outcome 2. H1 predicts a negative $\beta_{1,1}$.

V. RESULTS

Table 2 describes bank- and country-level variables based on sample I. Table 3 reports correlations between bank-level variables in Panels A and B, and between country-level variables in Panels C and D. *Bank Reform,* our main variable of interest, is included in both panels.

Results for Broad Banking Reform (H1)

AQ1

Results are reported in Table 4. The average *predictive power of earnings*, identified in the benchmark model (Column (1)), is 0.427 (β_1), which is lower than that in the U.S. (0.717) according to the results from Altamuro and Beatty (2010). The difference is consistent with the argument that countries with stronger institutions have better AQ. We also find that future performance, captured by the dependent variable, is positively associated with banks' *Size, Capital Ratio,* and lending activity (*Loans*). This may suggest a strong "Matthew Effect" in those transition countries: banks with earlier success in amassing resources are more likely to gain further success. The DID results are reported in Column (2). In support of H1, β_3 is positive and significant. A one standard deviation (s.d.) increase in *Bank Reform* (0.466 within the sample) leads to a 0.304 increase in AQ1, which is equal to 71.16 percent of the sample average.

The positive coefficient before *EBT* $\times$ *Public* is consistent with the demand from the equity market for accounting information that has high predicative power. There is also some evidence that both accession to EU and adoption of IFRS help improve *AQ1*. For robustness, we re-run the main tests using the basic model (no control for country- or year-level AQ) and the within-country model (controlling for country-level but not year-level AQ). The results are reported in the notes within Table 4. We also report in these table notes the β_3 estimate when *Corporate Reform* and its interaction term are left out of the model. *Corporate Reform,* which is related to but broader than *Bank Reform,* is added into the model to show that our results are not driven by unobserved macro factors that can both push the reforms and have a positive effect on AQ. The results show that *Corporate Reform* does not dilute the positive impact of *Bank Reform* or show significant positive effect by itself, removing the concern about such unobserved influences.

AQ2

Results are reported in Table 5. We split the sample into profit- and loss-reporting subsamples. Prior studies do not differentiate between the two when estimating earnings smoothing. This oversight can lead to model misspecification because firms' priorities change with their circumstances. When firms are in a negative "tailspin," efforts to survive financial distress dominate reporting concerns (Graham et al. 2005). Consistent with this conjecture, our benchmark results provide no evidence of earnings smoothing among the loss-reporting subsample ($\beta_1 < 0$ in Column (1)). The profit-reporting subsample, on the other hand, shows strong smoothing ($\beta_2 > 0$ in Column (2)). Therefore, we confine our AQ2-based tests within the profit-reporting subsample (94 percent of the whole sample). Compared with the findings in the U.S., the average earnings smoothing

TABLE 2
Descriptive Statistics

Panel A: Bank Level

Variables	Explanation	Mean	Median	Std. Dev.	25 Pct.	75 Pct.
BEGLLA	Loan Loss Allowance/Total Loans	0.061	0.038	0.066	0.015	0.080
Capital Ratio	Equity/Total Assets	0.125	0.100	0.083	0.074	0.142
CORP	Corporate Loans/Total Assets	0.439	0.481	0.243	0.268	0.619
Deposit	Deposit/Total Assets	0.772	0.817	0.140	0.706	0.866
EBT	Profit before Taxes/Total Assets	0.016	0.015	0.022	0.007	0.025
EBTLLP	Profit before Taxes and LLP/Total Assets	0.025	0.021	0.025	0.013	0.032
Foreign (H2b)	Foreign Bank Indicator	0.115	0.000	0.319	0.000	0.000
LLP	Loan Loss Provision/Total Assets	0.009	0.005	0.015	0.001	0.011
Loans	Loan/Total Assets	0.523	0.548	0.184	0.404	0.645
NPL	Non-Performing Loans/Total Loans	0.057	0.034	0.071	0.012	0.074
Public	Exchange Listed	0.331	0.000	0.471	0.000	1.000
Risk (H2a)	Reverse Z-score	−3.218	−3.317	1.201	−4.007	−2.584
Size	Ln_Assets	13.177	13.099	1.524	12.031	14.287
State-Controlled (H2b)	Government Bank Indicator	0.059	0.000	0.236	0.000	0.000
Volatility	$\sigma(ROA)$	0.009	0.004	0.013	0.002	0.008

Table 2, Panel A, describes the bank-level variables based on Sample I.

Panel B: Country Level

Variables	Source	Mean	Median	Std. Dev.	Pct25	Pct75
Auditor Effectiveness	BCL data	6.136	6.000	0.890	5.492	7.000
Bank Reform (H1)	EBRD	3.068	3.000	0.722	2.670	3.670
Capital Requirement	EBRD	0.092	0.080	0.016	0.080	0.100
Corporate Reform	EBRD	0.000	−0.026	1.090	−0.471	0.529
Creditor Rights	Pistor and Haselmann	6.881	7.000	2.268	5.750	9.000
DI (H2d)	Demirgüç-Kunt	0.833	1.000	0.374	1.000	1.000
EU Membership	EU website	0.229	0.000	0.421	0.000	0.000
Foreign Bank Assets	EBRD	59.980	69.000	31.542	33.850	87.500
GDPPC	World Bank	6,895	5,943	4,298	3,232	9,639
IFRS	See Other Institutional Variables in Section III	0.534	0.500	0.412	0.000	1.000
Independence (H2c)	BCL data	2.168	2.216	0.883	1.701	3.000
NPL	EBRD	0.127	0.063	0.146	0.031	0.160
State Bank Assets	EBRD	19.876	7.400	24.080	2.150	36.879

Table 2, Panel B describes the macro variables using 192 country-year observations (16 countries × 12 years).

in our sample ($\beta = 0.325$) is larger and more significant. The coefficients on control variables are mostly consistent with intuitions and those for U.S. banks.

In support of H1, β_3 in Column (3) is negative and significant. A one standard deviation improvement in *Bank Reform* (0.471) leads to decrease in *earnings smoothing,* which is equal to 23.77 percent of the average smoothing level in the sample. Public banks show less earnings smoothing, suggesting the stronger monitoring they face.

AQ3

Results are reported in Table 6. Scaled by total assets, the *earnings-inflating DLLPs* have an average magnitude of 0.767 percent. The quality of *DLLP* as a measure of EM depends on how well the first-stage provision model explains the data. According to results from the first-stage estimation (untabulated in Table 6), the provision model explains roughly 60 percent of the variation within *LLP*. This is a decent goodness of fit, considering that similar provision models from U.S. studies have R^2s around 30 percent. The DID results support the prediction in H1 ($\beta_1 < 0$). Increasing *Bank Reform* by one standard

TABLE 3
Correlations

Panel A: Bank-Level Variables (1)–(8)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	Bank Reform	1.00							
(2)	BEGLLA	−0.25	1.00						
(3)	Capital Ratio	−0.29	0.22	1.00					
(4)	CORP	−0.06	0.04	0.15	1.00				
(5)	Deposit	0.11	−0.22	−0.62	−0.16	1.00			
(6)	EBT	0.04	0.02	0.13	0.02	−0.07	1.00		
(7)	EBTLLP	−0.17	0.16	0.27	0.15	−0.21	0.76	1.00	
(8)	Foreign	0.04	−0.17	0.01	0.06	0.07	−0.10	−0.12	1.00
(9)	LLP	−0.33	0.23	0.26	0.21	−0.23	−0.20	0.43	−0.05
(10)	Loans	0.21	−0.13	0.13	0.59	−0.18	0.04	0.14	0.03
(11)	NPL	−0.27	0.78	0.31	0.09	−0.28	0.05	0.25	−0.15
(12)	Public	−0.03	0.21	0.19	0.13	−0.13	0.07	0.11	−0.18
(13)	Risk	−0.18	0.11	−0.14	−0.05	0.13	−0.20	−0.13	0.06
(14)	Size	0.34	−0.22	−0.51	−0.02	0.24	0.09	−0.04	0.08
(15)	State-Controlled	−0.01	0.12	−0.09	−0.01	−0.11	−0.08	−0.03	−0.09
(16)	Volatility	−0.32	0.23	0.20	−0.01	−0.14	−0.28	−0.07	−0.01

Panel B: Bank-Level Variables (9)–(16)

		(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(9)	LLP	1.00							
(10)	Loans	0.15	1.00						
(11)	NPL	0.34	−0.03	1.00					
(12)	Public	0.09	0.18	0.28	1.00				
(13)	Risk	0.07	−0.24	0.05	−0.19	1.00			
(14)	Size	−0.22	0.13	−0.17	0.02	−0.08	1.00		
(15)	State-Controlled	0.03	−0.02	0.10	−0.05	0.01	0.11	1.00	
(16)	Volatility	0.29	−0.15	0.16	−0.10	0.58	−0.33	−0.01	1.00

Table 3, Panels A and B, reports correlations among bank-level variables (except for *Bank Reform*) using Sample I. Non-indicator variables are winsorized at 1 percent at both ends. *EBT* and *EBTLLP* are winsorized at 2 percent level.

Panel C: Country-Level Variables (1)–(7)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	Auditor Effectiveness	1.00						
(2)	Bank Reform	0.28	1.00					
(3)	Capital Requirement	0.07	0.05	1.00				
(4)	Corporate Reform	0.16	0.44	0.11	1.00			
(5)	Creditor Rights	−0.24	0.06	0.11	0.12	1.00		
(6)	DI	0.10	0.63	0.20	0.33	−0.01	1.00	
(7)	EU Membership	0.03	0.49	−0.10	0.11	0.06	0.24	1.00
(8)	Foreign Bank Assets	0.09	0.61	0.38	0.38	0.10	0.62	0.29
(9)	GDPPC	0.25	0.63	−0.34	0.08	−0.13	0.27	0.53
(10)	IFRS	0.07	0.30	0.10	0.16	−0.12	0.26	0.39
(11)	Independence	0.25	0.23	0.40	0.14	0.12	0.16	0.05
(12)	NPL	−0.13	−0.44	−0.33	−0.17	−0.23	−0.26	−0.34
(13)	State Bank Assets	−0.13	−0.64	−0.16	−0.36	−0.10	−0.57	−0.33

TABLE 3 (continued)

Panel D: Country-Level Variables (8)–(13)

		(8)	(9)	(10)	(11)	(12)	(13)
(8)	*Foreign Bank Assets*	1.00					
(9)	*GDPPC*	0.14	1.00				
(10)	*IFRS*	0.34	0.18	1.00			
(11)	*Independence*	0.25	0.06	0.21	1.00		
(12)	*NPL*	−0.48	−0.31	−0.32	−0.26	1.00	
(13)	*State Bank Assets*	−0.70	−0.28	−0.37	−0.23	0.55	1.00

Table 3, Panels C and D, reports correlations among macro variables based on the 192 country-year observations (16 countries × 12 years).

TABLE 4

H1 Results: AQ1 Predictive Power of Earnings

$Y = EBTLLP_{t+1}$	(1) Benchmark Model		(2) DID Model	
EBT (β_1)	0.427***	(16.034)	Absorbed	
Capital Ratio	0.034***	(3.050)	0.023**	(2.071)
CORP	0.005	(1.584)	0.005	(1.492)
Deposit	−0.007	(−1.286)	−0.001	(−0.159)
Loans	0.015***	(3.151)	0.014***	(3.092)
Size	0.002***	(3.790)	0.001**	(2.519)
Volatility	−0.023	(−0.412)	−0.053	(−0.911)
Auditor Effectiveness			0.000	(0.399)
Bank Reform			0.008*	(1.689)
Corporate Reform			−0.003***	(−3.199)
Creditor Rights			0.002*	(1.803)
EU Membership			0.006**	(2.369)
GDPPC			0.002	(1.256)
IFRS			0.002	(0.592)
Public			−0.002*	(−1.652)
EBT × Auditor Effectiveness			0.049	(0.867)
EBT × Bank Reform (β_3)			0.652***	(3.223)
EBT × Corporate Reform			−0.039	(−0.861)
EBT × Creditor Rights			−0.015	(−0.361)
EBT × EU Membership			0.386**	(2.315)
EBT × GDPPC			−0.070	(−0.905)
EBT × IFRS			0.319*	(1.682)
EBT × Public			0.205***	(2.652)
Country and Year Fixed Effects	Yes		Yes	
Country-Level AQ1	No		Yes	
Year-Level AQ1	No		Yes	
Observations	1,185		1,185	
Adj. R^2	0.400		0.497	

*, **, *** denote significances at 0.1, 0.05, and 0.01 levels, respectively.

$\beta_3 = 0.239$**, t-stat. = 1.801 from the alternative Basic Model, which does not control for predictive power of earnings by country ($\sum$ *Country Indicators* × $EBT_{i,t}$) and by year ($\sum$ *Year Indicators* × $EBT_{i,t}$).

$\beta_3 = 0.612$***, t-stat. = 3.712 from the alternative Within-Country Model, which controls for predictive power of earnings by country but not by year.

$\beta_3 = 0.621$***, t-stat. = 3.204 when *Corporate Reform* and its interaction term are left out of the model.

TABLE 5

H1 Results: AQ2 Earnings Smoothing

$Y = LLP$	Observations with Negative Earnings		Observations with Positive Earnings		Observations with Positive Earnings	
	(1) Benchmark Model		(2) Benchmark Model		(3) DID Model	
EBTLLP (β_1)	−0.131	(−0.472)	0.325***	(7.929)	Absorbed	
BEGLLA	0.039	(0.190)	−0.037	(−1.248)	−0.042	(−1.527)
Capital Ratio	0.058	(1.203)	−0.048***	(−5.052)	−0.036***	(−4.581)
CHLoans	0.040*	(1.696)	0.000	(−0.069)	−0.001	(−0.184)
CHNPL	0.256	(0.922)	0.023	(0.499)	0.046	(1.162)
CORP	−0.014*	(−1.825)	0.000	(0.326)	0.000	(0.400)
Deposit	0.044*	(1.840)	−0.001	(−0.498)	0.000	(0.064)
Loans	−0.002	(−0.117)	0.007***	(3.391)	0.006***	(3.145)
NPL	0.068	(0.351)	0.110***	(3.098)	0.112***	(3.402)
Size	−0.001	(−0.138)	−0.001***	(−5.145)	−0.001***	(−3.836)
Volatility	0.398	(1.577)	0.154	(1.631)	0.102	(1.144)
Auditor Effectiveness					−0.001	(−0.846)
Bank Reform					0.002	(1.131)
Corporate Reform					−0.002	(−1.633)
Creditor Rights					0.000	(0.323)
EU Membership					0.002*	(1.917)
GDPPC					0.001	(1.417)
IFRS					−0.003**	(−1.989)
Public					−0.002**	(−2.433)
EBTLLP × Auditor Effectiveness					0.040	(1.147)
EBTLLP × Bank Reform (β_3)					−0.164**	(−2.109)
EBTLLP × Creditor Rights					0.000	(−0.014)
EBTLLP × EU Membership					0.114*	(1.730)
EBTLLP × GDPPC					0.029	(1.167)
EBTLLP × IFRS					−0.112	(−1.492)
EBTLLP × Corporate Reform					0.041	(1.412)
EBTLLP × Public					−0.127**	(−2.123)
Country and Year Fixed Effects	Yes		Yes		Yes	
Country-Level AQ2	No		No		Yes	
Year-Level AQ2	No		No		Yes	
Observations	783		47		783	
Adj. R^2	0.558		0.598		0.631	

*, **, *** denote significances at 0.1, 0.05, and 0.01 levels, respectively.
Alternative Specifications:
$\beta_3 = -0.193$***, t-stat. = −2.977 from the alternative Basic Model, which does not control for earnings smoothing level by country ($\sum$ *Country Indicators* × $EBTLLP_{i,t}$) and by year ($\sum$ *Year Indicators* × $EBTLLP_{i,t}$).
$\beta_3 = -0.137$**, t-stat. = −1.983 from the alternative Within-Country Model, which controls for earnings smoothing level by country but not by year.
$\beta_3 = -0.145$**, t-stat. = −2.091 when *Corporate Reform* and its interaction term are left out of the model.

deviation (0.451 in this sample) leads to a decrease in AQ3 by a magnitude that is equal to 0.346 percent of total assets, which represents a 55.95 percent improvement from the sample average. We also find *Auditor Effectiveness* significantly curbs AQ3, which is in contrast with its limited impacts on AQ1 and AQ2. The difference confirms the notion that auditors are more active when dealing with income-increasing items than income-decreasing ones (Desai and Gerard 2013; Heninger 2001; Basu 1997).

AQ4

Results are reported in Table 7. A one standard deviation improvement in *Bank Reform* leads to a 4.51 percent drop in the frequency of small positive earnings in absolute terms. Compared to the average frequency, it represents a 57.09 percent improvement. We also find that *avoidance of reporting losses* occurs less frequently among banks that are *public* and larger in

TABLE 6

H1 Results: AQ3 Earnings-Inflating *DLLP*

$Y = |DLLP|$	DID Model	
Auditor Effectiveness	−0.002**	(−2.383)
Bank Reform (β_1)	−0.008***	(−2.872)
Corporate Reform	0.001**	(2.354)
Creditor Rights	0.001	(1.504)
EU Membership	−0.001	(−0.834)
GDPPC	0.002*	(1.782)
IFRS	−0.001	(−0.835)
Public	0.000	(−0.172)
Country-Level AQ3 (Country Fixed Effect)	Yes	
Year-Level AQ3 (Year Fixed Effect)	Yes	
Observations	441	
Adj. R^2	0.221	

*, **, *** denote significances at 0.1, 0.05, and 0.01 levels, respectively.
Alternative Specifications:
$\beta_1 = -0.002*$, t-stat. $= -1.686$ from the alternative Basic Model, which does not control for earnings inflation by country ($\sum$ *Country Indicators*) and by year ($\sum$ *Year Indicators*).
$\beta_1 = -0.005**$, t-stat. $= -2.310$ from the alternative Within-Country Model, which controls for earnings inflation by country but not by year.
$\beta_1 = -0.008***$, t-stat. $= -2.910$ when *Corporate Reform* is left out of the model.

size. These findings substantiate our conjecture that public banks face more monitoring in financial reporting and bank size is a strong indicator of bank quality in CEE countries.

Results for Specific Reformative Actions in Banking (H2)

The results from the predictive model (Equation (3)) are summarized in Table 8. All three country-level predictors we proposed (*Bank Reform, NPL Resolution,* and *Capital Requirement*) have strong predictive power for bank *Risk*. Their impacts remain strong even after we include other macro variables used in this study. We then compute the predicted bank risk ($\widehat{Risk}$) based on the coefficient estimates and country-level predictors. $\widehat{Risk}$ captures the progress in PR&S due to banking reform, with a lower value suggesting more progress.

To test H2, we replace *Bank Reform* with specific reforms in the above AQ models, while retaining all the other variables. Key results are summarized in Table 9. Columns (1) to (4) report separate test results for H2a–H2e; Column (5) reports the results of testing them all together. Column (6) reports the economic impacts of those specific reforms based on the results in Column (5). The absolute impacts are calculated as the changes in AQ levels with one s.d. increase in the reform variable. The relative impacts are the absolute impacts divided by the average AQ levels in the sample.

Among the four channels, PR&S (H2a) provides the strongest and most consistent impacts on the four types of AQ. The variables of interest for the test of PR&S are $EBT \times \widehat{Risk}$ in Table 9**,** Panel A, $EBTLLP \times \widehat{Risk}$ in Panel B, and $\widehat{Risk}$ in both Panels C and D. The relative impact ranges from 36.05 percent, on *earnings smoothing,* to 76.94 percent, on *earnings inflation*. The results also support, in general, the prediction that AQ improves with the entry of foreign-owned banks and exit of state ownership (H2b and H2c). A noticeable inconsistency is on the impact of state ownership on earnings inflation (Panel C). One explanation is that state-controlled banks have different priorities than other banks. A stellar performance is not as important as the appearance of stability. Rather than pursuing aggressive earnings inflation, they are more interested in smoothing earnings and avoiding reporting losses. Strengthening political independence (*H2d*) shows positive effects on all four types of AQ. The impacts are strong economically but somewhat weaker statistically. The weaker statistical significances are likely caused by the noise within the *Independence* measure. There is some evidence that implementing explicit DI improves *predictive power of earnings* and reduces *earnings smoothing* (H2e). But in general, we do not find consistent or strong evidence in support of its benefits on AQ. There could be three explanations. First, under the old Soviet regime, banks were state-controlled, and deposits were already implicitly guaranteed by the governments, thereby limiting the incremental value of explicit DI. Second, more than 90 percent of the observations in our sample fall in the period when a country-level DI system is already in place, creating too small a variation in DI to investigate its impact in a DID model. Third, DI can lead to more risk-taking behaviors, which increases the incentive behind accounting manipulation.

TABLE 7

H1 Results: AQ4 Avoidance of Reporting Losses

Panel A: Earnings Discontinuity (Sample IV)

Earnings Interval Indicator	Small Pos./Neg.	Outcomes (Analysis in Panel B)	Frequency in Sample V
$ROA < -1\%$		Outcome 2 (Others)	8.9%
$-1\% \leq ROA < -0.75\%$		Outcome 0 (Nearby control)	1.0%
$-0.75\% \leq ROA < -0.5\%$		Outcome 0 (Nearby control)	0.7%
$-0.5\% \leq ROA < -0.25\%$		Outcome 0 (Nearby control)	1.0%
$-0.25\% \leq ROA < 0$	Small Neg.	Outcome 0 (Nearby control)	1.1%
$0 \leq ROA < 0.25\%$	Small Pos.	Outcome 1 (Loss avoid.)	7.9%
$0.25\% \leq ROA < 0.5\%$		Outcome 0 (Nearby control)	8.8%
$0.5\% \leq ROA < 0.75\%$		Outcome 0 (Nearby control)	10.1%
$0.75\% \leq ROA < 1\%$		Outcome 0 (Nearby control)	11.3%
$ROA > 1\%$		Outcome 2 (Others)	49.0%
$\Delta ROA < -1\%$		NA	11.2%
$-1\% \leq \Delta ROA < -0.75\%$		NA	3.2%
$-0.75\% \leq \Delta ROA < -0.5\%$		NA	5.6%
$-0.5\% \leq \Delta ROA < -0.25\%$		NA	8.2%
$-0.25\% \leq \Delta ROA < 0$	Small Neg. Δ	NA	14.0%
$0 \leq \Delta ROA < 0.25\%$	Small Pos. Δ	NA	13.8%
$0.25\% \leq \Delta ROA < 0.5\%$		NA	8.8%
$0.5\% \leq \Delta ROA < 0.75\%$		NA	5.6%
$0.75\% \leq \Delta ROA < 1\%$		NA	2.3%
$\Delta ROA > 1\%$		NA	27.1%

Panel B: The Impact of Banking Reform on *Avoidance of Reporting Losses*

Y = Small Pos.	DID (Outcome 1)	(z-stat.)
Size	−0.185***	(−2.989)
Public	−0.563**	(−2.310)
Auditor Effectiveness	0.015	(0.087)
Bank Reform	−1.714**	(−2.553)
Corporate Reform	0.122	(0.824)
Creditor Rights	0.110	(0.799)
EU Membership	−0.816	(−1.642)
GDPPC	0.108	(0.564)
IFRS	0.386	(0.714)
Country-Level AQ4 (Country Fixed Effect)	Yes	
Year-Level AQ4 (Year Fixed Effect)	Yes	
Observations	2,283	
Pseudo R^2	0.0667	

, * denote significances at 0.05 and 0.01 levels, respectively.
Results are from multinomial logistic regressions.
Alternative Specifications:
$\beta_1 = -0.467$***, z-stat. = −2.855 from the alternative Basic Model, which does not control for *avoidance of reporting losses* by country ($\sum$ *Country Indicators*) and by year ($\sum$ *Year Indicators*).
$\beta_1 = -1.861$***, z-stat. = −3.592 from the alternative Within-Country Model, which controls for *avoidance of reporting losses* by country but not by year.
$\beta_1 = -1.974$***, z-stat. = −2.939 when *Corporate Reform* is left out of the model.

TABLE 8

The Impact of *Bank Reform* on *Risk*

Variables	(1) *Y = Risk*		(2) *Y = Risk*		(3) Impact[a]
Bank Reform	−1.171***	(−6.864)	−1.213***	(−5.819)	−47.70%
Capital Requirement	−13.539**	(−2.405)	−14.575**	(−2.434)	−18.05%
NPL Resolution	−2.561***	(−3.853)	−2.470***	(−3.802)	−15.03%
IFRS			−0.188	(−0.985)	−6.80%
Auditor Effectiveness			−0.095	(−1.269)	−7.11%
Corporate Reform			−0.017	(−0.319)	−0.44%
Creditor Rights			0.042	(0.847)	6.82%
EU Membership			0.109	(0.834)	4.30%
GDPPC			−0.051***	(−4.181)	−13.06%
Country and Year Fixed Effects	Yes		Yes		
Observations	1,289		1,289		
R^2	0.232		0.255		

, * denote significances at 0.05 and 0.01 levels, respectively.

[a] The impact from an independent variable (I.V.) on *Risk* is calculated as $(\beta_{variable} \times s.d. (I.V.)/s.d. (Risk))$, where *s.d.* is the standard deviation within this sample.

VI. OTHER ANALYSES

Non-parametric analyses are used to provide direct and visual evidence on how AQ changes with banking reform. Since no or fewer control variables are needed in these analyses, the samples are larger and thus more representative of the true population than those in our DID analyses. The details are provided in Appendix B.

We also re-test the hypotheses using country-level regressions. The dependent variable is *Country-Year AQ*. AQ1 *and* AQ2 are estimated for each country-year before re-testing the hypotheses on country-year level. For AQ3 and AQ4, *Country-Year AQ* is respectively the average |*DLLP*| and the frequency of small positive earnings within each country-year. The results support H1 across the board. As for H2, we find consistent support for the positive impacts of PR&S on AQ (H2a). However, we do not find evidence on the positive impacts from other channels (H2b–H2d).

VII. SUMMARY AND CONCLUSIONS

CEE transition countries experienced drastic but uneven developments in various institutions. Regulatory reforms that directly target economic transactions, such as ownership reform, trade policies, labor, rule of law, and protection of the rights of creditors and shareholders, often take priority over developments that address the quality of financial reporting. Being one such example, the sweeping banking reform does not directly regulate accounting practices. We posit that it can reduce managerial motives for accounting manipulation, nevertheless. To investigate this positive externality of banking reform, we take advantage of the exogenous nature of the institutional changes in CEE countries and test our prediction separately in four AQ models. According to the benchmark results, those AQ models perform well in capturing earnings quality and accounting manipulations in our sample countries. Comparing them with the U.S. evidence, we find that CEE countries on average have worse AQ, but the situation improved dramatically during the reform period. The improvement cannot be simply explained by their economic development, as their average annual GDP growth during this period was just marginally higher than those from other country groups. Instead, we find consistent evidence across all four AQ models that banking reform significantly improves banks' AQ. The positive effects are statistically and economically strong, but not all equal. The change in earnings smoothing is much smaller than that in earnings inflation. This could evidence managers' strategic retreat from accounting manipulation, as the former is generally considered as a less severe type of EM. This finding has important policy implications because it shows that the reform has more pronounced impact on the more aggressive type of manipulation.

Our study adds to the extensive accounting literature that finds relationships between AQ and institutional factors. What makes our study unique is the clean and powerful research setting. The drastic cross- and within-country variations make it possible for us to apply DID estimators and control for various concurrent reforms. This is beyond identifying a positive association between AQ level and static institutional strength across countries with established economies. To refute an alternative explanation that unobserved macro factors can affect both reform progress and AQ, we create a general reform

TABLE 9

Impact of Specific Reformative Changes on AQ1–AQ4 (H2)

Panel A: AQ1 Predictive Power of Earnings *(Y = EBTLLP$_{t+1}$*, n = 1,185)*

EBT	(1) H2a	(2) H2b and c	(3) H2d	(4) H2e	(5) All Together		(6) Impact
× $\widehat{Risk}$ (−)	−0.179***[a] (−6.068)				−0.170***[a]	(−5.816)	−0.195/−45.59%
× State-Controlled (−)		−0.531*** (−2.677)			−0.410**	(−2.486)	−0.094/−22.06%
× Foreign (+)		0.146* (1.653)			0.151	(1.640)	0.051/12.00%
× Independence (+)			0.231** (2.119)		0.247**	(2.499)	0.241/56.36%
× DI (+)				0.322* (1.818)	0.268	(1.633)	0.084/19.47%

*, **, *** denote significances at 0.1, 0.05, and 0.01 levels, respectively.
Only key variables are presented here. Predicted signs are reported in the parentheses following the variables.
[a] Under the alternative specification, in which $\widehat{Risk}$ is replaced by *Risk,* this coefficient becomes −0.114*** in column (1) and −0.108*** in column (5).

Panel B: AQ2 Earnings Smoothing *(Y = LLP*, n = 783)*

EBTLLP	(1) H2a	(2) H2b and c	(3) H2d	(4) H2e	(5) All Together		(6) Impact
× $\widehat{Risk}$ (+)	0.139**[b] (2.701)				0.154***[b]	(3.451)	0.117/36.05%
× State-Controlled (+)		0.112 (1.260)			0.199*	(1.861)	0.046/14.11%
× Foreign (−)		−0.138** (−2.260)			−0.198***	(−3.118)	−0.062/−18.86%
× Independence (−)			−0.123 (−1.622)		−0.120	(−1.629)	−0.099/−30.24%
× DI (−)				−0.281 (−1.622)	−0.308*	(−1.678)	−0.056/ −17.30%

*, **, *** denote significances at 0.1, 0.05, and 0.01 levels, respectively.
[b] Under the alternative specification, in which $\widehat{Risk}$ is replaced by *Risk,* this coefficient becomes 0.072*** in column (1) and 0.067** in column (5).

Panel C: AQ3 Earnings Inflation *(Y = |DLLP|*, n = 441)*

	(1) H2a	(2) H2b and c	(3) H2d	(4) H2e	(5) All Together		(6) Impact
$\widehat{Risk}$ (+)	0.005***[c] (6.608)				0.005***[c]	(6.500)	0.0048/76.94%
State-Controlled (+)		−0.003 (−0.559)			−0.002	(−0.367)	−0.0003/−5.04%
Foreign (−)		−0.002* (−1.866)			−0.001	(−1.579)	−0.0004/−6.23%
Independence (−)			−0.003** (−2.122)		−0.002	(−1.595)	−0.0016/−25.77%
DI (−)				0.003 (1.418)	0.000	(0.017)	0.0000/0.29%

*, **, *** denote significances at 0.1, 0.05, and 0.01 levels, respectively.
[c] Under the alternative specification, in which $\widehat{Risk}$ is replaced by *Risk,* this coefficient becomes 0.002*** in column (1) and 0.002*** in column (5).

TABLE 9 (continued)

Panel D: AQ4 Avoidance of Reporting Losses (Y = Loss Avoid., n = 1,461)

	(1) H2a	(2) H2b and c	(3) H2d	(4) H2e	(5) All Together		(6) Impact
$\widehat{Risk}$ (+)	0.373***[d] (3.038)				0.350***[d]	(2.718)	0.0300/37.97%
State-Controlled (+)		2.540*** (7.464)			2.505***	(7.210)	0.0601/76.76 %
Foreign (−)		−0.160 (−0.405)			−0.116	(−0.300)	−0.0026/−3.29%
Independence (−)			−0.569 (−1.302)		−0.610	(−1.329)	−0.0328/−41.52%
DI (−)				0.263 (0.441)	0.114	(0.164)	0.0023/2.91%

*, **, *** denote significances at 0.1, 0.05, and 0.01 levels, respectively.
[d] Under the alternative specification, in which $\widehat{Risk}$ is replaced by *Risk*, this coefficient becomes 0.361*** in column (1) and 0.340*** in column (5).

measure, *Corporate Reform,* which is likely to be more influenced by those unobserved factors. After adding *Corporate Reform* into our AQ models, we find neither positive effect of it on AQ nor dilution on the positive effect from *Bank Reform*. We have further identified four specific reformative actions in the bank sector that may have contributed to the improvement in AQ. One such action is bank stabilization through prudential regulation and supervision. The corresponding risk-reduction shows significant positive effects on bank AQ. Our results, with some wrinkles, also suggest that ownership reform and political independence in the banking sector contribute to the observed AQ improvement. However, we do not find consistent evidence that explicit DI plays a role in the improvement. We have also analyzed the impact from two contemporaneous events: enlargement of the European Union and adoption of IFRS. The results indicate that those events improve value relevance in bank earnings but do not necessarily decrease accounting discretion.

Banks are playing an increasingly important role in the economies of CEE countries. During our sample period, bank credit to the private sector has increased from 21.53 percent to 62.37 percent of GDP. Previous studies of the transition economies mainly focus on the operating and financial decisions of banks, such as lending activities and capital structure. Our study approaches the topic from an accounting perspective. While the departure from a planned economy automatically spurs economic growth, a market economy without strong institutions can pull it back. Numerous examples in capital market history taught us that unhinged free economies can have catastrophic consequences, many of which were preceded by significant deterioration in AQ. We believe more accounting research is needed for those transition economies, where capital markets are still rapidly evolving. A healthy financial reporting environment gives investors the confidence to entrust capital to firms in those post-Soviet states.

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APPENDIX A

Specific Banking Reforms and Dominance Analyses

A. Prudential Regulation and Supervision
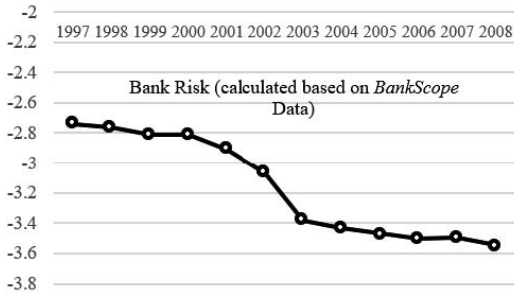
B. Ownership Reform
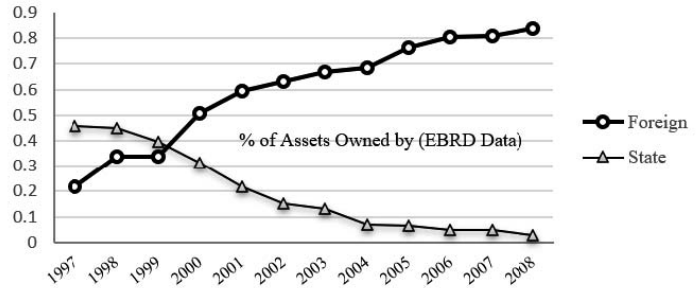
C. Political Independence
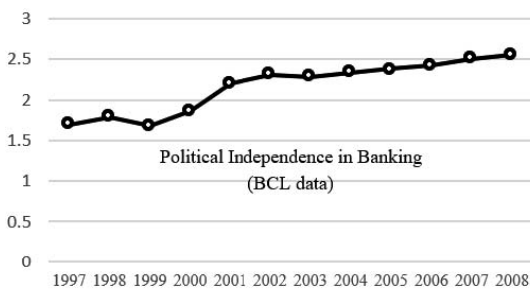
D. Deposit Insurance
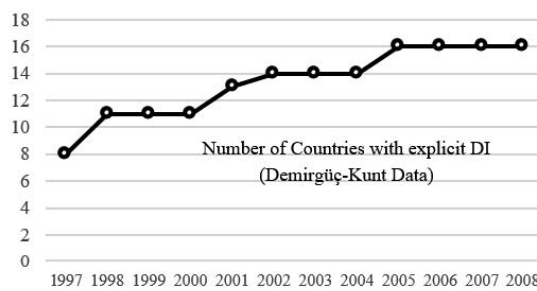
	Domin. Stat.	Standardized	Rank	Domin. Stat.	Standardized	Rank	Domin. Stat.	Standardized	Rank
	Figure A. Y=Bank Risk (N=1,289)			*Figure B. Y=Asset % by State. (N=192)*			*Figure B. Y=Asset % by Foreign (N=192)*		
Bank Reform (EBRD)	0.051	0.412	1	0.338	0.731	1	0.354	0.726	1
GDP per capita	0.024	0.192	3	0.031	0.068	3	0.045	0.092	3
Creditor Rights	0.033	0.272	2	0.007	0.015	4	0.005	0.010	4
Kaufmann Governance	0.015	0.124	4	0.086	0.186	2	0.084	0.172	2
	Figure C. Y=Political Indep. (N=192)			*Figure D. Y=Deposit Insurance (N=192)*					
Bank Reform (EBRD)	0.093	0.565	1	0.430	0.697	1			
GDP per capita	0.009	0.055	4	0.058	0.094	3			
Creditor Rights	0.017	0.102	3	0.002	0.003	4			
Kaufmann Governance	0.046	0.279	2	0.128	0.206	2			

APPENDIX B

Non-Parametric Analyses

Panel A: Predictive Power of Earnings by Reform Stage

A. Predictive power of earnings by reform stage. We examine *predictive power of earnings* by plotting future cash flows ($EBTLLP_{i,t+1}$) against current earnings ($EBT_{i,t}$). The plot contains all bank-year observations that have $EBT_{i,t}$ and $EBTLLP_{i,t+1}$ available. *EBT* is winsorized at 1 % at both ends. Each observation is marked by a "×" symbol in the graph. Its x-axis value is $EBT_{i,t}$ and y-axis value is $EBTLLP_{i,t+1}$. We divide the sample into five stages based on the *Bank Reform* values: Stage 1 (*Bank Reform* =2.33 or 2.67), Stage 2 (=3), Stage 3 (=*3.33*), Stage 4 (=3.67), and Stage 5 (=4). The graph demonstrates a clear pattern that, as we move up in reform stage, it becomes easier to use $EBT_{i,t}$ to predict $EBTLLP_{i,t+1}$.

X-axis: *EBT*   Y-axis: *EBT*$_{T+1}$ —— fitted line   — — — 95% confidence interval
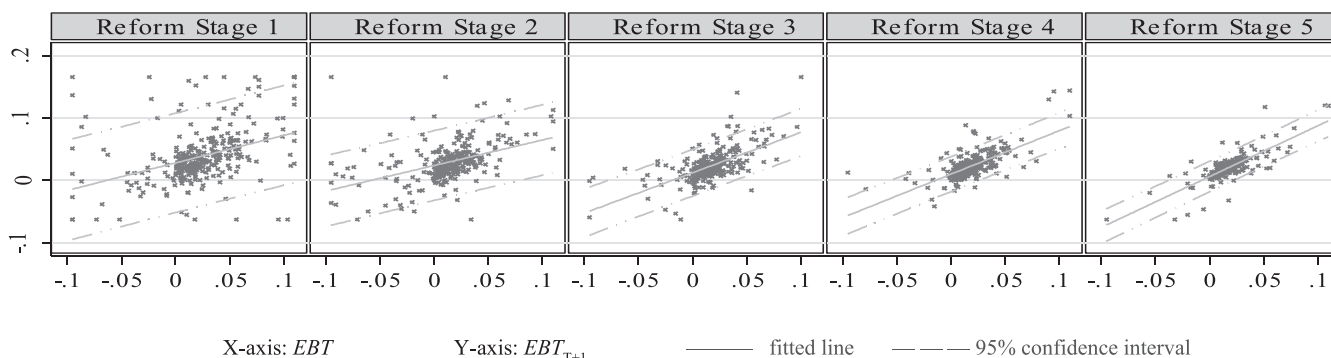
Panel B: Earnings Smoothing by Reform Stage

B. Earnings smoothing by reform stage. We use scatterplots of *EBTLLP* and *LLP* (x- and y-axis values, respectively), with fitted lines included, to demonstrate the change in earnings smoothing through stages of banking reform. The "loss observations" group displays a fitted line with downward slope, suggesting big-bath accounting among banks with the worst performance. The observations with positive earnings are divided into five reform stages. A quick visual inspection shows that earnings smoothing, captured by the upward slope of the fitted lines, has a strong presence in Stage 1 and gradually wanes down in the following reform stages.

X-axis: *EBTLLP*   Y-axis: *LLP*   — fitted line
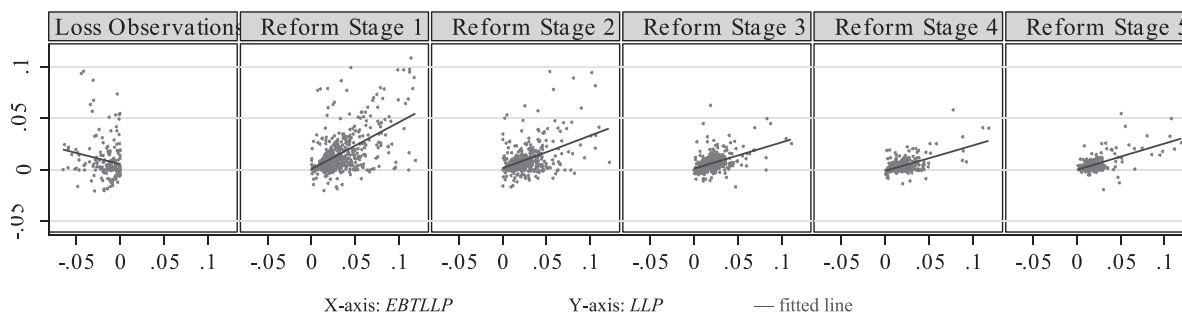
Panel C: Distribution of Different Types of Discretionary Loan Loss Provisions (DLLP)

C. Distribution of different types of Discretionary Loan Loss Provisions (DLLP). Here is a full picture of all *DLLPs*. First, we divide *DLLPs* based on their impact on reported earnings. The aggressive ones have a significant earnings-increasing impact (*DLLP* < -0.5%); neutral ones have limited/no impact on earnings (-0.5% < *DLLP* < 0.5%); conservative ones have a significant earnings-decreasing impact (*DLLP* > 0.5%). As banking reform moved from Stage 1 to the Stage 5, there was a steady decrease in the frequency of aggressive *DLLPs*, from 38.4% to 7.3%; the frequency of neutral *DLLPs*, increases from 34.6% to 72.5%. Conservative *DLLPs* remained relatively stable. Together, those results show a clear shift from aggressive accounting choices to more neutral ones with the progress of banking reform.
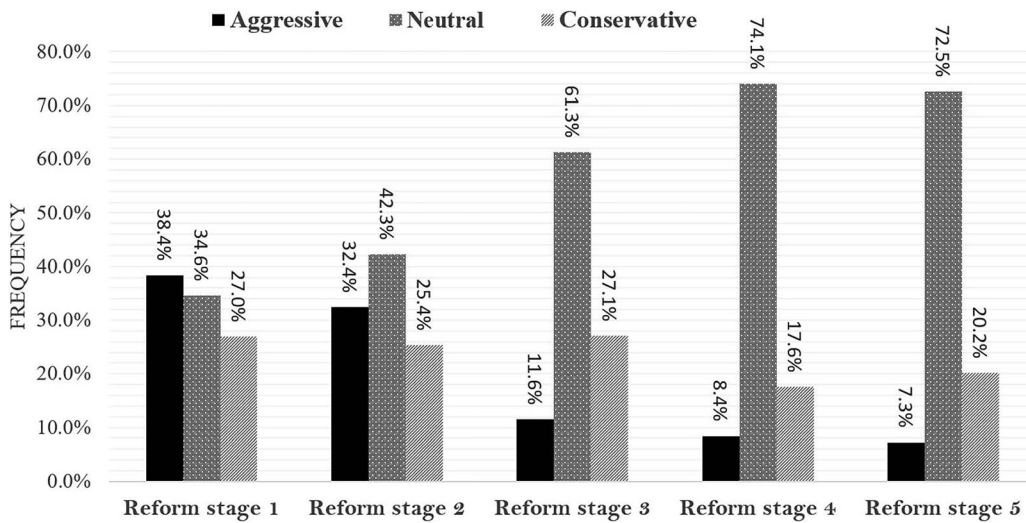
Panel D: Avoidance of Reporting Losses by Reform Stage (Distribution of Earnings Reported)

D. Avoidance of Reporting Losses by Reform Stage (Distribution of Earnings Reported). We create histograms to show the actual frequency for each earnings interval with a width of 0.5%. To have enough observations for each histogram, we create only three stages: early stage has bank reform index no greater than 3; intermediate stage between 3 and 4; and the final stage equal to 4. Then, we use K-density estimation to draw the smoothed distribution curve over the histogram. The area between the curve and the upper limit of the first bin right of 0, shaded in the figures, represents the abnormal occurrences of small positive earnings. The size of the shaded area represents the severity of *avoidance of reporting losses*. In comparison, we find loss avoidance the most severe in the early stage of banking reform and the least in the final stage.
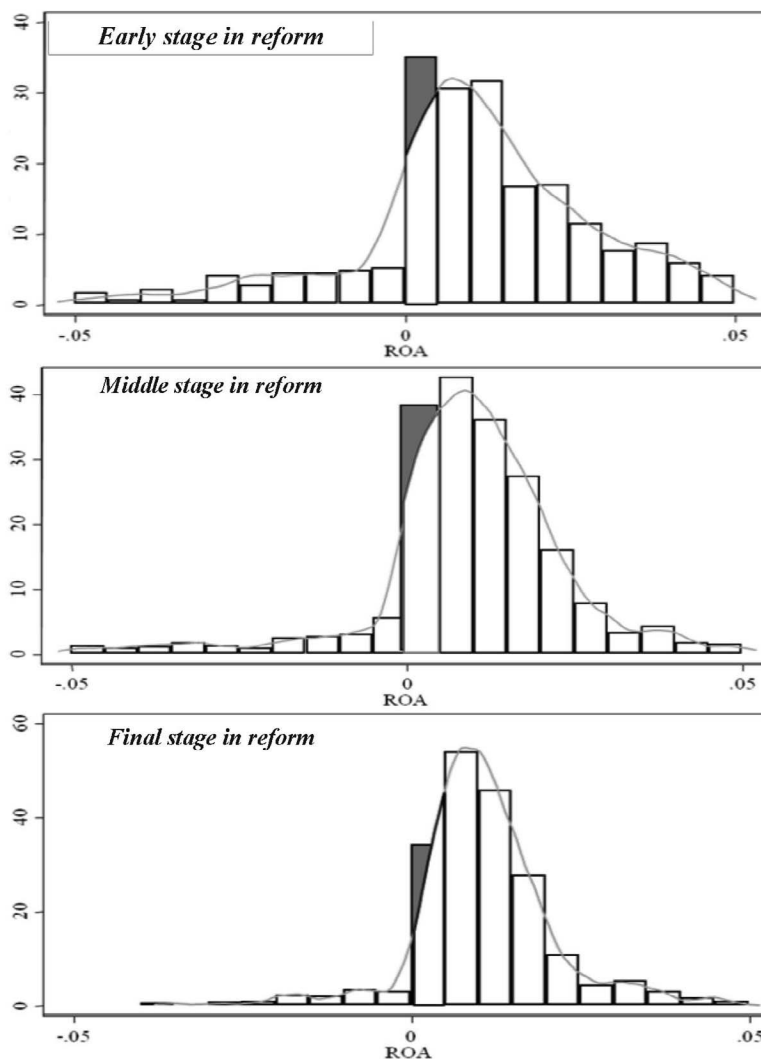
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