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Institutions and Creative Destruction in CEECs: Determinants of Inefficient Use of Assets

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Abstract

We analyze the relationship between institutional quality and firm efficiency. Using rich data on firms in the European Union between 2005 and 2012, we show that high institutional quality lowers the share of persistently inefficiently used assets. The adverse effect of low institutional quality may be one of the narrow channels through which institutions affect income per capita in the long-run. Our approach combines institutional economics and Schumpeterian creative destruction. In addition, we observe similarities between inefficiently used assets by European firms and the phenomenon of zombie lending in Japan during the last decades.

Keywords: Institutions, Unproductive Assets, European Union, Creative Destruction.

JEL Classifications: O43, K23, C33.

1 Introduction

Our empirical analysis confirms that more efficient institutions ensure a more efficient use of assets in the economy. We define more efficient institutions by their ability to resolve insolvency. In general, weak institutions may reduce the ability as well as incentives to clean up the economy from unproductively used assets and are less successful in assuring necessary competition. We propose that this adverse effect of weak institutions is one of the many but narrow channels through which institutions potentially affect income per capita in the long-run. We observe that institutions are comparably weak in Central and Eastern European countries (CEECs) compared to mature economies like Germany, Austria, and Sweden. Our benchmark for efficiency at the firm-level is provided by the interest coverage ratio, as firms should be able to serve at least their interest payments from their current earnings. Firms which fall below a specific threshold for one year or even longer are potentially wasting the entrepreneurs' resources and suffer from severe inefficiency, since they have to provide interest payments from internal sources. The existence of such firms is facilitated by institutional weaknesses. We label these firms as "entrepreneurial artifacts" because they do not disappear and they are economically not desirable.

Institutional quality is generally believed to be an important precondition for longterm growth and per capita income, respectively (Acemoglu and Robinson, 2012). The recent literature has been putting more emphasis on the role of institutions related to economic growth and income per capita. Yet institutions are manifold and remain often vague despite the intensive discussion on this topic in the recent literature. Thus, even though there is a rich literature on the role of institutions, a precise definition of institutions and the corresponding channels via which institutions impact long-run growth is mostly agnostic.

Motivated by this puzzle in institutional economics, we analyze the relationship between the institutional quality and the efficient use of assets at firm-level. Thereby, we analyze a narrow channel through which institutions potentially affect income per capita in the long-run. In particular, we investigate whether more efficient institutions, which are able to recover a higher share of assets in the case of a firm insolvency, lower the share of unproductively used assets in the economy. In other words, an economy with more efficient institutions is more open to the Schumpeterian creative destruction. Institutions, which assure that firms tying up unproductive assets can be resolved efficiently, contribute to income and productivity growth. We test the hypothesis whether more efficient institutions lead to a more efficient use of assets in an economy and whether institutional quality has asymmetric effects during the business cycle. Indeed, our results confirm that institutional quality is important but has no asymmetric effect over the business cycle.

The issue of firm efficiency received a lot of attention at the beginning of the economic transition, especially regarding the importance of privatization (Estrin et al., 2009; Djankov and Murrell, 2002; Campos and Coricelli, 2002). By contrast, the issue of severe firm inefficiency due to financing conditions has not been intensively analyzed in the more recent literature. In addition, the triangular relationship between domestic institutional quality, financing conditions, and firm inefficiency has been omitted from the discussion as well to our best knowledge. Thus, our contribution closes this gap in the recent literature. Through the analysis of this severe form of firm inefficiency, our paper contributes indirectly to the growth literature. We aim to address the relationship between institutional ability to resolve insolvency and the use of assets at firm-level. Moreover, our study contributes to the discussion regarding European integration since there are substantial differences in institutional quality between EU countries. This study contributes also to our understanding of a potentially narrow channel through which institutions affect wealth in the long-run. Our results provide empirical insight into the determination of the existence of inefficiently used assets at the firm-level. Finally, by addressing basically macroeconomic issues with the use of micro data, our approach is closely related to a current trend in economics (Buera et al., 2014; Gollin et al., 2014; Kaboski et al., 2014).

2 Literature Review

2.1 Institutions and Growth

Following seminal empirical contributions on growth (Mankiw et al., 1992; Levine and Renelt, 1992; Sala-i-Martin, 1997; Hall and Jones, 1999), Acemoglu et al. (2001) established the role of institutions in the empirical literature. Accordulet al. (2001) show, using European settler mortality rates as an instrument for current institutions in African countries, the large effect of institutions on income per capita. This initial contribution paved the way for an intense discussion of the relationship between institutions and income. Since then a lot of literature followed. Yet this initial contribution is not exempt of criticism, see in particular Albouy (2012). However, Accordunce at Accord and Accord a instrument providing additional robust evidence for the long-run effect of institutions on income per capita. In additon, Glaeser et al. (2004) criticized the omission of human capital in Acemoglu et al. (2001). As a response to this point, Acemoglu et al. (2014) show that the impact of institutions on long-run development is robust with respect to historically-determined differences in human capital. Moreover, Alesina and Giuliano (2013) find that culture matters for a variety of economic outcomes based on one specific aspect of culture through its relationship with institutions. In addition, Acemoglu and Jackson (2014) emphasize the interplay between social norms and the enforcement of law.

However, institutions themselves remained a broad concept in the recent literature. The literature distinguishes between *de jure* and *de facto* institutions, which reflects the distinction between the legal rules as well as their enforcement. And even though institutions received a lot of attention in recent literature, there is still little understanding about the specific channels through which institutions are influencing growth. Acemoglu et al. (2014) describe institutions as fundamental determinants in a causal chain working through channels but argue as well that (p. 28): "Most empirical literature on this topic is agnostic about channels via which institutions impact long-run development [...]".

2.2 Institutional Quality

The empirical literature witnesses many attempts to measure the "quality of institutions" in order employ a numerical variable empirically. The Political Risk Services report an index reflecting protection against expropriation. This index is commonly used, for example by Acemoglu et al. (2001). However, Glaeser et al. (2004) critisize that a country under dictatorship can achieve the same level of protection against expropriation as a democratic country. The Polity IV dataset provides a measure of democracy and the World Bank's Worldwide Governance Indicator reports on six dimensions of governance of more than 200 countries. Besides the most wellknown measures, many different measures are constructed for example to gauge the "quality of government" related to the functioning of the public sector, efficiency of bureaucracy, corruption etc. La Porta et al. (1998) emphasize the role of legal origins with respect to current investor protection.

In our empirical analysis we will employ an index provided by the World Bank which conceptually grounds on Djankov et al. (2008). Using data on time, cost, and the likely disposition of assets, Djankov et al. (2008) construct a measure of the efficiency of debt enforcement for 88 countries. In order to construct the index, they confront insolvency practitioners with a standardized case of an insolvent firm. This example assumes a midsize firm that has limited liability legal form. It has one major shareholder and one large secured creditor. Hence, the firm will default on straight debt and there is no financial complexity which could help to circumvent formal default. It is assumed that the firm could be able to serve bank debt for the next two years but then it will turn into trouble due its long-term inability to repay the debt. Employees want the firm to continue in business and tax administration will follow the procedure that maximizes its expected recovery rate. There are three possible procedures in place, namely foreclosure, reorganization, and liquidation. The liquidation can be followed by two possible outcomes: going concern or piecemeal sale. Based on this example, Djankov et al. (2008) provide a measure of efficiency which is defined as the present value of the terminal value of the firm after bankruptcy costs, referred to as *recovery rate*. This measure does not only reflect the institutional quality. In addition, we understand this measure to create incentives for different parties at stake when considering whether to enter formal bankruptcy. A higher recovery rate means that different parties at stake may initiate a formal bankruptcy procedure rather sooner than later. Thus, institutional quality proxied by the institutional ability to resolve insolvency is neither perfectly related to institutions-as-equilibria nor institutions-as-rules.¹

2.3 Competition and Growth

Nickell (1996) finds that competition, measured by the number of competitors, is associated with a significantly higher growth rate of total factor productivity. Since innovations matter with respect to productivity, another relevant finding is that less competitive industries generate fewer aggregate innovations but at the firm-level those firms with a higher market share tend to be more innovative (Blundell et al., 1999). Again at the firm level, Aghion et al. (2005) show that the relationship between competition and innovation follows a hump-shaped pattern. In addition to empirical analyses at firm or industry level, Dutz and Hayri (2000) provide a crosscountry study which indicates that the effectiveness of antitrust and competition policy enforcement is positively associated with long-run growth. Aghion et al. (2008) find that high mark-ups or low-level product competition, respectively, have a large negative effect on productivity growth in the South African manufacturing industry.

2.4 Zombie Firms

A different strand of literature is analyzing the so called "zombie firms" and their impact on economic performance. A zombie firm is defined as a firm which would become insolvent if banks do not continue lending, referred to as "evergreening".

 $^{^{1}}$ See Alesina and Giuliano (2013) for a discussion of both definitions.

Caballero et al. (2008) find that misdirected bank lending played a substantial role in extending the macroeconomic stagnation in Japan beginning in the 1990s. Their findings summarize that the existence of zombie firms causes the following economic consequences: first, they document a reduction of profits of healthy firms, which discourages entry and investment. Second, sectors dominated by zombie firms are often characterized by a more depressed job creation and low productivity growth. Finally, they find that even healthy firms generate depressed employment growth. These stylized facts indicate that zombie firms have significant negative spillovers on the remaining firms in the same sector and the overall economy. Giannetti and Simonov (2013) conclude from the Japanese phenomenon that bank bail-outs characterized by too small capital injections during a banking crisis have encouraged the evergreening of nonperforming loans.

2.5 Hypothesis

IMF (2013) proposes an intuitive measure to identify firms facing debt-servicing difficulties and describes such firms as (p. 32): "These firms would be unable to service their debts in the medium term unless they make adjustments such as reducing debt, operating costs, or capital expenditures." Correspondingly, such firms cannot use their assets efficiently, which in turn causes severe inefficiency at the firm-level and negatively affects potential growth for the whole economy.

We hypothesize that economies with more efficient institutions in terms of resolving insolvency suffer less from unproductive assets tied up in firms with debtservicing difficulties. A lower recovery rate creates an incentive to keep a firm operating even if its assets cannot be employed most productively anymore. Thereby, market entry of new firms is prevented, which is economically not desirable. More efficient institutions regarding their ability to resolve insolvency ensure that such entrepreneurial artifacts will not be kept artificially operating and that the share of assets employed in inefficient firms will be lower. This makes the economy more Schumpeterian.² According to Schumpeterian growth theory, market entry is desirable since the reallocation of resources from incumbents to new entrants is one major source of productivity growth (Aghion et al., 2013). In other words, a better resolving insolvency framework is proposed to enhance creative destruction. In turn, one could argue that Schumpeterian theory of creative destruction implies a harmful effect of high competition on growth. However, recent empirical analyses³ confirm this relationship at firm level but reveal a positive correlation between productivity growth and competition at industry level and the corresponding theoretical modification is provided by Bento (2014). Our interpretation of weak resolving insolvency frameworks as a subsidy to incumbents matches with the arguments presented by Acemoglu et al. (2013).

To sum it up, the narrow channel through which "institutional quality" is proposed to work here are assets tied up in entrepreneurial artifacts. Hence, we address the question of how the existence of assets tied up in entrepreneurial artifacts is influenced by institutional ability to resolve insolvency.

3 Data and Descriptive Statistics

3.1 Country Selection

We collect detailed firm data for twelve member states of the European Union - namely Austria, Bulgaria, Czech Republic, France, Germany, Hungary, Latvia, Poland, Romania, Slovenia, Slovak Republic, and Sweden. We selected these countries because they show large differences in institutional quality. Moreover, institutions in central eastern European countries have improved mainly stepwise as a part to the accession to the EU, which included the adoption of the acquis communautaire. Thus, institutional quality can be viewed as exogenous.

For those central European countries that are not included this is due to limited data availability. Moreover, we include Austria, France, Germany, and Sweden as examples of mature developed economies in the European Union which represent

 $^{^{2}}$ This is where we see the similarities to the lines of arguments presented by Caballero et al. (2008).

 $^{^3\,}$ See our discussion of subsection 2.3 above.

different origins of law (La Porta et al., 1998). Relatively detailed firm data are available from 2005 to 2012 for all countries except Latvia which is only available from 2008 to 2012.

We forgo to include other mature developed economies in the European Union in order to avoid biased results by firms suffering from inefficiency due to a domestic banking crisis. We consider the existence of "zombie firms" as more likely in the European periphery than in those mature developed economies included here. Bank loans subject to "evergreening" provide a misleading identification of firms with debt-servicing difficulties and, thus, would finally bias our results.

3.2 Institutional Indices

The World Bank provides various indices of governance and institutional quality. Among them, the efficiency of insolvency frameworks across economies is chosen for our analysis. It is measured by the recovery rate of creditors in case of insolvency. A higher recovery rate of creditors in case of insolvency reflects more efficient institutions (Djankov et al., 2008). The recovery rate of creditors naturally ranges between 0 and 1 which equals 0 to 100 per cent.⁴

Table 1 provides an overview of the World Bank index. The arithmetic average of the recovery rate across countries and years is roughly 0.47 and the median is 0.42; the minimum recovery rate on average is 0.23 (Romania) and the maximum is 0.82 (Germany). Taking into account the development over time, among the central eastern European economies, even though still having weak institutional quality, Romania and the Czech Republic improved considerably between 2005 and 2012. Slovenia and Slovak Republic made progress as well. Bulgaria, Hungary, Latvia, and Poland seem to be stuck at an institutional quality level below the median. However, on average more than half of the value of a resolved firm is lost in CEECs. The fact that French institutional quality is below that of Germany, Sweden, and

⁴ The World Bank describes the relevance of its indicator as: "When a weak insolvency framework does not provide for effective formal and out-of-court mechanisms to address financial distress, more debts remain unsolved and more companies languish, unprofitable but with their assets unavailable to their creditors and little chance of turnaround."

Austria is supposed to be due to different origins of law (La Porta et al., 1998).

3.3 Firm Data

We focus on non-listed companies. In order to avoid financial complexity, we additionally restrict our analysis to companies that are bank financed. On the one hand, this corresponds closely to the example of the insolvent firm discussed by Djankov et al. (2008). On the other hand, this group of firms represents also the most important domestic firms in the CEECs where domestic capital markets are generally underdeveloped and whose access to international capital markets is limited. We use the Amadeus databank of Bureau van Dijk, which provides detailed data including balance sheets, profit and loss accounts, the legal form for European firms, and the industrial code (Nace, Rev. 2). We use the following information for each firm: cash flow (CF), total assets (TA), long-term debt (LTD), short-term debt (STD), interest expenses (IE), depreciation (DP), and earnings before interest, taxes, depreciation and amortization (EBITDA). Using these inputs for each firm, *i*, in period *t*, we define the interest coverage ratio (ICR_{it}) which equals

$$ICR_{it} = \frac{EBIT_{it}}{IE_{it}},\tag{1}$$

where $EBIT_{it}$ equals $EBITDA_{it}$ minus DP_{it} . Brealey et al. (2008) call this ratio time-interest-earned and describe it as a measure of "how much clear air there is between hurdle and hurdler". This means that the current earnings should cover at least interest expenses, otherwise the internal sources of the firm have to be used for the repayment. Therefore, this will be the key variable for further analysis. We will use it for our definition of firms, labeled as entrepreneurial artifacts, which are inefficient and have to exploit internal source in order to serve their interest payments. The explanatory variables at firm-level, that is cash flow divided by total assets and debt⁵ divided by total assets, follow the findings of the previous literature (Benito and Whitley, 2003; Mojon et al., 2002). In total, we collect roughly 1.5

⁵ Debt equals long-term debt plus short-term debt.

million observations across countries between 2005 and 2012.

Table 4 illustrates pairwise correlation coefficients of the analyzed variables using individual data. The ratio of cash flow to total assets is positively and statistically significantly correlated with the interest coverage ratio. Debt to total assets ratio is negatively and significantly correlated with the interest coverage ratio. Hence, both variables are correlated as expected with the interest coverage ratio. We calculate a Herfindahl Index (HI) for sectors based on EBITDA which is positively and statistically significantly correlated with the interest coverage ratio. The recovery rate of creditors, which is employed in order to proxy institutional quality, is positively correlated with corporate financial health, which confirms also our expectations. A recession is defined as a negative annual growth rate.⁶ Surprisingly, country-specific recessions do not correlate with the interest coverage ratio. But the interaction of a recession with institutional quality is positively and statistically significantly correlated with the interest coverage ratio. This interaction is employed in order to gauge an asymmetric effect of institutions along the business cycle.

Table 3 illustrates differences between healthy firms and entrepreneurial artifacts. Comparing entrepreneurial artifacts with healthy firms, *t-tests* reveal intuitive results. However, comparing firms facing debt-servicing difficulties one period with those facing debt-servicing difficulties for more than one period provides some interesting findings. Firstly, firms facing debt-servicing difficulties for more than one period are larger, more indebted, but not significantly less liquid. Secondly, and that is surprising, they do not face much tougher financing conditions even though they are more indebted. The implicit lending rate, which equals interest expenses divided by outstanding bank debt, does not differ those two groups of entrepreneurial artifacts. This can be interpreted as a lower recovery rate of creditors facilitates "evergreening".⁷ The puzzling fact that entrepreneurial artifacts are larger than

⁶ This should be more or less identical to negative growth rates over two consecutive quarters, which is the standard definition of recession.

⁷ This is where we see once again similarities to the lines of arguments presented by Caballero et al. (2008) but also a major difference since there is no reason that our results reflect evergreening of nonperforming loans due to insufficient bank bail-outs like in Japan (Giannetti and Simonov, 2013).

healty firms might be attributed to the political willingness to keep large firms operating. However, another reason could be loss aversion by stakeholders (Kahneman and Tversky, 1979; Odean, 1998).

3.4 Macroeconomic Data and Cross-Sectional Relationship

Our analysis is motivated and completed by the comparison of microeconomic and macroeconomic data. The macroeconomic data are taken from the World Economic Outlook Database of the International Monetary Fund (real growth rate of GDP, total investment as share of GDP, and gross national savings as share of GDP) and from the Ameco Database provided by the European Commision (GDP at current market prices per person employed).

The long-run correlation between institutions and GDP per capita is relatively well understood in the literature. As far as we proxy institutional quality by the recovery rate of creditors, we first have to check whether our measure satisfies this long-run relationship in the cross-section of analyzed countries. We take GDP at current market prices per person employed as a productivity indicator. In a Schumpeterian sense, productivity ought to be higher in countries with higher competition. In addition, we include a "saving gap" which equals gross national saving (as share of GDP) less total investment (as share of GDP). Figure 1 illustrates the following stylized facts: first, the mean and/or median of GDP per capita is higher for countries whose institutional quality is above the mean and/or median. Second, the mean and/or median of the saving gap is negative for countries whose institutional quality is below the mean and/or median.

3.5 Sectoral Agregation

In general, there are several channels through which institutional quality may affect economic performance in the long-run. We focus on the inefficient use of assets by firms facing debt-servicing difficulties, which are not declared bankrupt due to weak insolvency frameworks. If a firm is in financial distress, defined by an interest coverage ratio below one, it will use internal sources to repay credits. In the long run, such entrepreneurial artifacts will starve slowly to death and its assets will eventually be fully wasted. Moreover, we distinguish between firms which face financial distress for only one period and those which do so two consecutive observations, thus, we try to distinguish between firms with some and no long-term prospects, respectively.⁸

Using individual firm data, we define two sectoral variables which describe sectoral measures of entrepreneurial artifacts. The variable "Asset Ratio" is defined as the ratio of assets tied up in firms facing financial distress aggregated for sectors within countries. The variable "Firm Ratio" is defined as the ratio of firms facing financial distress aggregated for sectors within countries. Both variables are constructed based on firms which face debt-servicing difficulties for either one period or two consecutive observations. The calculated Herfindahl Index is by definition a sectoral variable. However, a Herfindahl Index based on the EBITDA of firms in our sample does not necessarily capture sectoral competition appropriately. Firms in our sample also compete at a sectoral level with firms not only bank financed and public firms which are not part of our data. This is why we will treat this Herfindahl Index as control variable in our later analyses.

The measure of main interest is the "Asset Ratio" for two consecutive observations. Our intuition is that the longer the inefficient use of assets persists the lower the lower the growth potential of the economy which ought to be reflected in GDP per capita. Thus, this measure is required to reflect the characteristics observed in Figure 1. Actually, Figure 2 illustrates that the "Asset Ratio" for two consecutive observations shares – even though less pronounced – the long-run characteristics of our proxy for institutional quality.

4 Estimation and Results

4.1 Determinants of the Individual Interest Coverage Ratio

The whole data set of individual data includes more than 1.5 million observations. The interest coverage ratio is our key variable, which identifies firms facing debt-

⁸ According to Djankov et al. (2008) firm in the standardized case is able to serve bank debt for the next two years but then it will turn into trouble due its long-term inability to repay the debt.

servicing difficulties causing them to use assets inefficiently. Thus, prior to our main empirical analyses we analyze the determinants of the interest coverage ratio in several individual different panel regressions. We regress interest coverage ratio on the explanatory variables we will use in our sectoral empirical analysis

$$ICR_{ict} = \beta_0 + \beta_1 \frac{CF_{ict}}{TA_{ict}} + \beta_2 \frac{Debt_{ict}}{TA_{ict}} + \beta_3 HI_t + \beta_4 REC_{ct} + \beta_5 INST_{ct} + \beta_6 REC_{ct} \times INST_{ct} + \mu_i + \delta_t + \epsilon_{it}$$
(2)

where cash flow and debt divided by total assets represent the firm-specific variables employed. HI_t is specific to sectors where a numerical outcome of 1 equals monopoly. REC_{ct} is a binary variable taking on 1 if the growth rate is negative and 0 elsewise in country c. $INST_{ct}$ reflects country-specific institutional quality. To check whether institutions play a different role in recessions, an interaction term is included. μ_i reflects fixed effects which control for unobserved contemporaneous correlation between countries. δ_t reflects time fixed effects which control for unobserved effects different across countries but equal across periods of time. We run each specification with clustered as well as "Jackknife" standard errors.

Table 5 and Table 6 show the results corresponding to equation (2). The coefficients of firm-specific variables reveal the expected signs and enter the regression statistically significantly but depending on the speficiation the statistical significance of cash flow divided by total assets reduces when "Jackknife" standard errors are used. The coefficients of the Herfindahl Index reveals that firms with a higher market share have much more clear air between themselves and the hurdle. The countryspecific variables and their interaction term reveal the expected signs and enter the regression statistically significantly but the statistical significance of the coefficient of institutional quality vanishes once "Jackknife" standard errors are used. Most coefficients are statistically significant between at least at a 1% and 10% significance level, most being significant even at a 1% significance level. Hence, the selection of variables seems to be appropriate at the micro level.

4.2 Sectoral Analysis

The above results using individual data are impressive, but they do not address the hypothesis representing our research question, because we are interested in the determinants of the share of assets tied up in entrepreneurial artifacts. As discussed above, competition has a different impact at firm level than at sector level. With respect to formal bankruptcy, Maksimovic and Phillips (1998) for example show that industry effects are important determinants of the frequency of bankruptcy and of economic decisions in bankruptcy. Thus, we construct sectoral aggregates and run analyses for sectors within countries similar to those at the micro level. Moreover, this approach gives us additional deeper information about country-specific sectoral effects.

Firms facing unsustainable debt-servicing difficulties, that is the firms which are not able to employ assets efficiently, are defined by an interest coverage ratio of below one and labelled as entrepreneurial artifacts. We distinguish between firms which face debt-servicing difficulties for one period and those which face debt-servicing difficulties for two consecutive observations. Moreover, we calculate two alternative variables realted to entrepreneurial artifacts for each sector in each country and year. These sectoral entrepreneurial artifact variables, $EA_{p;s;t}$, include either the simple share of entrepreneurial artifacts labeled as "Firm Ratio", $FR_{p;s;t}$, or the share of assets tied up in these entrepreneurial artifacts, "Asset Ratio", $AR_{p;s;t}$, which will be our preferred indicator at the sectoral level. The sectors are defined according to Nace (Rev. 2) classification. We drop sectors including less than 20 firms. Similarly, we aggregate cash flow and debt for sectors and divide them by sectoral total assets. The employed Herfindahl Index is by definition a sectoral variable. Table 2 illustrates pairwise correlation coefficients of all variables employed. However, only the aggregated micro variables and the Herfindahl Index reveal a correlation coefficient as expected consistently. However, the lower part of the table reveals an interesting finding which is that the more efficient institutions are the less persistently assets are tied up in entrepreneurial artifacts.

In order to identify the determinants of sectoral entrepreneurial artifact variables empirically and to mitigate the corresponding endogeneity problem, we use the dynamic panel "difference" General Method of Moments (GMM) estimator proposed by (Arellano and Bond, 1991):

$$\Delta EA_{p;s;t} = \Delta EA_{p;s;t-1}\delta + \Delta X_{s;t}\beta + \Delta \epsilon_{s;t}.$$
(3)

The dependent variable in equation $(3)^9$ is specific to a sector within a country, s, and year t, where p is either 1 or 2 and reflects the respective ratio for either firms which face debt-servicing difficulties for one period or two consecutive observations. $X_{s;t}$ includes all covariates already introduced and employed in equation (2) and $\epsilon_{s;t}$ is the residual.

Table 7 and Table 8 reveal satisfying test statistics and are of main interest. Table 7 shows that the share of assets tied up in firms facing debt-servicing difficulties for one period is solely determined by aggregated micro variables. To be precise, indebtness significantly increases the share of assets tied up in firms facing debtservicing difficulties one period. As illustrated in Figure 2, $AR_{2;s;t}$ shares the longrun characteristics of our proxy for institutional quality and is of main interest, in particular columns (I) and (II). Test statistics in Table 8 are consistently satisfying which is that residuals are not serially correlated with the regressors and the series should not have second order autocorrelation. The lagged dependent variable is as significant as it is in the analysis for $AR_{1;s;t}$ and the positive sign reveals persistence in firms financial health. Depending on the specification, indebtness as well as liquidity influence statistically significantly the share of assets tied up in firms' facing debt-servicing difficulties for two consecutive observations. However, insitutional quality seems to be the main driver of the share of assets tied up in entrepreneurial artifacts which do not recover from financial distress.

Using the simple share of entrepreneurial artifacts in each sector as dependent

⁹ All tables report the panel dimensions. Due to the transformation to first differences, fixed effects are crossed out. Time effects are used as standard instruments.

variable cannot be estimated with residuals serially uncorrelated with the regressors. Thus, results reported in Table 9 are subject to a Hansen test of overidentified restrictions with a *p*-value below 0.1.

4.3 Robustness Analysis

In our robutness analysis we focus on columns (I) and (II) from Table 8. In order to exercise our robutness analysis, we mainly employ different measures to proxy institutional quality instead of using the recovery rate of creditors. We do so to avoid that our proxy employed to measure institutional quality does not capture only country-specific characteristics related to domestic institutions since those are normally strongly correlated.

In Table 10 we employ the recovery rate of creditors in a binary fashion. We use mean and median like in Figure 2, where the binary variable is 1 if institutional quality in a country exceeds mean or median, respectively. The binary variable is calculated yearly, which provides a time-varying measure for a couple of countries. Test statistics are satisfying and institutional quality above mean or median, respectively, is associated with a statistically significantly lower share of assets tied up in firms facing debt-servicing difficulties for two consecutive observations. However, the insignificance of the lagged dependent variable limits the strength of the overall results obtained.

Next, we address the question of whether different institutional indices¹⁰ provide the same results as the recovery rate of creditors. Since different measures of institutional quality are normally correlated within countries, it is important to show that our results are not driven by the "general" level of institutional quality. Firstly, we use two indices measuring the dealing with construction permits. *Construction Permit* 1 provides the number of procedures when dealing with construction permits and *Construction Permit* 2 provides the days it takes to deal with construction permits. Surprisingly, both measures are uncorrelated. For the latter an interaction

¹⁰ All indices used are provided by the World Bank.

term with the recession dummy is included since intuition of a positive relationship with $AR_{2:s:t}$ is straightforward. Columns (III) to (V) in Table 11 provide satisfying test statistics and reveal a positive relationship of the time it takes to deal with construction permits and the share of assets tied up in firms facing debt-servicing difficulties for two consecutive observations. Nonetheless, from the overall results it is clear that measures related to the dealing with construction permits cannot replace the recovery rate of creditors. Secondly, we use measures of getting credit and the enforcement of contracts. Getting Credit 1 reflects the strength of the legal index (0-10), Getting Credit 2 reflects the depth of credit information (0-6), and Enforcing Contracts is a measure of days related to such an issue. Results reported from column (I) to (IV) in Table 12 are subject to a Hansen test of overidentified restrictions with a *p*-value below 0.1. Hence, measures related to the credit market cannot replace the recovery rate of creditors. Columns (V) and (VI) provide satisfying test statistics and show that the longer it takes to enforce contracts the higher share of assets tied up in entrepreneurial artifacts. However, weak significance of the lagged dependent variable and negligible size of the coefficient reduce the strength of the overall results obtained.

Finally, we use two ingredients of the recovery rate of creditors separately. *Resolving Inslovency* 1 is the number of procedures such an issue requires and *Resolving Inslovency* 2 reflects the amount of days it takes. Results reported from column (I) to (II) in Table 13 are subject to a Hansen test of overidentified restrictions with a *p-value* below 0.1. An the other hand, results reported from column (III) to (IV) in Table 13 reveal a positive relationship between the time it takes to resolve insolvency and the share of assets tied up in entrepreneurial artifacts.

The different results obtained through our robustness analysis are interpreted to be supportive to our main results which are columns (I) and (II) from Table 8. Thus, insitutional quality defined as the recovery rate of creditors seems to be the main driver of the share of assets tied up in entrepreneurial artifacts which do not recover from financial distress.

5 Conclusion and Policy Recommendation

The use of a rich dataset at the firm-level allows us to aggregate data across sectors within countries. We analyze a narrow channel through which institutions potentially affect income in the long-run – the institutional ability to resolve insolvency. We test whether the ability of institutions to resolve insolvency influences the existence of assets not used efficiently. In order to identify the determinants of inefficiently used assets at sector level and to mitigate the corresponding endogeneity problem, we use the dynamic panel "difference" General Method of Moments (GMM) estimator. The share of assets tied up in firms facing debt-servicing difficulties for one or more periods is of main interest and provides satisfying test statistics. We find that more efficient institutions reduce the share of assets tied up unproductively in firms facing debt-servicing difficulties for more than one year.

A further catch-up in terms of institutional quality by central eastern European countries is highly recommended. Taking into account that cross-border differences in institutions might be due to certain, country-specific cultural values, the implementation of institutional progress and, in particular, the enforcement of those changes are more challenging than they appear at first glance. Hence, we recommend imposing laws gradually as proposed by Acemoglu and Jackson (2014) in order to allow social norms to adopt. Yet in order to improve institutional quality, we follow the advice of Djankov et al. (2008) which is that countries with weak institutions ought to introduce relatively simple mechanisms like foreclosure with no or limited court oversight and floating charge, which essentially transfers control of the firm to the secured creditor in the case of default. In addition, a side-benefit of institutional improvement is that better insolvency frameworks correlate with more developed financial markets.

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					Tabl	e 1: Wo	rld Bank	t Index				
Year	AUT	BUL	FRA	GER	HUN	LTV	POL	ROU	SVK	SLV	SWE	CZE
2005	0.725	0.335	0.457	0.832	0.379	0.359	0.324	0.069	0.396	0.424	0.723	0.168
2006	0.733	0.335	0.476	0.810	0.357	0.339	0.321	0.175	0.386	0.440	0.749	0.178
2007	0.737	0.344	0.480	0.812	0.397	0.348	0.338	0.199	0.481	0.449	0.757	0.185
2008	0.724	0.324	0.474	0.816	0.384	0.346	0.337	0.289	0.452	0.466	0.747	0.213
2009	0.715	0.321	0.447	0.802	0.384	0.290	0.341	0.295	0.459	0.455	0.751	0.209
2010	0.715	0.321	0.447	0.802	0.384	0.290	0.341	0.285	0.459	0.455	0.751	0.209
2011	0.731	0.310	0.452	0.816	0.379	0.319	0.358	0.257	0.553	0.509	0.773	0.559
2012	0.727	0.314	0.458	0.827	0.392	0.464	0.315	0.286	0.543	0.511	0.758	0.560
country mean	0.726	0.326	0.461	0.815	0.382	0.344	0.334	0.232	0.466	0.464	0.751	0.285
overall min overall mean	$0.232 \\ 0.466$	(ROU)										
overall median	0.422											
overall max	0.815	(GER)										

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		Table	2: Pairwi	se Correla	tion, Secto	ral Aggreg	ation			
	AR_1	AR_2	FR_1	FR_2	CF/A	D/A	HI1	REC	INST	INT
AR_1	1.000									
AR_2	0.912^{*}	1.000								
FR_1	0.604^{*}	0.559^{*}	1.000							
FR_2	0.603^{*}	0.622^{*}	0.933^{*}	1.000						
CF/A	-0.343^{*}	-0.298*	-0.348^{*}	-0.308^{*}	1.000					
D/A	0.190^{*}	0.141^{*}	0.175^{*}	0.134^{*}	-0.187^{*}	1.000				
IH	0.060^{*}	0.087^{*}	0.215^{*}	0.254^{*}	0.165^{*}	-0.100^{*}	1.000			
REC	0.033	-0.013	0.137^{*}	0.080^{*}	-0.108^{*}	-0.038	-0.007	1.000		
INST	-0.003	0.057^{*}	-0.088*	-0.047	-0.130^{*}	-0.038	0.035	-0.058^{*}	1.000	
INT	0.013	-0.018	0.099^{*}	0.060^{*}	-0.090*	-0.032	0.015	0.916^{*}	0.111^{*}	1.000
	(FR1 -	AR2)	(FR2 -	AR2)	(AR1 -	AR2)	SNI	T		
(FR1 - AR2)	1.00	0								
(FR2 - AR2)	0.96		1.00	0						
(AR1 - AR2)	0.14	2*	0.03	7	1.00	0				
INST	-0.12	7*	-0.09	*0	-0.13	3*	1.00	00		
* denotes signific.	ance at 5%	-level.								

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		Table	3: Characteristics of Entre	epreneurial <i>i</i>	Artifact	
Mean	All Firms	Group 1	Group 1 vs. All Firms	Group 2	Group 2 vs. All Firms	Group 2 vs. Group 1
EBITDA	1429.813		-738.528		-896	.048
t- $value$			(28.008)		(21.651)	(5.062)
Interest Expenses	313.626		1006.124		1555	.345
t- $value$			(-5.762)		(-7.446)	(-1.446)
Implicit Lending Rate	0.040		0.171	S	0.1	31
t- $value$			(-7.160)	spo	(-3.583)	(0.693)
ST Debt	4984.730		8299.663	ireo	11557	7.560
t- $value$		po	(-20.478)	d ə.	(-29.269)	(-12.675)
LT Debt	4916.609	ire	6956.277	viti	9552.	.258
t- $value$		d ə	(-8.998)	ຄວອ	(-14.740)	(-8.549)
Cashflow	1036.780	uo	-528.828	su	-545.	.818
t- $value$		ıof	(26.745)		(19.483)	(0.215)
Total Assets	15016.110	1>	22010.190	OMJ	31066	3.450
t-value		>A	(-14.004)	t 10	(-23.166)	(-11.922)
Cashflow/Assets	0.097	DI	-0.151	θī	-0.1	55
t- $value$			(117.819)	>{	(85.822)	(0.913)
$\mathrm{Debt}/\mathrm{Assets}$	0.714		1.046	ICI	1.1	14
t- $value$			(-150.000)		(-130.000)	(-12.133)
$LT_Debt/Assets$	0.218		0.322		0.3	61
t-value			(-21.561)		(-21.404)	(-14.096)
$ST_Debt/Assets$	0.496		0.724		0.7.	53
t-value			(-46.094)		(-37.523)	(-6.190)
Notes: The t-statistic is a section.	reported in p	arentheses.	Null hypothesis is diff=0 w	where diff ec	quals mean(0)-mean(1) and	1 represents the specific



Notes: Institutional quality is proxied by the resolving insolvency measure provided by the World Bank. Saving gap equals gross national saving (in % of GDP) minus total investment (in % of GDP). GDP per capita equals gross domestic product at current market prices per person employed. Sources: Ameco, IMF, World Bank.

		Tabl	e 4: Pairw	rise Correla	ation		
	ICR	CF/A	D/A	IH	TSNI	REC	INSTxREC
ICR	1.000						
CF/A	0.024^{*}	1.000					
D/A	-0.019^{*}	-0.280^{*}	1.000				
IH	0.021^{*}	0.000	0.006^{*}	1.000			
INST	0.022^{*}	-0.001	0.013^{*}	0.084^{*}	1.000		
REC	-0.001	-0.010^{*}	-0.002*	-0.026^{*}	-0.110^{*}	1.000	
INSTxREC	0.004^{*}	-0.009*	-0.001	-0.023*	0.057^{*}	0.922^{*}	1.000
* denotes signifi	cance at 5%	ó-level.					



Figure 2: Share of Assets tied up in Entrepreneurial Artifacts, GDP per Capita, and Saving Gap

Notes: AR2 measures the share of assets tied up for two consecutive observations in entrepreneurial artifacts. Saving gap equals gross national saving (in % of GDP) minus total investment (in % of GDP). GDP per capita equals gross domestic product at current market prices per person employed. Sources: Ameco, IMF, World, Bank, Amadeus.

	Table 5: Par	lel Regression,	ICR, Clustered	l SE, 2005 - 201	12	
	(I)	(II)	(III)	(IV)	(V)	(VI)
time fixed effects	yes	yes	yes	yes	yes	yes
fixed effects	country	country	country	country	$\operatorname{country}$	country
standard errors	clustered	clustered	clustered	clustered	clustered	clustered
dependent variable	ICR	ICR	ICR	ICR	ICR	ICR
Cashflow/Assets	22.975^{*}	22.978^{*}	27.411^{**}		23.031^{*}	22.983^{*}
	(10.523)	(10.524)	(10.588)		(10.531)	(10.520)
${\rm Debt}/{\rm Assets}$	-14.723^{***}	-14.728^{***}		-20.703^{***}	-14.603^{***}	-14.721^{***}
	(4.563)	(4.561)		(4.319)	(4.567)	(4.560)
Herfindahl Index	264.902^{***}	262.428^{***}	262.357^{***}	266.502^{***}		263.089^{***}
	(78.377)	(78.405)	(77.987)	(79.296)		(78.498)
Institution	33.939^{*}	38.908^{*}	32.805^{*}	34.277^{*}	39.300^{*}	
	(16.559)	(18.401)	(16.253)	(16.559)	(18.571)	
Recession	-32.567^{***}	-6.418	-32.655^{***}	-32.786^{***}	-30.703^{***}	
	(8.285)	(4.226)	(8.310)	(8.294)	(7.310)	
Recession*Institution	58.140^{***}		58.320^{***}	58.282^{***}	54.183^{***}	
	(12.291)		(12.212)	(12.289)	(11.795)	
Constant	45.667^{***}	43.068^{***}	35.148^{**}	52.372^{***}	48.667^{***}	
	(12.047)	(12.526)	(12.008)	(10.496)	(11.713)	
R-squared	0.092	0.081	0.089	0.097	0.269	0.016
No of obs	1518391	1518391	1518391	1518391	1518399	1518391
No of groups	12	12	12	12	12	12
Note: $* (**) [***]$ denote	s significance a	t the 10% (5%) $[1\%]$ level.			

time fixed effects yes yes fixed effects country country the fixed effects fixed effects for the fixed effects country country country the fixed effects is a standard errors jackhnife jackhow/Assets 22.975 22.975 22.975 22.975 13.747 (13.747) (13.747) (13.747) (13.747) (13.747) (13.747) (13.747) (13.741) (5.243) (5.	yes ountry ckknife ICR 22.978 13.745) 4.728**	yes country jackknife ICR 27 411*	Ves	(^)	(VI)
fixed effects country courstandard errors jackknife jackk dependent variable ICR IC IC IC Cashflow/Assets 22.975 22.975 22.975 22.975 22.975 22.975 22.975 22.975 22.975 22.975 2.975 22.975 22.975 2	ountry ckknife ICR 22.978 [3.745] 4.728**	country jackknife ICR 27 411*	~	yes	yes
standard errorsjackknifejackkdependent variableICRICCashflow/Assets 22.975 22.9 Cashflow/Assets 22.975 22.9 Debt/Assets 13.747 (13.747) Debt/Assets -14.723^{**} -14.72 Debt/Assets -14.723^{**} -14.72 Debt/Assets -14.723^{**} -14.72 Debt/Assets 264.902^{**} 262.4 Herfindahl Index 264.902^{**} 262.4 (90.846) (90.746) (90.741) Institution 33.939 38.9 Recession -32.567^{**} -6.4 Recession *Institution 58.140^{**} $(52.2)^{**}$ Recession *Institution 58.140^{**} $(52.2)^{**}$ Constant 45.667^{**} 43.06	ckknife ICR 22.978 13.745) 4.728**	jackknife ICR 27 411*	country	country	country
$\begin{array}{c c} \mbox{dependent variable} & \mbox{ICR} & \mbox{IC} \\ \mbox{Cashflow/Assets} & 22.975 & 22.92 \\ \mbox{Cashflow/Assets} & (13.747) & (13.7 \\ (13.747) & (13.7 \\ (13.747) & (13.7 \\ (13.743) & (5.4 \\ (5.443) & (5.4 \\ (5.443) & (5.4 \\ (5.443) & (5.2 \\ (5.443) & (5.2 \\ (5.443) & (5.2 \\ (13.217) & (5.2 \\ (13.217) & (5.2 \\ (13.217) & (5.2 \\ (13.217) & (5.2 \\ (21.301) & (21.301) \\ \mbox{Constant} & 45.667^* & 43.06 \\ \end{array}$	ICR 22.978 13.745) 4.728**	ICR 27 411*	jackknife	jackknife	jackknife
Cashflow/Assets 22.975 22.975 Cashflow/Assets (13.747) (13.747) Debt/Assets $-14.723**$ -14.72 Herfindahl Index (5.443) (5.4) Herfindahl Index $264.902**$ 262.4 (90.846) (90.7) (90.746) Institution 33.939 38.9 Recession $-32.567**$ -6.4 Recession*Institution 58.140^{**} (5.2) Recession*Institution 58.140^{**} (52.2) Recession*Institution 58.140^{**} (52.2) Constant (21.301) (52.2)	22.978 13.745) 4.728**	97 411*	ICR	ICR	ICR
$\begin{array}{ccccccc} (13.747) & (13.7\\ Debt/Assets & (13.747) & (13.7\\ -14.723^{**} & -14.77 & (5.443) & (5.4\\ Herfindahl Index & 264.902^{**} & 262.4 & (90.746) & (90.7\\ Institution & 33.939 & 38.9 & 38.9 & (90.741) & (23.7\\ Recession & -32.567^{**} & -6.4 & (42.741) & (23.7\\ Recession *Institution & 58.140^{**} & (13.217) & (5.2) & Recession *Institution & 28.140^{**} & (21.301) & (21.301$	(13.745) 4.728^{**}			23.031	22.983
$\begin{array}{llllllllllllllllllllllllllllllllllll$	4.728^{**}	(13.140)		(13.758)	(13.739)
Herfindahl Index (5.443) (5.443) Herfindahl Index 264.902^{**} 262.4 (90.846) (90.7) Institution 33.939 38.9 Recession (42.741) (23.2) Recession -32.567^{**} -6.4 Recession*Institution 58.140^{**} (5.2) Recession*Institution 58.140^{**} (5.2) Constant 45.667^{**} 43.06		~	-20.703^{***}	-14.603^{**}	-14.721^{**}
Herfindahl Index 264.902^{**} 262.4 Institution (90.846) (90.7) Institution 33.939 38.9 Recession (42.741) (23.2) Recession -32.567^{**} -6.4 Recession*Institution 58.140^{**} (5.2) Recession*Institution 58.140^{**} (5.2) Constant 45.667^{*} 43.06	5.445)		(4.683)	(5.450)	(5.444)
$\begin{array}{cccccc} (90.846) & (90.746) & (90.751) \\ \mbox{Institution} & 33.939 & 38.9333 \\ \mbox{Recession} & (42.741) & (23.553333333333333333333333333333333333$	2.428^{**}	262.357^{**}	266.502^{**}	, r	263.089^{**}
Institution 33.939 38.6 Institution $32.567**$ -6.4 Recession $-32.567**$ -6.4 Recession*Institution $58.140**$ (5.2) Recession*Institution $58.140**$ (21.301) Constant $45.667*$ 43.06	90.745)	(90.289)	(92.070)		(90.891)
$\begin{array}{cccc} (42.741) & (23.2 \\ \text{Recession} & -32.567^{**} & -6.4 \\ & (13.217) & (5.2 \\ \text{Recession*Institution} & 58.140^{**} \\ & (21.301) \\ \text{Constant} & 45.667^{*} & 43.06 \end{array}$	38.908	32.805	34.277	39.300	
Recession $-32.567**$ -6.4 Recession*Institution (13.217) (5.2) Recession*Institution $58.140**$ (21.301) Constant $45.667*$ 43.06	23.275)	(41.298)	(39.796)	(41.631)	
$\begin{array}{rll} & (13.217) & (5.2 \\ \text{Recession*Institution} & 58.140^{**} \\ & (21.301) \\ \text{Constant} & 45.667^{*} & 43.06 \end{array}$	-6.418	-32.655^{**}	-32.786^{**}	-30.703^{**}	
$\begin{array}{rllllllllllllllllllllllllllllllllllll$	5.291)	(13.154)	(13.161)	(11.155)	
Constant (21.301) 45.667^* 43.06		58.320^{**}	58.282^{**}	54.183^{**}	
Constant 45.667* 43.06		(20.896)	(21.094)	(19.147)	
	$.068^{***}$	35.148	52.372^{**}	48.667^{*}	61.586^{***}
(24.752) (13.5)	(3.221)	(22.933)	(19.400)	(24.003)	(11.806)
R-squared 0.092 0.0	0.081	0.089	0.097	0.269	0.016
No of obs 1518391 1518	518391	1518391	1518391	1518399	1518391
No of groups 12 15	12	12	12	12	12

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	Table 7: Differen	ce GMM, Asset R ^a	atio one Period, 20	05 - 2012	
	(I)	(II)	(III)	(IV)	(V)
time fixed effects	yes	yes	yes	yes	yes
fixed effects	country-sector	country-sector	country-sector	country-sector	country-sector
dependent variable	AR1	AR1	AR1	AR1	AR1
$Dependent Variable_{t-1}$	0.180^{*}	0.234^{**}	0.247^{**}	0.264^{**}	0.265^{***}
	(0.099)	(0.107)	(0.096)	(0.105)	(0.101)
Cashflow/Assets	-0.701	-0.664	-0.560	-0.781	
	(0.762)	(0.540)	(0.680)	(0.705)	
${ m Debt}/{ m Assets}$	0.542^{**}	0.663^{**}	0.599^{**}		0.680^{**}
	(0.257)	(0.297)	(0.275)		(0.311)
Herfindahl Index	0.637	-0.057			
	(0.386)	(0.235)			
Recession	-0.031	-0.110	-0.109	-0.126	-0.109
	(0.114)	(0.117)	(0.139)	(0.141)	(0.144)
Institution	-0.110	-0.193	-0.120	-0.179	0.031
	(0.195)	(0.166)	(0.192)	(0.194)	(0.119)
Recession*Instituion	0.091	0.256	0.258	0.282	0.271
	(0.224)	(0.233)	(0.274)	(0.279)	(0.300)
No of obs	1036	1036	1036	1036	1036
No of sectors	183	183	183	183	183
Periods	t=6	t=6	t=6	t=6	t=6
Hansen p -value	0.237	0.166	0.174	0.033	0.518
$AR(1) \ p$ -value	0.000	0.000	0.000	0.000	0.000
$AR(2) \ p$ -value	0.186	0.380	0.347	0.312	0.343
Notes:					

Table 8:	Difference GMM,	Asset Katio two c	onsecutive Ubserve	tions, 2005 - 2012	
	(I)	(II)	(III)	(IV)	(V)
time fixed effects	yes	yes	yes	yes	yes
fixed effects	country-sector	country-sector	country-sector	country-sector	country-sector
dependent variable	AR2	AR2	AR2	AR2	AR2
$Dependent Variable_{t-1}$	0.355^{***}	0.370^{**}	0.434^{***}	0.476^{***}	0.402^{***}
	(0.129)	(0.143)	(0.120)	(0.128)	(0.149)
Cashflow/Assets	-1.196	-0.843*	-1.098*	-1.196*	
	(0.697)	(0.496)	(0.649)	(0.722)	
$\mathrm{Debt}/\mathrm{Assets}$	0.359*	0.502^{**}	0.392		0.539^{*}
	(0.203)	(0.274)	(0.240)		(0.281)
Herfindahl Index	0.485	-0.070			
	(0.379)	(0.248)			
Recession	-0.138	-0.127	0.392	-0.215	-0.181
	(0.098)	(0.104)	(0.240)	(0.156)	(0.116)
Institution	-0.425**	-0.401^{***}	-0.440^{**}	-0.465^{**}	-0.155^{*}
	(0.178)	(0.149)	(0.183)	(0.196)	(0.093)
Recession*Institution	0.264	0.253	0.390	0.424	0.388
	(0.192)	(0.212)	(0.277)	(0.312)	(0.249)
No of obs	1036	1036	1036	1036	1036
No of sectors	183	183	183	183	183
Periods	t=6	t=6	t=6	t=6	t=6
Hansen p -value	0.204	0.325	0.213	0.128	0.347
$AR(1) \ p$ -value	0.003	0.002	0.008	0.011	0.000
$AR(2) \ p$ -value	0.257	0.336	0.340	0.375	0.316
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Notes:

 ^{* (**) [***]} denotes significance at the 10% (5%) [1%] level.
 Robust standard errors are reported in parentheses.
 Variables corresponding to colored coefficients are treated as endogenous.

Та	ble 9: Difference (3MM, Firm Ratio,	2005 - 2012	
	(I)	(II)	(III)	(IV)
time fixed effects	yes	yes	yes	yes
fixed effects	country-sector	country-sector	country-sector	country-sector
dependent variable	FR1	FR1	$\mathrm{FR2}$	FR2
$Dependent Variable_{t-1}$	0.293^{***}	0.314^{***}	0.547^{***}	0.580^{***}
	(0.094)	(0.091)	(0.109)	(0.101)
Cashflow/Assets	-0.357 **	-0.396^{***}	-0.360^{***}	-0.252^{**}
	(0.156)	(0.141)	(0.119)	(0.097)
$\mathrm{Debt}/\mathrm{Assets}$	-0.034	-0.016	-0.021	0.008
	(0.095)	(0.086)	(0.066)	(0.069)
Herfindahl Index	0.071	-0.07	0.044	-0.064
	(0.090)	(0.105)	(0.073)	(0.084)
Recession	-0.052	-0.078*	-0.083**	-0.087**
	(0.038)	(0.041)	(0.040)	(0.038)
Institution	0.117^{**}	0.085	-0.162^{***}	-0.146^{***}
	(0.051)	(0.061)	(0.044)	(0.046)
${\it Recession^{*}Institution}$	0.138	0.191^{**}	0.174^{**}	0.184^{**}
	(0.075)	(0.082)	(0.079)	(0.077)
No of obs	1036	1036	1036	1036
No of sectors	183	183	183	183
Periods	t=6	t=6	t=6	t=6
Hansen p -value	0.015	0.079	0.000	0.000
$AR(1) \ p$ -value	0.000	0.000	0.000	0.000
$AR(2) \ p$ -value	0.950	0.780	0.608	0.410
Notes:				

201
2005 -
Ratio,
Firm
GMM,
Difference
9:
Table

Table 10: Difference GMM,	Asset Katio two co	onsecutive Observa	tions, Dummy Var	1able, 2005 - 2012
	(I)	(II)	(III)	(IV)
time fixed effects	yes	yes	yes	yes
fixed effects	country-sector	country-sector	country-sector	country-sector
dependent variable	AR2	AR2	AR2	AR2
$Dependent Variable_t-1$	0.228	0.248	0.274^{*}	0.287*
	(0.154)	(0.154)	(0.153)	(0.157)
Cashflow/Assets	-0.568	-0.315	-1.084^{*}	-0.647*
	(0.450)	(0.315)	(0.635)	(0.376)
${\rm Debt}/{\rm Assets}$	0.427^{**}	0.543^{**}	0.328^{*}	0.488*
	(0.203)	(0.257)	(0.191)	(0.248)
Herfindahl Index	0.614	0.056	0.689	0.069
	(0.397)	(0.207)	(0.451)	(0.230)
Recession	-0.010	-0.006	-0.008	-0.003
	(0.00)	(0.008)	(0.009)	(0.007)
Dummy Mean	-0.057^{**}	-0.050^{**}		
	(0.026)	(0.023)		
Dummy Median			-0.154^{**}	-0.124^{***}
			(0.069)	(0.048)
No of obs	1036	1036	1036	1036
No of groups	183	183	183	183
Hansen p -value	0.290	0.105	0.473	0.112
$AR(1) \ p$ -value	0.000	0.000	0.001	0.000
$AR(2) \ p$ -value	0.242	0.222	0.216	0.256
Notes:				

2012
2005 -
Variable,
Dummy
Observations,
consecutive
two
Ratio
Asset
GMM,
Difference
10:
Table

Table 11: L	Difference GMM, A	sset Ratio two con	secutive Observation	ons, Construction	Permit, 2005 - 201	2
	(I)	(II)	(III)	(IV)	(\mathbf{V})	(VI)
time fixed effects	yes	yes	yes	yes	yes	yes
fixed effects	country-sector	country-sector	country-sector	country-sector	country-sector	country-sector
dependent variable	AR2	AR2	AR2	AR2	AR2	AR2
$Dependent Variable_t-1$	0.227	0.243	0.301^{*}	0.314^{*}	0.296^{**}	0.326^{**}
	(0.151)	(0.152)	(0.153)	(0.160)	(0.148)	(0.161)
Cashflow/Assets	-0.518	-0.306	-0.952	-0.691	-0.936	-0.733
	(0.495)	(0.364)	(0.609)	(0.435)	(0.633)	(0.491)
$\mathrm{Debt}/\mathrm{Assets}$	0.400*	0.510^{*}	0.421^{*}	0.542*	0.414^{*}	0.555*
	(0.236)	(0.286)	(0.219)	(0.278)	(0.227)	(0.296)
Herfindahl Index	0.588	0.085	0.564	0.072	0.574	0.064
	(0.385)	(0.210)	(0.411)	(0.244)	(0.395)	(0.252)
Recession	-0.002	0.000	0.002	0.005	-0.011	0.031
	(0.007)	(0.006)	(0.007)	(0.006)	(0.047)	(0.051)
Construction Permit 1	0.008	0.007				
	(0.038)	(0.033)				
Construction Permit 2			0.001^{**}	0.001^{**}	0.001^{*}	0.001^{**}
			(0.00)	(0.00)	(0.00)	(0.00)
Interaction					0.000	0.000
					(0.000)	(0.00)
No of obs	1036	1036	1036	1036	1036	1036
No of groups	183	183	183	183	183	183
Hansen p -value	0.115	0.019	0.230	0.157	0.224	0.002
$AR(1) \ p$ -value	0.001	0.001	0.001	0.001	0.001	0.219
$AR(2) \ p$ -value	0.321	0.308	0.254	0.267	0.250	0.153
Notes:						

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Table 12: D	ifference GMM, As	set Ratio two cons	secutive Observatic	ons, Credit and Co	ntracts, 2005 - 201	2
	(I)	(II)	(III)	(IV)	(V)	(VI)
time fixed effects	yes	yes	yes	yes	yes	yes
fixed effects	country-sector	country-sector	country-sector	country-sector	country-sector	country-sector
dependent variable	AR2	AR2	AR2	AR2	AR2	AR2
$Dependent Variable_t-1$	0.251	0.275^{*}	0.225	0.263^{*}	0.277^{*}	0.291^{*}
	(0.155)	(0.162)	(0.149)	(0.152)	(0.155)	(0.157)
Cashflow/Assets	-0.594	-0.485	-0.553	-0.317	-1.376^{*}	-0.938*
	(0.537)	(0.415)	(0.453)	(0.313)	(0.829)	(0.550)
$\mathrm{Debt}/\mathrm{Assets}$	0.304^{*}	0.385*	0.363^{**}	0.462^{**}	0.439^{*}	0.577^{**}
	(0.156)	(0.211)	(0.167)	(0.224)	(0.239)	(0.289)
Herfindahl Index	0.540	0.059	0.595*	0.051	0.605	0.040
	(0.361)	(0.213)	(0.357)	(0.206)	(0.469)	(0.259)
Recession	-0.096	-0.078	0.025	-0.037	0.077	0.087^{*}
	(0.067)	(0.052)	(0.114)	(0.109)	(0.055)	(0.048)
Getting Credit 1	-0.026	-0.041^{*}				
	(0.023)	(0.024)				
Getting Credit 2			-0.006	-0.012		
			(0.017)	(0.016)		
Enforcing Contracts					0.001^{*}	0.001^{*}
					(0.00)	(0.00)
Interaction	0.013	0.010	-0.006	0.008	-0.000*	-0.000***
	(0.010)	(0.008)	(0.023)	(0.022)	(0.000)	(0.00)
No of obs	1036	1036	1036	1036	1036	1036
No of groups	183	183	183	183	183	183
Hansen p - $value$	0.174	0.023	0.135	0.031	0.523	0.327
$AR(1) \ p$ -value	0.001	0.001	0.001	0.001	0.001	0.001
$AR(2) \ p$ -value	0.284	0.234	0.331	0.329	0.145	0.149
Notes:						

Table 13: Difference GMM, 2012	Asset Katio two o	consecutive Observ	ations, Resolving	Insolvency, 2005 -
	(I)	(II)	(III)	(IV)
time fixed effects	yes	yes	yes	yes
fixed effects	country-sector	country-sector	country-sector	country-sector
dependent variable	AR2	AR2	AR2	AR2
$Dependent Variable_t-1$	0.228	0.242^{*}	0.408^{***}	0.400^{***}
	(0.141)	(0.145)	(0.133)	(0.151)
Cashflow/Assets	-1.233^{*}	-0.837*	-1.713^{*}	-1.191*
	(0.719)	(0.487)	(1.032)	(0.662)
${ m Debt}/{ m Assets}$	0.375^{*}	0.502^{*}	0.253	0.421
	(0.216)	(0.275)	(0.218)	(0.263)
Herfindahl Index	0.543	-0.005	0.481	-0.037
	(0.362)	(0.227)	(0.427)	(0.292)
Recession	0.524	0.401	0.114	0.110
	(0.335)	(0.316)	(0.096)	(0.094)
Resolving Insolvency 1	0.053	0.048^{*}		
	(0.032)	(0.027)		
Resolving Insolvency 2			0.059^{*}	0.050^{**}
			(0.031)	(0.023)
Interaction	-0.017	-0.013	-0.043	-0.039
	(0.011)	(0.010)	(0.036)	(0.034)
No of obs	1036	1036	1036	1036
No of groups	183	183	183	183
Hansen p -value	0.082	0.039	0.238	0.153
$AR(1) \ p$ -value	0.003	0.002	0.012	0.004
$AR(2) \ p$ -value	0.106	0.137	0.323	0.455
Notes:				

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