Après, les deluge?
Policies, Institutions, and Bank Profitability after the Global Financial Crisis

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ABSTRACT

While the determinants of bank profitability have been well-explored, the question of the drivers of profitability during a crisis is less well-understood. Given the presence of a financial crisis such as the one that struck the global economy from 2007 onward, did the macroeconomic response help to ease banks through the tough times? Or was it the underlying institutional structure of the economy that was the key determinant? Utilizing a new database of 1,600 banks across 30 transition economies, this paper applies Bayesian model averaging, fixed-effects, and IV-GMM methodology to test this hypothesis. Results are conclusive across models that bank-specific and institutional factors dominated macroeconomic policies in terms of influence on a specific bank's return on assets, although US monetary policy was significant for a bank's ROE. Democratic accountability in particular correlated negatively with bank returns, but appeared to work its effects through the choice and size of government. For economic institutions, investor protection appeared to be more important for return on equity than return on assets.

Keywords: institutions; bank profitability; return on assets; transition economies; Bayesian model averaging

JEL Codes: G21, P26, E58

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I. Introduction

The question of the drivers of bank profitability is a well-studied one in economics and finance, with papers such as Bourke (1989), Molyneux and Thornton (1992), Demirgüç-Kunt and Huizinga (1999), and Flamini, McDonald and Schumacher (2009) approaching the analysis from a panel perspective. Alternately, work from Chaudhry *et. al* (1995), Athanasoglou *et. al* (2008), and Dietrich and Wanzenried (2011) has focused on country-specific studies, drilling down deeper into a country's financial architecture to discern the forces behind bank performance. From this vast literature, a consensus has formed on broadly the most important factors regarding bank profitability, focusing on bank- or industry-specific factors, or the broader macroeconomic conditions prevailing in a country.

Despite this impressive body of knowledge on what makes a bank more profitable on average, comparatively less is known about the performance of banks under pressure; that is, the profitability of individual banks going through a systemic banking crisis. The recent global financial crisis in particular offers a broad-based laboratory in which to examine the performance of banks, an opportunity which has been taken up by only a few papers. Dietrich and Wanzenried (2011) in particular make a notable exception in their examination of the Swiss banking system before and after the crisis, finding that bank profitability is mainly explained by bank-specific factors such as operational efficiency, the growth of total loans, funding costs, the business model utilized, and ownership. Beltratti and Stulz (2012) also provide excellent insight into the question of the impact of the crisis on banks, performing a comparative analysis of large banks in 32 (mostly developed) countries. Their research, incorporating measures of both bank-specific and country-specific governance, shows that macroeconomic imbalance contributed to poorer performance, but the largest factors of profitability remained bank-specific (such as levels of Tier 1 capital and size of the deposit base).

In countries such as the US or Singapore, however, the institutional environment may be less important for banking performance, mainly due to the fact that the institutions in these countries are very stable (indeed, one of the traits comprising an "institution" is this notion of semi-permanence). But what of other countries, where the institutional framework is either incipient or in a state of flux? This is precisely the case in the transition countries of Central and Eastern Europe (CEE) and the former Soviet Union (FSU), which have put in place broader market frameworks in a comparatively shorter period of time. In these countries, did the institutional environment have a larger impact than in the OECD countries?

It is my contention that, unlike Beltratti and Stulz's (2012) findings, country-level institutions, especially as related to contracting institutions (property rights) and political representation (democratic accountability) did indeed impact bank profitability in transition. Moreover, it is plausible that institutional development was even more important during the global financial crisis; only countries that had a strongly developed set of property rights, combined perhaps with political accountability, would be expected to see banks recover from the shock of the global crisis. Finally, given that bank reform itself was part of the institutional transition, one would expect, as Brissimis *et. al* (2008) find, that bank reform would also be an institutional reform that could help individual banks recover profitability after the crisis.

There are many reasons, especially in a transition economy, why bank profitability may be influenced in a crisis by the broader institutional environment. In the first instance, there is of course a large literature relating good institutions positively to financial sector development (Demirgüç-Kunt and Levine 1996, Claessens and Laeven 2003, Beck and Levine 2005), in that good institutions help support the growth of

the financial sector more broadly. There also already exists a wealth of research on institutional development in transition, with work such as Hartwell (2013) taking a methodical look at the various institutions needed for a market economy and how they impacted different parts of the real economy in transition. In regards to the financial sector, there is also a diverse body of work on how institutions would Fang, Hasan, and Martin (2014) have already found some evidence of the impact of institutions on bank stability in transition. Given this empirical backing, it is plausible to expect that these same institutional changes may have benefitted the banking sector writ large and individual banks in particular.

On a theoretical level in relation to bank profitability, one could expect property rights to make contracting more secure and provide at least a legal basis for trust; thus, even in the midst of a financial crisis, security of property rights should help banks to weather the storm better than if there were worries about expropriation or nationalization. This fact would be especially true in a transition economy, where the experience of dealing with capitalist financial intermediation is far lower than in established Western countries. Moreover, secure property rights tend to correlate with less governmental interference, meaning that banks can minimize costs (and, by extension, raise profitability) associated with policy uncertainty. There is some empirical support for this theory, as Demirgüç-Kunt, Laeven, and Levine (2004) found that positive institutional indicators are associated with lower cost of financial intermediation for each particular bank.

On the other hand, a theory advanced by Diamond and Rajan (2001 and 2005) posits that bank deposits are an attractive alternative to formal property rights, especially in an environment where investors are not well-protected. Under this formulation, banks act as an ersatz contracting institution when broader legal and/or personal protections are weak. However, this implies that private banks could actually do better in a weak-contracting environment, as substitutes will be less available, allowing for banks to capture a much larger share of the financial intermediation market (there is also empirical evidence that banks perform better in such an environment due to opportunities revealed via corruption, see Aburime 2009). If we accept this argument, it is plausible that broader property rights may actually harm bank profitability, by allowing alternatives to bank-based financial intermediation, and making margins smaller. In a crisis situation, especially one where banks were the epicenter for the crisis, better property rights may allow a flight away from banks and a concomitant drop in bank profitability.

Similarly, political institutions may also affect bank profitability in uncertain ways. In theory, a more democratic polity may make better economic choices than a dictator acting alone (Olson 1991 and 1993, Rodrik and Warcziag 2005), thus positively influencing the broader environment that a bank operates in. Based on an analysis of emerging economies, Rodriguez and Santiso (2008) find that banks do indeed prefer, based on their lending patterns, stable emergent democracies (although their analysis neglects the issue of bank profitability). On the other hand, democracies, especially in the throes of a crisis, are prone to fits of populism and bad economics (Przeworski and Limongi 1993), perhaps creating a popular desire for bailouts to save banks in particular (although Rosas (2006) found the opposite, in that democratic regimes tend to rely on bank closures more on average than bank bailouts). In direct relation to bank profitability, populism could also go the other way, as public clamors for additional regulation and policies could directly strike at the bottom line for any one particular bank. Similarly, the public could not necessarily advocate directly for harsher bank regulations, but instead elect leaders of a certain political stripe (i.e. left-wing) that are more likely to be less friendly to banks.

Arrayed against this theoretical and empirical support for the role of institutions in transition is the special reality of the global financial crisis and the massive policy response it elicited in both the CEE/FSU countries and in the halls of power in Washington DC and Brussels. In particular, the financial crisis in the transition countries was not generated by the institutional failings within these countries, as the crisis was (for the most part) an exogenous shock emanating from the subprime mortgage crisis in the United States. While there were economic policies in many of the CEE and FSU countries that created macro and financial imbalances, in some sense they were imported from the policies of the developed countries. Then, when the crisis did burst, the transmission of the shock was amplified due to the structure of the banking systems in transition, which are characterized by high rates of foreign ownership, meaning traditional asset contagion was easily spread.

Since it appeared that the financial crisis was a policy, and not an institutional, issue in transition, might have changes in these policies had more of an impact on the balance sheets of banks? Put simply, was it the underlying fundamentals of a country, i.e. its progress in basic and fundamental institutions, or was it perhaps the macroeconomic policies pursued in Warsaw, Prague, Astana, and Ljubljana (not to mention the US and Brussels) that brought the banks back from the brink? A case can indeed be made that institutional attributes, being slow-formed and possibly slower-acting, would be less consequential for the short-term balance sheets of banks in the region than swifter macroeconomic adjustments. Indeed, while the crisis may have harmed profitability in the short-run, the global response to the crisis may have provided quick relief in the form of lower interest rates, ample liquidity, and sovereign and quasi-sovereign guarantees ("too big to fail") that would have bolstered bank profitability. Additionally, prudent macroeconomic policies before the onset of the crisis may have made the entire economy of a country more resilient to the exogenous financial shock; as Flamini, McDonald and Schumacher (2009) show for banks in 41 countries in sub-Saharan Africa, macroeconomic policies that promote low inflation and stable output growth are good for the performance of banks in those countries. Thus, a country that was well-prepared macroeconomically before the crisis may have been better-equipped to deal with the crisis.

The purpose of this paper is thus to examine the performance of banks in transition before, during, and after the global financial crisis as a function of the policies taken to combat the crisis and the underlying institutional structure. This paper makes a novel contribution to the literature in three ways: first, building on earlier work such as Demirgüç-Kunt, Laeven, and Levine (2004) and Dietrich and Wanzenried (2011), the paper utilizes a somewhat similar methodology but applies it specifically to the transition countries of Central and Eastern Europe (CEE) and the former Soviet Union (FSU); Dietrich and Wanzenried focus only on Switzerland, while Demirgüç-Kunt, Laeven, and Levine (2004) used a widely dispersed sample of banks from 72 countries, focusing on averages over the period from 1995-1999. However, the world has changed since the heady days of the mid-1990s, with at least two major financial crises (the Russian crisis of 1998, in itself a continuation of the Asian crisis of 1997, and the global financial crisis of 2008) that may have altered or confirmed earlier findings regarding the role of institutions on bank performance. This is therefore the first study examining bank profitability in transition after a major crisis, a fact that helps differentiate it from such excellent papers as Fang, Hasan, and Martin (2014), which focuses on bank risk up to the crisis (1997-2008).[1]

Secondly, the frontier of knowledge on institutions, and in particular in quantitative institutional economics, has been pushed outward in recent years (see Hartwell 2013), meaning that we have much more accurate (or at least complete) ways to quantify institutional development. This paper makes use

[1] Moreover, Fang, Hasan, and Martin (2014) do not include CIS countries in their dataset, which I do here.

of these innovative indicators in a manner heretofore unexplored in the literature. Finally, earlier studies on bank profitability have failed to incorporate model uncertainty into their analysis, an issue given the possibly large set of variables that can influence banking performance. This paper is the first to my knowledge to utilize Bayesian methods to discern a "correct" model of bank profitability in transition during a crisis.

II. Empirical Strategy

The Data and Empirical Model

The data for this exercise comes from a newly assembled database of banks in transition economies from 2006-2012 derived from various sources. Bank-level data for the most part were derived from the BankScope database, but the most labor-intensive portion of the database, the coding on foreign or domestic ownership, came from scrupulous examination of publicly available sources, bank websites, and bank regulatory filings. In total, 1,963 banks from 30 transition countries over the timespan 2006-2012 are included in this dataset, although not every bank has a complete 5-year series; moreover, not every control is available for each country in each year, meaning a shifting window that translates in practice to approximately 7,000 to 9,000 observations.

[Table 1 here]

The baseline empirical model, as is common in the literature (and similar to Dietrich and Wanzenried 2011), will express bank profitability as a function of bank-specific, industry-specific, and country-specific macroeconomic factors. Additionally, coming to the crux of the research question of this paper, institutional factors are added as additional country-specific explanators. The model is thus an examination to determine which factors were more salient in the profitability of banks during and after the global financial crisis. Was it the macroeconomic policies of the governments in the transition economies, or was it the institutional make-up of the country? Expressed as an equation, the model is:

$$ROA_{it} = \alpha Bank_{it} + \beta Industry_{it} + \gamma Policy_{it} + \delta Inst_{it} + \varepsilon_{it}$$

Where ROA is average return on assets, the preferred (as in, *inter alia*, Athanasoglou *et. al* 2008 and Dietrich and Wanzenried 2011) bank profitability indicator. The positive attributes of ROA as an indicator of profitability have been amply discussed elsewhere (see Golin 2001), but suffice it to say here that ROA is preferred to ROE as ROE disregards risks associated with high leverage (the IMF (2002) also notes that financial leverage ratios are also often endogenously determined by regulation). As a robustness check, however, ROE will also be included as a possible indicator of bank profitability, keeping in mind the caveat associated with bank debt.

In relation to the bank-, industry, and country-specific indicators, a large number of possible determinants of profitability have been identified in the literature; given this embarrassment of riches, a rigorous econometric method (detailed below) will be utilized in order to pare down controls and obtain the "correct" model. Table 1 shows a complete list of the various indicators and their provenance. Bank-specific controls are derived from the literature and such papers as Molyneux and Thornton (1992) in relation to cost of banking and Athanasoglou *et. al* (2008) for capital and credit risk indicators. Similarly, industry-specific and macroeconomic controls are taken from papers such as Demirgüç-Kunt and Huizinga (2000), Bikker and Hu (2002), and Dietrich and Wanzenried (2011). Some country-specific traits not included in any of these papers, but that will be utilized in this model, are also included in this paper.

For example, population density is included as a determinant of profitability, the theory being that a more dense population will have more need for financial intermediation than one that is widely dispersed, thus increasing bank profitability. Additionally, given the fact that the major monetary policy responses to the global financial crisis originated in the developed countries, a metric of the growth of M2 in the United States is included to capture these policy effects.

The true innovation in this paper is not population density or the growth of M2 in the US, however, but, as noted above, the inclusion of specific institutional variables to capture institutional influence on profitability before and after the crisis. The two key institutional variables utilized in the model are the International Country Risk Guide's (ICRG) indicators for investor protection and democratic accountability, where investor protection represents the legal framework for property rights (or, if you will, *potential* property rights) and democratic accountability represents the ability of the individual voter to influence the political system. The ICRG indicators are standard in the literature for measuring institutional progress (see Djankov *et. al* 2006 or Akitoby and Stratmann 2010), as they capture the legal and political environment governing both property rights and the political system.

As a check on the subject investor protection ranking, I also utilize an objective indicator for property rights, contract-intensive money, which represents the proportion of money held inside the formal banking sector (see Clague *et. al* 1996 and Hartwell 2013). In contrast to the investor protection indicator, contract-intensive money is more accurately described as *realized* property rights, as it measures the behavior of individuals in reaction to perceived changes in property rights. Of course, as with all objective indicators, its drawback is that it may capture more than just property rights (see Williams and Siddique 2008 for a critique of its use); however, when paired with the ICRG indicator of investor protection, I believe it will deliver a full picture of both ex ante and ex post property rights.

A further critique on the use of contract-intensive money is that it may appear odd to use a banking indicator also an institutional indicator, but it can be justified due to its particular attributes. In the first instance, as we are attempting to ascertain the profitability of particular banks, as influenced by institutions, contract-intensive money is a suitable proxy as no one bank influences the indicator; that is, while it functions as a vote of confidence in the entire banking sector and property rights in general, unless you are country like Turkmenistan with a monobank structure, no single bank can dominate the outcome of the indicator. Moreover, while contract-intensive money may sometimes be thought of as a proxy for financial depth (Williams and Siddique 2008), previous empirical tests by Clague *et. al* (1996) have shown that contract-intensive money does indeed capture different effects than broader financial sector development. This is indeed the case here for, as Table 2 shows, while there is some moderate correlation between CIM and other financial depth variables (with the strongest being with country-wide bank capital to assets ratio at 0.5094), the extent of the correlations do not suggest that contract-intensive money cannot be used. Finally, and similarly, econometrically, contract-intensive money shows almost zero collinearity with the bank profitability variables or even the investor protection indicator (see Table 2), also signaling its suitability in capturing property rights, rather than financial aspects.

[Table 2 here]

Econometric Methodology

As our database is a classic short panel (small *t,* incredibly large *n*), the model utilized is a (within group) fixed-effects estimator. The choice of a static fixed-effects approach is conditioned on the dataset, as results of a Hausman test on the full model yielded results that conclusively rejected a random-effects

estimator. Moreover, given the importance of each individual year in this sample, and given that this examination covers pre-crisis, crisis, and post-crisis years, I have included period-specific fixed effects as well, a technique confirmed via a Wald test using the command *testparm* in Stata 13. A modified Wald test for groupwise heteroskedasticity likewise confirmed that our data is indeed heteroskedastic, and thus robust standard errors, allowing for country and bank clustering, are also utilized. Although these standard errors are robust to serial correlation, tests on the full model yielded little evidence of serial correlation over this short time span (with a Wooldridge test for autocorrelation yielding an F-stat of 0.238 with a probability of 0.6255 for ROA and 0.426 for ROE, failing to reject the null of no first-order autocorrelation).[2]

Moreover, as noted above, given the large number of possible variables and the reality of model uncertainty, Bayesian model averaging (BMA) in line with Hoeting *et. al* (1999), Fernandez, *et. al* (2001), Masanjala and Papageorgiou (2008), and O'Hara and Sillanpää (2009) will be utilized to narrow down the thousands of possible model combinations into more "correct" specifications for examining bank profitability. As Fernandez et al. (2001:566) noted, BMA provides a "practical and theoretically sound method for inference," while Hoeting *et. al* (1999:398) correctly note that "In theory, BMA provides better average predictive performance than any single model that could be selected, and this theoretical result has now been supported in practice in a range of applications involving different model classes and types of data." The use of BMA will thus help to consolidate our broad range of explanatory variables to a more parsimonious set.

While this approach covers conditional heteroskedasticity of unknown form and possible serial correlation, the fixed-effects approach does not eliminate the possibility of endogeneity, an issue that is omnipresent in the consideration of institutions (Prezeworski 2004, Eicher and Leukert 2009, Hartwell 2013). Given this possible endogeneity of the institutional variables, an IV-GMM regression will be utilized for robustness, with the institutional indicators instrumented by appropriate macro-economic and country-specific indicators as derived from the literature. Standard econometric tests for instrument suitability will be performed, but this IV-GMM approach will allow us to correct for unobserved fixed-effects, heteroskedasticity, serial correlation, and endogeneity.

III. Results and Discussion

The results of the baseline fixed-effects model are shown in Table 3, implemented via the areg command in Stata 13 with clustering on the bank and country variables. Column 1 shows the "kitchen sink" model, with all explanatory variables included for ROA as a dependent variable, and the results already point to a lower level of significance for policies *vis a vis* institutions and bank-specific traits. Of the bank-specific traits, capital adequacy (positively) and operating costs (negatively) dominate, with size and credit risk less important but still statistically significant and positively related to ROA. Industry-specific effects are for the most part unrelated to bank profitability, while, of the macroeconomic variables, only GDP growth is positively correlated with bank ROA (with inflation showing a minor and negative influence). Thus, it appears that policies that lead to growth also lead to bank profitability,

[2] Although Dietrich and Wanzenried (2011) correctly note the persistence of bank profits (thus arguing for a system-GMM approach in their paper), this persistence, as just noted, is not present in my data. In particular, the relatively short time frame, coupled with the straddling of a major financial crisis, means that the ROA indicator utilized here exhibits little serial correlation, as well as arguing against a dynamic specification such as system-GMM.

while other manipulations have little (or deleterious) effects. Finally, the institutional variables also do not fare as well as the bank-specific variables, with democratic accountability showing a marginally slight negative effect on profitability, and investor protection showing a more robust positive effect. On the whole, however, the model appears to be vitiated by the inclusion of many insignificant variables, with the time dummies in particular sapping the explanatory power of the model.

[Table 3 here]

To correct for this model uncertainty, a BMA approach is utilized in Stata to derive a more parsimonious model from this set of possible variables. Using Bayesian averaging over a space of 2,097,152 possible models (for the ROA specification alone; the ROE specification has a similar model space, meaning a total of 4,194,304 models were analyzed), the variables that survived are either our variables of interest (the institutional indicators) and/or those that have a high posterior inclusion probability (PIP); I have implemented here a rule of thumb similar to Kass and Wasserman (1995) where a PIP of 75% or above was considered as strong or decisive evidence of inclusion. The results for the Bayesian averaging are shown in Table 4 for both ROA and ROE as a dependent variable, and, based on these results, the pared-down model for ROA is shown in Column 2 of Table 3. As in the full model, bank-specific attributes appear to be the most important, with institutional variables also showing importance. As earlier, democratic accountability appears to be a negative influence on bank profitability, a result that holds even though the country-specific attributes of Russia (whose banks are disproportionately represented in the dataset) are controlled for by the fixed-effects specification. Investor protection is also a good thing, leading to higher return on assets, while GDP growth is again a significant explanator of profitability. In regards to return on assets, it appears that having a more engaged polity in the midst of a crisis is a bad thing, even if the economy itself is growing.

[Table 4 here]

Robustness tests

As noted earlier, an alternate proxy for bank profitability could be ROE, which has been utilized in papers such as Demirgüç-Kunt and Huizinga (1999), Guru *et. al* (2002), and Athanasoglou *et. al* (2008). While perhaps imperfect when compared to ROA, due to the bias in ROE understating the dangers of leverage, it provides a different measure of bank profitability for robustness. The full model for ROE, shown in Column 3 of Table 3, also reveals that bank-specific attributes are significant for explaining performance, in particular (as with ROA) credit risk and operating costs. However, capital adequacy falls entirely out of significance, while of institutional factors, only investor protection shows a positive and significant correlation. Perhaps striking, when contrasted with ROA, is how much of a factor US monetary policy, completely dominating the regression in terms of scale and significance.

As it is possible that this full model is full of extraneous variables that could be influencing these effects, another BMA analysis for ROE, already shown in Table 4, was conducted and that also holds some interesting results. Once again, there are important differences from the ROA model, with policy variables holding much more of an importance in the ROE analysis and bank-specific attributes are almost entirely insignificant. Finally, one similarity between the two metrics, however (not shown here) was an almost perfect insignificance of the year dummies across the entire model space, with no one year scoring a PIP above 10%.

Re-running the fixed-effects regression with the parsimonious ROE model as revealed by BMA, shown in Column 4 of Table3, the dominance of US monetary policy (which has increased its significance) and of

GDP growth continues, while bank-specific traits entirely drop out of the equation. Investor protection remains a significant and positive explanator of bank profitability, but broader property rights have a surprisingly negative effect on returns on equity. Indeed, on the whole, ROE appears to be driven by outcomes external to the specific bank during the crisis period, with US monetary policy increasing the returns and broader property rights dampening the return of any one bank.

While the results for each metric (ROA or ROE) are consistent across their own regressions, there are other peculiarities of the crisis era that may have influenced the performance of banks. One of the largest (and transition-specific) factors possibly omitted from this previously model is the so-called "Vienna Initiative," a grouping of multilateral banks and the largest bank firms active in Central, Eastern, and Southeastern Europe (CESEE) convened in January 2009 to ensure continued cross-border flows to the region. In the first round, dubbed "Vienna 1.0," five countries in particular were targeted for assistance (Bosnia and Herzegovina, Hungary, Latvia, Romania, and Serbia) due to the perception that these countries would be most affected by a general halt in cross-border bank flows. As the key objective of Vienna 1.0 was to "ensure that parent bank groups maintain their exposures and recapitalize their subsidiaries in emerging Europe" (EBRD 2012), this intervention could have had an effect on the balance sheets of banks that was unrelated to other macroeconomic, institutional, or other country-specific attributes.

To account for this reality, I include a dummy for banks based in these five countries from the period of 2008 onward for both the ROA and the ROE regressions. With the inclusion of a further variable, the BMA analysis is re-run as well, leading to the pared-down specification shown in Columns 5 and 6 of Table 3. For the most part, in regards to ROA, the results are unchanged, with democratic accountability losing a bit of its significance and investor protection gaining more, but the scale is roughly equivalent. The only real change from the inclusion of the Vienna dummy in the BMA analysis for ROA is strengthening the influence of inflation, which enters the equation as marginally negatively related to bank profitability. On the other hand, the inclusion of the Vienna Initiative dummy creates large changes in the behavior of institutions to ROE; while (as in the ROA analysis), the Vienna dummy itself is insignificant, the sign and magnitude of democratic accountability changes appreciably. Once a mildly positive influence, democracy is now a strongly and significantly negative predictor of bank profitability. Bank-specific traits, absent from the earlier BMA exercise, re-enter the ROE equation, with operating costs and (perhaps surprisingly) capital adequacy negatively influencing profitability, at least on equity.

Another question that could arise is in relation to the influence of democratic accountability. It is possible that what matters for the banking environment is not necessarily the ability of the populace to influence the political process, but *how* they do it, that is, what sorts of leaders they elect. To control for the partisan effects on bank performance in a democracy, in addition to the inclusion of a broader democracy variable, I include a dummy variable if the leader of a country is left-wing (Social Democrat of Communist) or not, taking a value of 1 if the country's leader or his or her party has an explicit left-wing ideology, with a value of 0 if the leader/party is right-wing or centrist.[3] Theoretically, as Calderon and Schaeck (2013) note, the partisan orientation of a government can impact bailout propensities during a crisis, a fact which would then also presumably have an effect on bank profitability during a crisis. In this framework, left-wing governments are more likely to intervene (i.e. bailout) in order to maintain employment, while right-wing governments should, in theory, be more laissez-faire (Garrett and Lange

[3] While this coding is tricky for some countries whose leaders are more accurately described as "authoritarian" rather than belonging to a specific ideology (such as Putin's Russia), I have based the coding on their explicitly stated policies in any case.

1991). However, such a relationship is ambiguous in transition; while right-wing parties or leaders have already been empirically linked positively with the decision to privatize banks in transition (Boehmer, Nash, and Netter 2005), the linkages between both sides of the ideological spectrum and the banking sectors in many transition countries (Jackowicz, Kowalewski, and Kozłowski 2013) makes the influence of orientation on profitability more difficult to ascertain.

Results of this further robustness test are shown in Columns 7-10 of Table 3. In relation to ROA (column 7), the presence of a left-wing government per se is insignificant, while the negative of influence of democracy persists. For ROE (column 9), the left-wing government shows a negative but marginally significant influence, while once again democracy appears to be bad for return on equity. Perhaps this effect is a multiplicative one, however, and so in columns 8 and 10 I interact the left-wing dummy with the democracy indicator, on the theory that left-wing populists might be more likely to crack-down on bank profitability than leaders who are fairly well-insulated from the political process (even if they are left-wing). This approach also yields interesting results; for ROA, the interaction term just misses significance, while the presence of a left-wing government and democracy are bad for bank profitability in transition, while for ROE, left-wing governments and democracy are strongly and unequivocally bad for bank profits, but the interaction term is positive. Thus, left-wing governments in the presence of more democracy actually lead to higher returns on equity, in somewhat of a vindication of Garrett and Lange's (1991) supposition.

Finally, as noted above, endogeneity is a common problem in institutional regressions (Eicher and Leukert 2009) and especially in a transition context (Hartwell 2013); moreover, it is possible that various facets of bank performance themselves are endogenous based on the broader institutional environment (for example, operating costs might be higher due to institutional barriers, while regulatory policies or political institutions could be the reason motivating the equity or loan mix of certain banks, see Athanasoglou *et. al* (2008). A series of endogeneity tests were carried out on the ROA and ROE models and their variables, looking at both possible endogeneity of bank-specific and institutional indicators, and for ROA, Athanasoglou *et. al*'s (2008) supposition about the nature of capital adequacy is correct; at least in this dataset, the capital adequacy of particular banks in transition is endogenous to the model, while institutional and macroeconomic variables were almost perfectly exogenous (with difference-in-Sargan statistics for remaining variables in the 0.76 – 0.96 range).

Correcting for this reality, an IV-GMM fixed-effects regression is shown in Table 5, Column 1, instrumenting capital adequacy with the policy variables found to be insignificant in the earlier regressions (a technique utilized in Lawson and Wang (2005) and Hartwell (2013)). Paring down the instrument set through a careful eye on the Hansen J-statistic (as well as remembering Murray's (2006) admonition to keep instruments grounded in economic theory), the most promising instruments for capital adequacy are government size, property rights, and presence of a left-wing government. These instruments are indeed justified in theory, as capital adequacy may be lower in an environment of secure property rights, but the presence of a large government (especially a left-wing one) will most likely drive capital holdings higher than they would be absent these factors. Using these instruments, capital adequacy continues to be an important determinant of ROA, as does investor protection; perhaps somewhat reassuringly, democratic accountability turns positive and insignificant, perhaps suggesting that the real channel political institutions work through is in the requirements for banks.

This exercise is repeated for ROE, which, as noted above, showed a much different relationship than ROA to the policy and institutional variables. However, in this model as well, bank capital is an endogenous variable, and I instrument the level of capital adequacy with the size of the bank (larger

banks should have larger capital buffers), the risk appetite of that particular bank (riskier banks should also keep a larger buffer in reserve), and the broader macroeconomic environment (represented here by inflation). The results of the IV-GMM regression, shown in Column 2, confirm that democracy is indeed (at least in the crisis period) bad for a bank's return on equity, as is the presence of a left-wing government. ROE is helped most strongly by general economic growth, strong investor protection, and, most significantly in terms of magnitude, quantitative easing in the United States. Thus, we can say that home-country policies may not have been as important for bank profitability in transition compared to the might of the US Federal Reserve.

[Table 5 here]

IV. Conclusions

This paper has taken a new look at the drivers of bank profitability in transition, focusing on the role of policies versus institutions during the global financial crisis. The results over the various specifications suggest that bank-specific attributes remain important, but that institutional factors appeared to be more important than country-specific policies. Investor protection, in particular, was a positive explanator of bank profitability for both ROA and ROE. There are several important differences from this analysis, however, depending upon which metric of bank profitability is utilized. In particular, during the crisis period, the extent of democracy appeared to harm a bank's ROE, while the presence of a left-wing government also hindered return on equity. These effects were dwarfed by the impact of US monetary policy, suggesting that a bank's ROE was dependent not on bank-, industry- or country-specific attributes, but by policies undertaken thousands of miles away.

The implications of this analysis are both simple and complex: in the first instance, any strengthening of property rights specifically concerned with investor protection is good for the economy and for bank profitability, and thus banks should be in favor of such policies. This is the simple implication. The more complex part comes in relation to the political institutions, which show a clear negative effect for democracy and left-win governments on bank profitability (as measured by ROE). In such an environment, banks should perhaps be prepared to move out of debt leverage and into other vehicles, in order to maintain profitability. In either case, banks should look at cutting operating costs and increasing capital adequacy to deal with the unexpected. In particular, if bank profitability in a crisis is dependent upon forces beyond even national policymakers' controls (i.e. US monetary policy), a bank should deal with its own in-house issues and lobby for better property rights rather than wait for the benevolence of the Fed to save them.

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Table 1 – Data Description and Sources

Indicator	Description	Source
Bank specific		
ROA	Average Return on Assets (Net Income/Total Assets)	BankScope
ROE	Average Return on Assets (Net Income/Total Equity)	BankScope
Size	Log of liquid assets (expressed in thousands of US dollars)	BankScope, author's calculations
Operating costs	Total costs as a share of total income	BankScope
Foreign ownership	Dummy variable taking the value of 1 if a bank is more than 50% foreign-owned, 0 otherwise	Bank websites, filings, regulatory sources
Credit Risk	Net loans as a percentage of a bank's total assets	BankScope
Capital adequacy	Equity as a percentage of a bank's total assets	BankScope
Industry-specific		
Domestic credit	All credit to the private sector provided by monetary authorities and deposit money banks, as a % of GDP	WDI
Bank concentration	Assets of three largest banks as a share of assets of all commercial banks	Čihák et. al (2012)
Bank reform	Measure of bank reform and liberalization, with a value of 1 for no liberalization and 4.33 for Western European banking standards.	EBRD
Vienna Initiative dummy	A dummy that takes the value of 1 for banks from the countries of Bosnia, Hungary, Latvia, Romania, and Serbia, from 2008 to 2012 and 0 otherwise	Author's calculations
Macro/country-specific indicators		
Inflation	Annual % change in consumer prices as measured by CPI	WDI
M2 Growth	Year on year percentage change in absolute M2 levels	WDI, central bank websites, author's calculations

GDP growth	Annual percentage growth rate of GDP at market prices based on constant local currency.	WDI
Output Gap	GDP, in constant 2005 US$, run through a Hodrick-Prescott filter to separate trend and cyclical components.	Author's calculations from WDI data
Trade to GDP	Sum of exports and imports of goods and services measured as a share of gross domestic product.	WDI
Total tax rate	Amount of taxes and mandatory contributions payable by businesses after accounting for allowable deductions and exemptions, as a share of commercial profits.	WDI
General government final consumption expenditure	All government current expenditures for purchases of goods and services (including compensation of employees), as % of GDP.	WDI
Population density	People per sq. km of land area	WDI
US Monetary policy	Year on year percentage change in absolute M2 levels of the United States	WDI
Institutional indicators		
Democratic accountability	A measure of how responsive government is to its people, with a score of 0 signifying autarky and a score of 6 a fully-functioning alternating democracy.	ICRG
Investor Protection	Proxy for property rights that covers three sub-indexes: Contract Viability/Expropriation, Profits Repatriation , and Payment Delays. Scored from 0 to 12, with higher numbers representing more property rights.	ICRG
Contract-intensive money	Ratio of M2 less money outside depository corporations to total M2	IMF IFS, central bank websites, author's calculations
Government partisanship (left-wing)	Dummy variable taking 1 if the party/leader in power is left-wing, 0 otherwise	Author's calculations based on party websites

Table 2 – Variable Correlations

	ROA	ROE	Contract-intensive money	Investor Protection	Democratic accountability	Size	Costs	Foreign Ownership	Credit risk	Capital adequacy	Domestic Credit	Bank Concentration
ROA	1.00											
ROE	0.26	1.00										
Contract-intensive money	-0.09	-0.05	1.00									
Investor Protection	0.02	0.06	0.35	1.00								
Democratic accountability	-0.11	-0.05	0.52	-0.03	1.00							
Size	-0.02	0.01	0.23	0.05	0.29	1.00						
Costs	-0.32	-0.27	-0.01	0.00	-0.09	-0.23	1.00					
Foreign Ownership	-0.06	-0.02	0.29	0.06	0.43	0.24	-0.06	1.00				
Credit risk	-0.03	0.01	0.06	0.02	0.17	0.00	-0.11	0.16	1.00			
Capital adequacy	0.31	-0.07	-0.13	-0.08	-0.22	-0.38	0.04	-0.12	-0.19	1.00		
Domestic Credit	-0.10	-0.10	0.44	0.02	0.52	0.22	0.05	0.20	0.09	-0.13	1.00	
Bank Concentration	-0.08	-0.04	0.14	-0.31	0.67	0.29	-0.10	0.37	0.16	-0.15	0.44	1.00
Bank Reform	-0.08	-0.03	0.58	0.41	0.78	0.26	-0.05	0.35	0.14	-0.18	0.57	0.33
Inflation	0.03	0.02	-0.20	-0.24	-0.24	-0.15	0.02	-0.16	-0.05	0.09	-0.11	-0.06
Growth of M2	0.10	0.10	-0.21	-0.06	-0.16	-0.13	-0.12	-0.11	-0.05	0.06	-0.42	-0.17
GDP growth	0.11	0.12	-0.14	0.01	-0.14	-0.05	-0.14	-0.05	0.03	-0.01	-0.43	-0.10
Output Gap	0.01	0.03	-0.01	-0.02	-0.04	0.01	-0.01	0.00	0.08	-0.05	0.03	0.03
Trade to GDP	-0.07	-0.02	0.36	-0.05	0.70	0.27	-0.13	0.43	0.17	-0.16	0.45	0.78
Total Tax Rate	0.07	0.07	-0.22	-0.25	-0.20	-0.10	-0.01	-0.14	-0.08	0.05	-0.17	0.13
Size of Government	0.00	-0.03	0.10	0.12	0.06	-0.07	0.13	-0.06	-0.03	0.04	0.36	-0.07
Population Density	-0.08	-0.04	0.28	-0.01	0.79	0.28	-0.11	0.44	0.19	-0.18	0.23	0.67
US Monetary Policy	0.06	0.08	-0.07	0.01	0.07	-0.03	-0.13	0.00	0.06	-0.02	-0.18	-0.04

	Bank Reform	Inflation	Growth of M2	GDP growth	Output Gap	Trade to GDP	Total Tax Rate	Size of Government	Population Density	US Monetary Policy
Bank Reform	1.00									
Inflation	-0.35	1.00								
Growth of M2	-0.27	0.26	1.00							
GDP growth	-0.20	-0.01	0.52	1.00						
Output Gap	0.00	0.10	-0.09	0.35	1.00					
Trade to GDP	0.51	-0.11	-0.15	0.00	0.02	1.00				
Total Tax Rate	-0.38	0.29	0.22	0.12	0.03	-0.06	1.00			
Size of Government	0.14	-0.07	-0.17	-0.38	-0.16	0.01	0.09	1.00		
Population Density	0.55	-0.28	-0.17	-0.06	0.00	0.72	-0.16	-0.06	1.00	
US Monetary Policy	0.01	0.21	0.34	0.31	0.32	0.04	0.13	-0.16	0.00	1.00

Table 3 – Fixed-Effects Regression Results and Robustness Tests

	Dependent Variable									
	ROA	**ROA**	**ROE**	**ROE**	**ROA**	**ROE**	**ROA**	**ROA**	**ROE**	**ROE**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Institutional indicators										
Democratic accountability	-0.60	-0.47	1.57	0.41	-0.39	-4.36	-0.44	-0.50	-4.28	-5.75
	*1.77**	*2.98***	*0.59*	*0.33*	*2.37**	*3.60***	*3.69***	*4.26***	*3.83***	*5.00***
Investor Protection	0.56	0.25	10.50	2.58	0.28	4.07	0.25	0.22	4.65	4.47
	*2.55**	*2.31**	*4.80***	*2.04**	*2.52**	*4.19***	*2.12**	*1.88**	*4.60***	*4.44***
Contract-intensive money	-0.27	-1.21	14.83	-23.34	-0.77	-15.98	-2.05	-2.28	-19.37	-23.16
	0.09	*0.75*	*0.72*	*2.32**	*0.46*	*1.77**	*1.22*	*1.37*	*2.09**	*2.57***
Left-wing Government							-0.17	-4.68	-5.10	-75.04
							0.65	*1.69**	*2.32**	*3.95***
Left-Wing*Democracy								0.82		12.59
								1.66		*3.71***
Bank specific										
Size	0.37		1.42							
	*2.03**		*1.10*							
Operating costs	-0.04	-0.04	-0.29		-0.04	-0.29	-0.04	-0.04	-0.29	-0.30
	*5.61***	*5.61***	*4.86***		*5.62***	*6.07***	*8.37***	*8.39***	*6.11***	*6.23***
Foreign ownership	0.41		4.59							
	0.42		*0.49*							
Credit Risk	0.02	0.01	0.14		0.01		-0.01	-0.01		
	*2.47**	*1.59*	*2.96***		*1.70**		*2.15**	*2.18**		
Capital adequacy	0.05	0.04	-0.08		0.04	-0.14	0.04	0.04	-0.14	-0.14
	*3.70***	*4.20***	*0.82*		*4.17***	*2.09**	*6.78***	*6.79***	*2.11**	*2.08**
Industry-specific										
Domestic credit	-0.04		-0.44	0.01		-0.14			-0.140	-0.22
	*1.68**		*1.73**	*0.09*		*1.64**			*1.70**	*2.70***
Bank concentration	0.01		-0.02							

	0.93		*0.18*							
Bank reform	-1.26		-6.65	8.84		1.20			0.75	-0.72
	1.32		*1.17*	*1.61*		*0.23*			*0.14*	*0.14*
Macro/country-specific indicators										
Inflation	-0.05		-0.23		-0.03					
	*1.81**		*1.17*		*1.83**					
M2 Growth	-0.45		9.03							
	0.86		*1.93**							
GDP growth	0.07	0.06	0.62	0.75	0.06	0.61	0.07	0.07	0.65	
	*2.99***	*6.66***	*1.89**	*4.41***	*6.16***	*3.47***	*8.00***	*8.05***	*3.80***	
Output Gap	-0.000003		-0.000004							
	0.99		*1.35*							
Trade to GDP	-0.004		-0.02							
	0.21		*0.19*							
Total tax rate	0.03		0.52							
	0.97		*3.51***							
Government size	0.06		0.81	1.23		1.45			1.60	1.57
	1.12		*1.13*	*1.99**		*2.41**			*2.80***	*2.76***
Population density	0.03		*0.26*							
	0.41		*0.29*							
US Monetary policy	0.21		42.73	42.95		26.15			28.43	26.16
	0.10		*2.15**	*4.89***		*3.27***			*3.39***	*3.06***
Vienna Initiative dummy					-0.22	-0.50				
					0.59	*0.15*				
C	-1.14	3.04	-114.90	-52.59	2.42	-4.42	4.22	4.94	-8.59	11.41
	0.18	*2.28**	*2.96***	*2.50**	*1.80**	*0.30*	*3.75***	*4.30***	*0.59*	*0.78*
n	7653	9106	7645	9105	9106	9065	9106	9106	9065	9065
Adjusted R-squared	0.35	0.33	0.23	0.18	0.33	0.26	0.16	0.16	0.26	0.26
Time Dummies?	yes	no	yes	no	no	no	no	no	no	no

*Absolute value of t-stats shown underneath coefficients; * denotes significance at the 10% level and ** at the 1% level. Fixed effects done in Stata 13 using areg, absorbing the country and bank variables.*

Table 4 - Bayesian Model Averaging Results

ROA			ROE		
Variable	**t**	**pip**	**Variable**	**t**	**pip**
Constant	4.03	1.00	Constant	0.07	1.00
Contract-intensive money	-1.57	1.00	Contract-intensive money	-0.08	1.00
Investor Protection	3.82	1.00	Investor Protection	3.68	1.00
Democratic accountability	-3.43	1.00	Democratic accountability	-1.38	1.00
Size	-1.23	0.66	Size	0.34	-0.44
Operating costs	-28.33	1.00	Operating costs	1.00	-0.25
Foreign ownership	0.17	0.04	Foreign ownership	0.00	0.01
Credit Risk	-3.90	0.99	Credit Risk	0.14	-0.02
Capital adequacy	12.31	1.00	Capital adequacy	1.00	-0.13
Domestic credit	-0.55	0.27	Domestic credit	-4.51	1.00
Bank concentration	0.11	0.04	Bank concentration	0.24	-0.03
Bank reform	0.12	0.03	Bank reform	1.27	0.68
Inflation	-0.92	0.52	Inflation	-0.02	0.02
M2 Growth	-0.11	0.02	M2 Growth	0.04	0.01
GDP growth	3.98	0.97	GDP growth	0.86	0.18
Output Gap	0.10	0.02	Output Gap	-0.07	0.03
Trade to GDP	-0.57	0.30	Trade to GDP	-0.14	0.04
Total tax rate	0.16	0.04	Total tax rate	-0.30	0.10
Government Size	0.92	0.51	Government Size	3.76	1.00
Population density	0.07	0.02	Population density	-0.92	0.55
US Monetary policy	0.44	0.19	US Monetary policy	1.48	0.75

Table 5 – IV-GMM Regressions, Determinants of Bank Profitability

	Dependent Variable	
	ROA	**ROE**
	1	**2**
Institutional indicators		
Democratic accountability	0.43	-1.92
	1.62	*2.75***
Investor Protection	0.56	1.37
	*4.09***	*3.44***
Contract-intensive money		-4.22
		0.79
Left-wing Government		-5.42
		*2.16**
Left-Wing*Democracy		0.74
		1.27
Bank specific		
Operating costs		-0.23
		*9.79***
Capital adequacy	0.36	0.01
	*3.30***	*0.23*
Industry-specific		
Domestic credit		-0.17
		*4.00***
Bank reform		4.53
		*2.22**
Macro/country-specific indicators		
GDP growth	0.11	0.41
	*4.95***	*4.50***
Government size		0.57
		*3.17***
US Monetary policy		24.49
		*3.16***
C	-11.67	4.09
	*2.36**	*0.76*
n	7653	8979
Kleibergen-Papp underidentification (p)	0.0005	0.0000
Hansen J statistic (p)	0.6965	0.6460
Endogeneity test (p)	0.0000	0.0021

*Absolute value of t-stats shown underneath coefficients; * denotes significance at the 10% level and ** at the 1% level. Regressions done in Stata 13 using ivreg2, with robust standard errors.*