

Determinants of International Buyout Investments

Serdar Aldatmaz
Greg W. Brown
Asli Demirguc-Kunt



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Abstract

Using a comprehensive and proprietary data set on international private equity activity, this paper studies the determinants of buyout investments across 61 countries and 19 industries over 1990–2017. The study finds evidence that macroeconomic conditions, development of stock and credit markets, and the regulatory environment in a country are important drivers of international buyout capital flows. The paper shows that countries with low unemployment, more active stock and credit markets, and better rule of law receive more buyout capital. A difference-in-differences

approach is used to explore the regulatory reforms some countries have adopted over the sample period. The findings are that countries receive significantly more buyout capital following investor protection and contract enforcement reforms. The impact of regulatory reform is more pronounced in countries with better corporate governance standards and education. Buyout investment responds to these factors more so than foreign direct investment and gross domestic fixed investment.

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Serdar Aldatmaz¹

Greg W. Brown²

Asli Demirguc-Kunt³

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¹ Serdar Aldatmaz, Assistant Professor of Finance, School of Business, George Mason University, Fairfax, VA 22182; saldatma@gmu.edu, contact author

² Gregory W. Brown, Sarah Graham Kenan Distinguished Professor of Finance, Kenan-Flagler Business School, The University of North Carolina, Chapel Hill, NC 27599; gregw-brown@unc.edu

³ Asli Demirguc-Kunt, Chief Economist, Europe and Central Asia Region, World Bank, Washington, DC 20433; ademirguckunt@worldbank.org

1 Introduction

Global private equity (PE) investments have increased tremendously over the last two decades. From the 1990s to date, global investment in PE has increased by an order of magnitude from under \$10 billion per year to well over \$100 billion in 2017 with the United States and the United Kingdom receiving the majority of these investments (see Figure 1). Over this same period, there has also been a shift in the United States and the United Kingdom away from public markets (see Figure 2; Doidge et al. 2013, 2017; Gao et al. 2013).⁴ These capital market developments are likely connected by the fact that small and mid-size companies are staying private longer (and increasingly never going public) due to changes in the supply of private funding to late-stage start-ups and “growth” companies (Ewens and Farre-Mensa, 2019; Doidge et al. 2018).

Another notable change in global capital markets has been the trend toward more global private equity investment. Figure 3 shows that the share of U.S. and U.K. private equity investment declined from about 90% of the total in the mid-1990s to about 70% by 2017. The increase in global private equity investments, coupled with the recent leveling off and slight downturn in global public company listings (see Figure 4) raises important questions about the development of capital markets globally. Are changes in the preference for private versus public ownership in the United States and the United Kingdom part of a larger global trend? If so, what factors have driven growth in private equity historically and why? Finally, where can we expect to see further change? Figure 5 depicts that some other developed countries, like Germany, that rely more on banking than public equity historically, and currently have less private equity activity compared to the

⁴ Some other major economies such as Germany, France, and Brazil have also seen declines in public listings of more than 30%. Stulz (2018) discusses the causes and consequences of the shrinking universe of public firms in a recent NBER report.

United States and the United Kingdom, also have experienced a significant decline in public listings. On the other hand, trends in developing countries are less obvious. Some countries, like China, have seen rapid growth in both public company listings and private equity activity, while other countries, like Brazil, have seen volatility in private equity activity concurrent with declines in public listings. This paper attempts to explain these changes in global capital markets by exploring three main hypotheses that may explain trends in global PE investment: i) country and industry macroeconomic conditions, ii) financial market development, and iii) institutional and regulatory environment. The hypotheses we examine are not mutually exclusive, and consequently, we seek to also understand the relative importance of different determinants of PE investment. Our ultimate goal is to better understand current and future trends in capital formation through financial intermediation by uncovering the historical determinants of PE investments at the country and industry levels.

Using nearly comprehensive country-industry-level data on international private equity activity, we study the determinants of buyout investments across 61 countries over the period 1990 – 2017.⁵ Our results indicate that macroeconomic conditions, financial development, and regulatory environment all play some role in determining the level of buyout activity at the country level. For macroeconomic conditions, we find that buyout activity increases more during economic expansions (as measured by a declining unemployment rate). We also find similar evidence at the industry level: industries receive more buyout investment following expansions in industry-wide

⁵ The countries included in our study are Argentina, Australia, Austria, Belgium, Bulgaria, Brazil, Canada, China, Croatia, Colombia, Costa Rica, Cyprus, Czech Republic, Denmark, the Arab Republic of Egypt, Finland, France, Germany, Greece, Hong Kong SAR, China, Hungary, Indonesia, India, Ireland, Iceland, Israel, Italy, Jamaica, Jordan, Japan, Kazakhstan, Mexico, Malaysia, Nigeria, Netherlands, Norway, New Zealand, Peru, Philippines, Poland, Portugal, Qatar, Romania, the Russian Federation, Saudi Arabia, Singapore, the Slovak Republic, Slovenia, the Republic of Korea, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, Uruguay, United Arab Emirates, United Kingdom, United States, Vietnam, South Africa.

employment. Financial market development also plays a role as we find private equity activity to be complementary to public and credit market activity: countries with more stock trading and credit provided to the private sector experience more buyout activity. Finally, we find that the institutional environment significantly impacts the extent of buyout activity – countries with better rule of law and countries that implement regulatory reforms for better investor protection and contract enforcement have more buyout activity.

To clearly identify the effect of the various factors we are exploring, we estimate a set of fixed-effects (country, industry, and time) regressions. These allow us to decompose the sources of variation from different factors as well as control for unobservable time-invariant country and industry characteristics, and thus we are able to ensure the effects of our explanatory variables are isolated from other confounding effects. When estimating the impact of regulatory reforms, the specifications we estimate are obtained from a difference-in-differences approach where we study the change before and after passing the reform in the amount of buyout capital invested among countries that passed a major reform (versus others that did not).

Next, we attempt to understand relative PE activity and explore if buyout investments respond to macro-economic conditions, financial development, and regulatory conditions any different than other traditional forms of investment. We take measures of foreign direct investment inflows and gross capital formation at the country level and repeat our main tests by standardizing our buyout measure by those other investments. Our findings suggest that the determinants we have identified play a role in relative buyout activity as well: buyout investments respond to macro-economic conditions, financial development, and institutional factors more than other traditional forms of investment. In terms of economic significance of effects, we find that all three hypotheses are important, but the credit market development and institutional factors are the largest. For

example, a one-standard deviation higher level of private sector credit is associated with about 70% higher buyout investment and a major investor protection reform results in about a doubling of subsequent buyout investment.

Lastly, having documented the positive impact of regulatory reforms on the amount of buyout investments, we also explore if the impact of reforms varies among countries with different legal conditions and human capital levels. On the one hand, a country with weaker existing governance may benefit more from the implementation of reforms; on the other hand, for these regulatory reforms to be effective in attracting more buyout capital, a country may need to have a strong country governance structure in place. Suggesting that reforms indeed need to be supported by strong country governance, we find reforms to be more effective in countries with better regulatory quality, rule of law, and lower corruption. Additionally, we also explore if the level of education and human capital plays a role in how effective the reforms are in attracting buyout activity. We find the positive association between reforms and buyout investments to be more pronounced in countries with higher levels of education, suggesting that reforms need to be backed not only by a strong regulatory environment but also availability of high-quality human capital.

Despite the fact that private equity has increasingly become a global asset class playing an important role in capital formation, there is yet very little evidence on the determinants of global private equity capital flows across countries and industries. The limited existing literature mainly focuses on venture capital (VC) investments and finds country-level factors such as the legal environment (Wright et al, 2004; Guler and Guillen, 2005) and stock market liquidity (Black and Gilson, 1998; Jeng and Wells, 2000; Cumming et al, 2009) to be important drivers of venture capital activity. This paper contributes to the limited existing literature on the determinants of private equity activity across countries, which mainly consists of studies that use surveys of private

equity managers (Leeds and Sunderland, 2003) or create indices of attractiveness for private equity investments based on a large set of parameters (Groh et al., 2010) rather than using actual investment data.⁶ To the best of our knowledge, this is the first systematic study on the determinants of buyout investments using actual buyout investment data from a comprehensive sample of developed and developing economies. Hence, the evidence we provide complements the existing evidence on the determinants of venture capital activity across nations and adds to our knowledge on international private capital flows.

Our study also contributes to the literature on law and finance (La Porta et al, 1997) and opens new avenues for research in the area of financial development and economic growth (King and Levine, 1993). Our results are helpful in understanding how capital markets are going to evolve globally and if and which other countries are most likely going to trend like the United States and the United Kingdom in terms of financial development, which potentially has new implications for economic growth in other developed or developing nations.

Finally, our results also have policy implications by identifying the factors a country should focus on when trying to attract more private equity investment. Aldatmaz and Brown (2020) find evidence for positive spillovers from private equity investments on public industry peers and highlights the importance of private equity capital on industry growth. Hence, in light of our findings, policy makers, especially those in developing economies, should focus on improving the institutional and regulatory environment in addition to providing growth potential to attract private capital, which may help local companies by providing the needed capital along with management expertise to realize growth opportunities.

⁶ This is likely due to data limitations. Detailed private equity investment data are very limited at the country-industry level from other providers.

The remainder of the paper is organized as follows. The next section reviews the related literature and develops our hypotheses. Section 3 discusses the data and presents descriptive analysis to showcase how international buyout investments have evolved over the last three decades. Section 4 presents the results on the determinants of buyout investments. Section 5 presents robustness checks and additional analysis, and Section 6 concludes.

2 Motivation and Hypotheses

Well-functioning stock and credit markets have both been shown to promote economic growth. (King and Levine, 1993; Levine and Zervos, 1998; Beck et al. 2001; Beck and Levine, 2002). Given the importance of financial market development for economic growth and the growing importance of private equity activity in financial markets globally, it is essential to understand the factors determining the level of private equity activity across countries.

Figures 6 and 7 depict that private equity investments have increased in other large economies, similar to the United States and the United Kingdom, while the number of public companies has recently leveled off since 2013. These dynamics are somewhat different than those observed for the United States and the United Kingdom, where PE has grown substantially while public listings have fallen for more than a decade. To further explore these differences, we present annual measures of the public and private equity markets of the 10 largest economies over the last two decades in Tables 1 and 2. Panel A of Table 1 presents the total market capitalization of public companies as a percentage of GDP and Panel B presents the number of publicly listed companies. Table 2 Panel A presents the total US\$-value of PE investments and Panel B presents PE amounts adjusted by GDP. Similar to the United States and the United Kingdom, Germany and France have seen significant increases in private equity activity, while the number of public listings has

declined in both markets. Italy and Brazil have also recently seen a big jump in private equity activity concurrent with a leveling off in public listings. Developing economies like China and India have seen rapid growth in PE activity. However, public listings in China have significantly increased, while they have been nearly stable in India. Overall, many countries seem to exhibit some cyclical activity at business-cycle frequency and these trends altogether suggest that there are likely both secular and cyclical forces at work. To understand if and how these trends are related and how capital markets are going to evolve globally, we must identify factors that explain the level of private market activity in world economies which are very different in their stage of economic, financial, and institutional development.

Despite the increased level of global buyout activity, the majority of studies regarding determinants of private capital flows have focused on venture capital activity solely.⁷ Although buyout and VC investors have different investment strategies and typically invest in companies at different stages of growth, we expect many of the macro factors found to be affecting VC activity to also impact buyout activity. As such, we build some of our hypotheses based on the existing determinants of VC activity.

Gompers and Lerner (1998) study the determinants of VC activity across different states within the United States and find that states with higher GDP growth have greater VC activity, indicating that demand factors play an important role. Wright et al. (2004) discuss the prospects

⁷ An exception to the lack of research regarding the determinants of international buyout, rather than VC, investments is Groh and Liechtenstein (2009). They run a survey among institutional investors about their concerns when investing in emerging PE markets and find that protection of property rights and corporate governance are perceived as most important for international PE allocation decisions. In a follow-up study, Groh et al. (2010) extend their research to include 27 European countries and present a composite index using six key drivers - economic activity, depth of capital market, taxation, investor protection and corporate governance, human and social environment, entrepreneurial culture - to measure the attractiveness of a country for VC and buyout activity. They also find that their index is positively correlated with the amount of VC and PE funds raised across countries. It is important to note that they do not use actual investment data.

of PE activity in Central and Eastern European countries and suggest that higher GDP growth should attract more PE capital. Similarly, we predict that there will be more opportunities for private capital deals in growing industries and countries due to higher demand for external capital from growing companies. Hence, our first hypothesis is that there is more buyout activity in countries and industries with better macroeconomic conditions. To test this, we use GDP per capita growth and unemployment as measures of country-level economic conditions, and changes in overall industry employment and capital expenditures as measures of industry-level economic conditions and explore if they are significantly related to buyout capital invested in a country (industry).⁸

Previous studies have shown the importance of stock markets (Black and Gilson, 1998; Jeng and Wells, 2000) as well as credit markets (Green, 1998; Hellman et al., 2004) for the development of active VC markets. Aizenman and Kendall (2012) investigate the factors that affect the market for international VC investments and find that the presence of high-end human capital, a better business environment, and deeper financial markets are crucial. We expect active stock and credit markets to also be important for buyout investments for several reasons. Demircuc-Kunt and Levine (1996) show that countries with better-developed stock markets have better-developed banks and nonbank financial intermediaries, suggesting that stock and credit markets complement each other. Similarly, Beck and Levine (2002) find that it is the overall financial development that spurs industry growth and having a bank-based or market-based financial system does not matter per se. As such, active stock and credit markets measure the level of financial development for a country, which likely proxy for other factors that could also lead to

⁸ As robustness, we also use other macroeconomic condition variables such as the interest and inflation rates, but do not find any significant relationships with those variables. Our other results remain unchanged if we include those as additional controls in our specifications.

the development of private equity markets such as available financial infrastructure and services as well as financial knowledge and expertise. Furthermore, PE managers would likely prefer opportunities with active public markets when selecting buyout deals, as these provide additional exit opportunities. Lastly, active credit markets allow for better access to credit when financing a buyout transaction as well as when operating a growing company. Hence, we expect private equity market development to go hand-in-hand with public and credit market development. Overall, our second hypothesis is that private market transactions would benefit from more developed public equity and credit markets, thus we would expect to see more buyout investment in countries with greater financial development.⁹

The law and finance literature has shown the importance of legal factors for financial development. La Porta et al. (1997) show that investor protection and law enforcement impact the development of capital markets. Similarly, Levine (1998, 1999) finds that countries with better creditor rights and contract enforcement have better-developed banks. Comparably, we predict the institutional and regulatory environment to be crucial in the development of private equity markets as well. On the VC side, Cumming et al. (2010) finds that legal origin and accounting standards have significant impact on the governance structure of VC deals and hence affect VC market success. Guler and Guillen (2010) study the importance of institutional environment for VC investments and conclude that countries where institutions provide regulatory stability, protect investor rights, and facilitate exits receive more VC investments. On the demand side, Armour and

⁹ An alternative hypothesis is that private markets substitute for public markets and provide financing in economies where financing is not available (or is too costly) through public markets. Although this might be true in some economies, we expect the complementarity argument to dominate and to find a positive association between buyout activity and public market development. In the robustness section, we repeat our main specifications with a measure of buyout investment adjusted by the size of public markets and find evidence that institutional factors are associated with more buyout investment relative to the size of public markets, suggesting that some institutional factors might be associated with substitution of private for public financing.

Cumming (2008) find a strong link between bankruptcy laws and entrepreneurship in their study of 15 countries in Europe and North America, suggesting that the legal environment is an important factor for VC activity. Similarly, we hypothesize that there is more buyout activity in countries with stronger institutions and better governance. As buyout transactions typically involve a large transfer of ownership and private contracting, investor protection and contract enforcement would be particularly important for PE investors. Hence, we use investor protection and contract enforcement reforms in addition to rule of law to measure the overall strength of the regulatory and institutional environment in a country.¹⁰

3 Data and Descriptive Statistics

The PE investment data come from Burgiss, a financial services company providing record keeping and performance analysis support to large institutional investors. There are two major advantages of this data set over others. First, Burgiss sources its data exclusively from limited partners, as opposed to general partners (GP), so the typical biases associated with GP-sourced data sets are not present.¹¹ Second, Burgiss has provided us a complete data set of investments, by country, by industry, by year for their entire database of funds and these data are unavailable from any other source.

The primary variable from Burgiss data for our study is the annual amount of buyout capital invested (measured in US\$) at the country level for 61 countries over the period 1990 to 2017.

¹⁰ The use of reforms rather than other traditional measures of regulatory quality, which are typically highly correlated with rule of law, also allows us to perform a difference-in-differences analysis where we compare buyout activity pre- versus post-reform in countries that implemented a reform versus others that did not.

¹¹ GP-sourced databases on private equity may have significant biases as GPs strategically stop reporting. In many cases, Burgiss cross-checks data across different investors in the same fund, which leads to a high level of data integrity and completeness. Recently, Brown et al. (2015) compare different commercial PE data sets. For detailed information about Burgiss and its coverage of the PE universe, see Harris et al. (2012) and Brown et al. (2011).

Burgiss provides aggregated company level PE capital data invested at the industry level based on the Industry Classification Benchmark (ICB). So, a typical unit of observation would be the US\$ amount of buyout capital invested in India in the technology sector in 2015. We use both industry-level and aggregated investment data at the country-level in our study. It is important to note that this is the first data set which has actual dollar amounts of buyout capital invested at this level of detail globally.

Most of our other country-level data are obtained from the World Bank's Development Indicators; the institutional quality variables come from World Bank's Worldwide Governance Indicators and the reforms data come from World Bank's Doing Business Data. These data and the buyout investment data are matched at the country level using country codes. The industry-level growth data are obtained from DataStream and are matched to Burgiss data using industry codes from Industry Classification Benchmark. After matching data from all the different sources, we have a panel of 61 countries across 19 industries over 29 years. Variable definitions and data sources are provided in Appendix Table A1.

Table 3 presents descriptive statistics on the main variables used in the study. The average amount of PE investment in the sample is \$805 million per country-year and \$42 million per country-industry-year.¹² As these raw investment figures are hard to compare across countries of different sizes, we measure private equity investments as a percentage of GDP in the analysis. On average, new buyout investments are 0.036% of GDP at the country-level and 0.002% of GDP at the industry-level. If we exclude country- (industry-) years with zero investment, the average buyout to GDP measure goes up to 0.07% (0.01%) at the country- (industry-) level. To compare

¹² These averages are in 2017 dollars.

with the size of public equity and credit markets, the market value of stocks traded, a common measure for the depth of public markets, is on average 40% of GDP while credit provided to private sector, a common measure for the depth of credit markets, is about 76% of GDP.¹³ Of course, the market capitalization and credit measures are stock variables whereas the PE measures are (annual) flow variables so the interpretations are different.¹⁴ The average GDP per capita growth is 2.08% and the unemployment rate is unchanged on average during our sample period. At the industry level, annual employment grows at 3.3% and annual capital expenditures grow 10.4% on average.

We conduct some univariate analysis to compare countries with different levels of buyout investments. Panel A of Table 4 provides univariate comparisons of country-years with zero versus positive amounts of buyout capital investments across different dimensions of macroeconomic and governance variables. Panel B compares average employment and capital expenditures growth across country-industry-years with zero versus positive amounts of buyout investments. Panels C and D repeat the same analysis across country- and country-industry-years with positive amounts of buyout investments for high versus low amounts of capital invested. Panel A shows countries that receive buyout investments have on average lower unemployment, more developed financial markets (i.e., larger equity and credit markets), and a better regulatory environment. Panel B shows country-industries that receive buyout investments have on average higher employment growth, while capital expenditures growth is not different from country-industries with no buyout investments. If we repeat the comparisons for high versus low buyout country-years in Panels C and D, we find the same significant differences except for unemployment growth which appears

¹³ As another point of comparison, over the same time period, FDI inflows on average are 4% of GDP.

¹⁴ The size of buyout investments per GDP may seem small compared to the size of the stock and credit markets. However, the concentrated ownership and hands-on management and monitoring at the portfolio company level make private equity ownership very pivotal in portfolio company performance. Given this and the implications for PE on the broader economy (Aldatmaz and Brown, 2020; Bernstein et al. 2017), buyout investments are as important regardless of their smaller size.

to be similar across all countries with positive buyout investments.¹⁵ We additionally find that countries with lower buyout investments have lower GDP per capita growth on average, which is likely due to the fact that more developed nations with lower growth rates receive larger investments.

Overall, the univariate comparisons suggest that countries with less unemployment, more developed financial markets and a better regulatory environment receive more buyout capital. However, as the countries differ in many dimensions, we should not draw conclusions with these simple univariate comparisons. Consequently, we next conduct a multivariate analysis to more accurately examine the determinants of buyout investment activity.

4 Main Results

4.1 Determinants of Buyout Investments

The univariate comparisons indicate that developed countries receive more buyout capital. However, additional analysis is required to fully understand how various factors determine the level of buyout investment as countries with more developed financial markets, lower unemployment, and better institutions differ from other countries in various other dimensions. As such, we estimate multivariate panel regressions with country, industry, and year fixed effects to more clearly identify the drivers of buyout investments. Our sample contains many country-years (or country-industry-years) with zero buyout investment, and so the data are naturally truncated at zero. For this reason, we estimate Tobit models of the form

¹⁵ This might suggest that unemployment affects the decision of PE managers to enter a country but it becomes less important once they enter and decide how much to invest. Nevertheless, when we repeat our main analysis on a subsample of countries with positive investment in the robustness section, we still find unemployment to be significantly related with the amount of buyout invested.

$$\begin{aligned}
PE_{i,j,t} = & \alpha_1 MacroActivity_{i,j,t} + \alpha_2 MacroActivity_{i,j,t-1} + \alpha_3 MacroActivity_{i,j,t-2} \\
& + \beta FinancialDevelopment_{i,t-1} + \gamma RegulatoryEnvironment_{i,t} + \delta_i + \theta_j \\
& + \varepsilon_t .
\end{aligned}$$

$PE_{i,j,t}$ is buyout capital invested at the country-level or country-industry-level divided by country GDP. $MacroActivity_{i,j,t}$ includes GDP per-capita growth and the change in unemployment rate for country-level specifications or GDP per-capita growth and the change in unemployment rate along with employment growth and capital expenditures growth at the industry-level for industry-level specifications. We also include one- and two-year lags for macroeconomic variables to allow for PE firms considering two years of past macro activity when making investment decisions as well as the natural lag from the time it takes to identify and close a deal. $FinancialDevelopment_{i,t}$ includes measures of stock and credit market activity. $RegulatoryEnvironment_{i,t}$ includes rule of law, and dummies for investor and contract reforms.¹⁶ δ_i , θ_j , ε_t are country, industry, and year fixed effects. By including year fixed effects, we are controlling for global shocks that might be affecting the amount of buyout capital invested. The country (industry) fixed-effects control for any time-invariant country (industry) characteristics and allow us to identify the impact of within country (industry) variables that vary over time.

Table 5 presents country-level results. In Column 1, we find that *Unemployment* is negatively associated with buyout investments, suggesting that more buyout capital is invested when the economy is relatively strong and labor markets are tight. *Stocks Traded* has a positive and significant coefficient suggesting that more buyout is invested in countries with more

¹⁶ The reform dummies are indicator variables that take the value 1 for country-years following a country's implementation of a reform.

developed stock markets. The coefficients on *Rule of Law* and *Contract Reform* are also positive and significant. In columns 2 and 3, we add a time trend and year fixed effects, respectively, and results hold except for the *Contract Reform* which becomes insignificant with the time trend. In Column 4, we include country fixed effects (i.e., we compare the level of buyout investments within a country across years) and observe additional significant relations. Specifically, the coefficients on *Credit to Private* and *Investor Reform* also become positive and significant, suggesting that credit markets and investor reforms are significantly and positively associated with buyout investments within a country. In Column 5, we include country and year fixed effects together and the results are very similar to Column 4.¹⁷

Overall, results in Table 5 suggest that macroeconomic conditions, financial development, and regulatory environment all play a role in determining how much buyout capital is invested in a country: countries with lower unemployment, more active stock and credit markets, stronger rule of law, and better investor protection and contract enforcement receive more buyout capital. It is important to note that with country and year fixed effects included, the estimation of coefficients on the reform variables is akin to a difference-in-differences model where we are comparing buyout investments among countries that adopted an investor protection or contract enforcement reform versus those that did not pre and post-reform. Thus, the positive coefficients on the reform variables indicate that there is more buyout investment following regulatory reforms.

The effects we document in Table 5 are economically large as well. For example, taking coefficients from Column 5, a one standard deviation decrease in *Unemployment* (-1.2%) is associated with a 0.007 increase in the amount of buyout investment (PE_t). This suggests an

¹⁷ Results are unchanged when a time trend is included together with year and country fixed effects.

increase of about 19% relative to the sample mean of 0.036. Similarly, a one standard deviation increase in *Stocks Traded* would be associated with a 25% increase in buyout investment relative to the sample mean, while a one standard deviation increase in the amount of credit provided to the private sector would be associated with a 70% increase in buyout investment. A country's buyout investment would increase by 0.029 (80% increase relative to the sample mean) following an investor protection reform, and by 0.038 (100% increase relative to the sample mean) following a contract enforcement reform.¹⁸

Table 6 repeats the analysis in Table 5 at the industry level. In Column 1, we find that *Employment Growth* is positively associated with the amount of buyout capital invested, while *CAPEX Growth* is not significant. The country-level variables are the same as in Column 1 of Table 5 – *Unemployment*, *Stocks Traded*, *Rule of Law*, *Contract Reform* are positive and statistically significant. In Columns 2 and 3, we add a time trend and year fixed effects, respectively, and results are unchanged. In Column 4, we include industry fixed effects and those absorb the effect of *Employment Growth* except for two-year lagged *Employment Growth*, while the coefficients on *Unemployment*, *Stocks Traded*, *Rule of Law*, and *Contract Reform* remain the same. In Column 5, we include country fixed effects, i.e., we compare the level of buyout investments in an industry within a country across years and get more significant coefficients. In addition to what we find in Columns 1-4, the coefficient on *Credit to Private* and *Investor Reform* also become positive and significant. In Column 6, we include industry, country, and year fixed effects all together and results are very similar to Column 5 except for *Employment Growth* which

¹⁸ Please note that these are marginal effects on the latent variable. If we condition on our dependent variable being positive, the marginal effects are smaller. For instance, the marginal effect of a one standard deviation decrease in unemployment conditional on buyout per GDP being positive is 0.004%, which would refer to an increase of about 13% in buyout per GDP on average relative to the sample mean.

becomes significant only when lagged for two years. Overall, results in Table 6 confirm what we have found in Table 5: unemployment, stock and credit market depth and regulatory environment all determine the level of buyout capital invested in a country. Additionally, both contemporaneous and past industry employment growth are positively associated with buyout investments across industries, but only past employment growth remains significant within industry.

4.2 Determinants of Relative Buyout Activity

Our results so far have shown the importance of macroeconomic conditions, financial development, and institutional factors for buyout activity. Although interesting by itself, one might be concerned that these are factors that any other form of investment would respond to and our findings are not specific to private equity. To mitigate this concern and to better understand the determinants of relative buyout activity, we study how buyout activity responds to these factors relative to other forms of investment such as foreign direct investment (FDI) and gross capital formation (GCF) in a country.

We repeat our main specifications from Table 5 and results are presented in Table 7. In Columns 1-3, our dependent variable is total buyout investment at the country-level adjusted by the total amount of FDI inflow. In Column 1, we include year fixed effects and find that only *Unemployment* and *Rule of Law* to be statistically significantly associated with relative buyout investment. We control for country fixed effects in Column 2 and the coefficients on *Credit to Private*, *Investor Reform* and *Contract Reform* become positive and statistically significant. In Column 3, we include both year and country fixed effects and results are very similar to those in Column 2 except for *Credit to Private*, which loses statistical significance. These results suggest that the responses of buyout investments to changes in macroeconomic conditions and the stage

of financial development are not much different from the response of FDI inflows.¹⁹ Nevertheless, the response of buyout activity to institutional factors is significantly different: buyout investments respond to improvements in rule of law, investor protection, and contract enforcement more positively than do FDI inflows. One concern with this analysis is that FDI is very volatile for many countries and may add noise to the analysis. Consequently, in Columns 4-6, the dependent variable is buyout investment scaled by gross fixed capital formation (also known as gross domestic fixed investment) for each country-year. With year fixed effects in Column 4, we find that *Unemployment*, *Stocks Traded*, and *Rule of Law* have statistically significant coefficients. When we include country fixed effects instead in Column 5, the coefficients on *Credit to Private* and *Investor Reform* also become significant. In Column 6, we include both year and country fixed effects and find very similar results with the addition of a significant coefficient on *Contract Reform* as well. These results indicate that buyout activity responds to declines in unemployment, active financial markets, and institutional factors such as better rule of law, investor protection and contract enforcement more positively than domestic fixed investment, i.e., the investment component of GDP.

Overall, these results confirm our main results regarding the determinants of buyout activity and indicate that buyout activity is more responsive to these factors than other traditional forms of investment. Given the existing evidence on the positive impact of buyout investments on portfolio companies (Cumming et al., 2007; Guo et al. 2011; Kaplan and Stromberg, 2009) as well as the positive spillover effects documented on industry peers (Aldatmaz and Brown, 2020) and overall industry growth (Bernstein et al., 2016), our findings potentially have important policy

¹⁹ It may also be the case that some of these factors lose statistical significance due to the FDI measure being too noisy across countries.

implications for developing economies. Our findings highlight the importance of institutional factors and suggest that developing countries should focus on improving the institutional environment in addition to providing active public and credit markets and growth opportunities to attract more buyout capital relative to other traditional forms of investments.

4.3 Where are reforms more effective?

Our main results have shown that investor protection and contract enforcement reforms are associated with more buyout investments on average, but it may very well be the case that the impact of these reforms is different across the cross-section of countries. To understand if and where these reforms are more effective, we study two such dimensions across which the impact of reforms might be different: legal environment and human capital.

While reforms are more likely needed in countries with a weaker regulatory environment to start with and might be more effective in such circumstances, well-functioning institutions and a strong legal system could potentially make the implementation of investor and contract reforms more effective in attracting more buyout capital. We test this by adding interactions of the reform dummies with various measures of legal environment to our estimations in Table 5. Results are presented in Table 8. We use scores on rule of law and regulatory quality from World Bank's Governance Indicators and the corruption index from Transparency International to proxy for the strength of overall governance in a country. Columns 1, 3, and 5 show that the coefficients on the interaction of *Investor Reform* dummy with the governance variables are all positive and statistically significant, suggesting that the investor protection reforms are indeed more effective in attracting more buyout capital in countries with a strong governance environment in place. The coefficients on the interactions with the *Contract Reform* dummy in Columns 2, 4, and 6 are

positive and significant as well and thus tell the same story: contract enforcement reforms are more effective in attracting buyout capital in countries with stronger governance systems.

Next, we consider the impact of human capital on the effectiveness of reforms. Similarly, we interact the reform dummies with different measures of education and human capital: enrollment in tertiary education, government spending on education, and country-level internet usage. Results are presented in Table 9. In Columns 1, 3, and 5, we find a positive and significant coefficient on the interaction variable, suggesting that investor reforms are more effective in countries with better education overall. Columns 2, 4, and 6 present results for contract enforcement reforms and the interactions are again positive and significant: the positive impact of contract reforms on buyout capital invested is more pronounced in countries with higher human capital.

One natural concern with these cross-country results is that reforms could be more prevalent in countries with stronger governance or better education, which might be driving the results we find in Tables 8 and 9. As such, we compare average numbers for investor and contract reform dummies across countries with high versus low governance and high versus low education and present them in Table 10. Mean differences across subsamples are statistically insignificant, i.e., there is no evidence that reforms are more common in high rule of law or high education countries. On the contrary, the only significant difference we find is that investor reforms are more common in countries with lower rule of law, which, if anything, should bias us against finding the results we present in Table 8.

Overall, our results suggest that investor protection and contract enforcement reforms are crucial in private equity companies' decision to invest in a specific country and the effect they

have on how much buyout capital is invested is more pronounced in countries with better governance and education systems. In other words, investor protection and contract enforcement reforms are effective in attracting more buyout capital, but they need to be supported with a strong country-level governance as well as a strong supply of human capital.

5 Robustness Checks and Other Analysis

In this section, we discuss robustness checks and additional analysis. Our main analysis relies on estimations of Tobit models which are left-censored at zero given the nature of our data which contain many country-years (or country-industry-years) with no buyout investment. To check if the results are robust to the type of specification used, we also estimate OLS regressions on a subsample of country-years with positive buyout investment and present results in Table 11. The results are very similar to those presented in Section 4.1. Among country-years with positive investment, we find that countries with lower unemployment, more active financial markets, and a stronger regulatory environment receive higher amounts of buyout capital.

We next check how our results differ across OECD countries versus others to alleviate concerns about our results being driven by OECD countries only. We repeat our main tests from Table 5 across OECD countries and others and report the results in Table 12. In Column 1, we include a dummy for OECD countries and our main results are unchanged.²⁰ In Columns 2 and 3, we compare the reform results for OECD countries and others by interacting our reform variables with the OECD dummy. We find that the impact of reforms is more pronounced in OECD countries versus other countries which is not surprising based on our analysis in Section 4.3 where we showed that reforms are more effective in countries with better governance and education. If

²⁰ We also find a positive coefficient on the OECD dummy suggestive of more buyout investments in OECD countries.

we compare governance and education measures across OECD countries versus others, we find that OECD countries have significantly better governance and education. We further explore how the financial development results differ among OECD countries versus other countries in Columns 4 and 5 in a similar fashion but find that the impact of stock and credit markets does not vary in a statistically significant way among OECD countries and others.²¹

To study if our findings would apply to venture capital investments, we repeat our main analysis with country-level venture capital investments on the left-hand side and present results in Table 13 in the same fashion as in Table 5. In Column 1, we have no fixed effects and find that GDP per capita growth and stock market activity are positively associated with VC investments, while unemployment growth is negatively associated with VC. If we add a time trend and year fixed effects in Columns 2 and 3, respectively, the investor protection reform dummy also becomes positive and significant. In Column 4, we add country fixed effects and only the coefficients on stock and credit market activity remain significant. Results are unchanged when year fixed effects are added in addition to country fixed effects in Column 6. Overall, these results indicate that financial development is the only important driver of VC investments within and across countries in our sample after controlling for time-invariant country characteristics and time fixed effects.²²

We perform further robustness checks that we do not tabulate for brevity.²³ First, we consider two additional control variables that might be related to buyout investments and impact

²¹ In un-tabulated results, we find that the impact of unemployment and rule of law are lower in OECD countries, but differences are not statistically significant.

²² We get the same results when we estimate OLS regressions on country-years with positive VC investment instead of Tobit with left censoring.

²³ In addition to all these robustness checks discussed in this section, we also conduct a number of other tests. In these tests, we examine alternative measures for regulatory environment and financial development as well as different subsamples by country and by time period. Our key results remain unchanged regardless of the measures or subsamples used.

our results: corporate taxes and cyclicalities. Djankov et al. (2008) present data on effective corporate tax rates across 85 countries and find that effective corporate tax rates have an adverse impact on entrepreneurial activity leading to less demand for VC. Groh et al. (2010) also include taxation as a component of their PE attractiveness index. Similarly, in un-tabulated analysis, we also test if taxation plays a role in how much buyout capital is invested across countries but do not find any statistically significant relationship regardless of the corporate tax data we use.²⁴ Private equity managers have to deliver returns to their investors and hence might be looking for opportunities to buy companies at a discount when economies are going through downturns. To test this, we create an across-country and time recession dummy based on jumps in the unemployment rate and include it as a control variable in our country-level models. We do not find a significant association between this recession dummy and buyout activity, suggesting that there is no evidence of PE bottom-fishing during times of dislocation.

Another interesting question is if the response of buyout investments to institutional factors differs across industries as the level of institutional involvement may vary across industries. To explore this, we repeat our industry-level specification on subsamples created based on various industry groupings. One such difference we find evidence for is that the effect of regulatory environment on buyout activity seems to be more pronounced in non-traded versus traded industries, and in services versus goods industries. This might reflect that private equity managers have to deal with institutions more when making investments into portfolio companies from these industries and thus respond more to regulatory factors. However, it should be noted that these

²⁴ We use other data on corporate taxes from different sources like the OECD and the World Bank's Doing Business data. Our results remain unchanged if we include corporate tax rates as an additional control in our models. The reason we do not include it in the main analysis is that the tax data are either only available for a subset of countries or a subset of years and lead to a big drop in the number of country-years in the sample.

differences are not statistically different and hence we cannot draw conclusions with the existing evidence.

Lastly, in an attempt to better understand the relationship between public markets and buyout investments, we estimate models where our measure of buyout investments is adjusted by the total market capitalization of public firms instead of including public market activity as a control variable. If institutional reforms make being public more costly for firms and hence lead to a substitution of private financing for public financing, we would expect to find a positive coefficient on our reform variables. That is indeed what we find: buyout activity relative to public market activity increases following investor protection reforms. This suggests that one reason buyout activity increases following investor protection reforms might be that firms substitute private equity financing for public financing which increases the demand for private capital and leads to more buyout investments.

6 Conclusion

Despite the tremendous increase in global buyout investments over the last two decades, there is a significant lack of systematic studies exploring the country-level drivers of buyout investments. Our study aims to fill that gap by using comprehensive data on buyout investments across 61 countries over 1990–2017. We find evidence that macroeconomic conditions such as unemployment as well as financial development and regulatory environment all are important determinants of international buyout investments. Our findings suggest that countries with lower unemployment and higher stock and credit market activity receive more buyout investments. We also explore regulatory reforms regarding investor protection and contract enforcement and find that countries receive more buyout capital following the implementation of these types of reforms.

We also show that the factors we identify are more strongly related to buyout investment levels than other forms of investment (i.e., FDI and aggregate investment). Finally, our cross-sectional results indicate that strong institutions and high-end human capital are necessary for investor protection and contract enforcement reforms to be effective in attracting more buyout capital.

Overall, our findings make important contributions to our understanding of how capital markets will evolve in developed and developing economies by identifying what macroeconomic and regulatory factors impact the growth of private markets. For example, our results can be used to identify which economies are more likely to trend like the United States in terms of private capital formation in the future. Given the importance of overall financial development (Levine and Zervos, 1998) as well as private equity activity (Aldatmaz and Brown, 2020) on the real economy, our results are important for enhancing our understanding of the relation between finance and growth. Future research can answer how private market development contributes to economic growth in addition to the contributions from public and credit markets.

References

- Aizenman, Joshua, and Jake Kendall, 2012, The Internationalization of Venture Capital, *Journal of Economic Studies* 39, 488 – 511.
- Aldatmaz, Serdar, and Greg W. Brown, 2020, Private Equity in the Global Economy: Evidence on Industry Spillovers, *Journal of Corporate Finance* 60.
- Armour, John, and Douglas Cumming, 2008, Bankruptcy Law and Entrepreneurship, *American Law and Economics Review* 10, 303 – 350.
- Beck, Thorsten, and Ross Levine, 2002, Industry Growth and Capital Allocation: Does Having a Market- or Bank-Based System Matter?, *Journal of Financial Economics* 64, 147-180.
- , 2004, Stock Markets, Banks, and Growth: Panel Evidence, *Journal of Banking and Finance* 28, 423-442.
- Beck, Thorsten, Ross Levine, Ross and Norman Loayza, 2001, Finance and the Sources of Growth, *Journal of Financial Economics* 58, 261-300.
- Bernstein, Shai, Josh Lerner, Morten Sørensen, and Per Stromberg, 2016, PE and Industry Performance, *Management Science* 63, 1198 - 1213.
- Black, Bernard S., and Ronald J. Gilson, 1998, Venture Capital and the Structure of Capital Markets: Bank versus Stock Markets, *Journal of Financial Economics* 47, 243 – 277.
- Brown, Greg W., Robert S. Harris, Tim Jenkinson, Steven N. Kaplan and Ruediger Stucke, 2011, How Big is the PE Universe?, UNC Kenan Flagler Business School, Presentation to UNC PE Conference, October 14, 2011.
- Brown, Greg W., Robert S. Harris, Tim Jenkinson, Steven N. Kaplan and David Robinson, 2015, What Do Different Commercial Data Sets Tell Us About PE Performance?, *working Paper*.
- Brown, Greg W. and Pete Witte, 2019, A new equilibrium: Private equity's growing role in capital formation and the critical implications for investors, retrieved from Kenan Institute of Private Enterprise website: <https://www.kenaninstitute.unc.edu/index.php/publication/a-new-equilibrium>
- Cumming, Douglas, and Sofia Johan, 2007, Regulatory Harmonization and the Development of Private Equity Markets, *Journal of Banking and Finance* 31, 3218 – 3250.
- Cumming, Douglas J., Mike Wright, and Donald S. Siegel, 2007, PE, Leveraged Buyouts and Governance, *Journal of Corporate Finance* 13, 439 - 460.
- Cumming, Douglas, Daniel Schmidt, and Uwe Walz, 2010, Legality and Venture Capital Governance around the World, *Journal of Business Venturing* 25, 54 – 72.
- Cumming, Douglas, Grant Fleming, Sofia Johan, and Mai Takeuchi, 2010, Legal Protection, Corruption and Private Equity Returns in Asia, *Journal of Business Ethics* 95, 173 – 193.
- Demirguc-Kunt, Asli, Ross Levine, 1996, Stock Markets, Corporate Finance, and Economic Growth: An Overview, *The World Bank Economic Review* 10, 223 – 239.

- , 1999, Bank-based and Market-based Financial Systems - Cross-country Comparisons, *Policy Research Working Paper*, World Bank.
- Djankov, Simeon, Tim Gasner, Caralee McLiesh, Rita Ramalho, and Andrei Schleifer, 2008, The Effect of Corporate Taxes on Investment and Entrepreneurship, *working paper*.
- Doidge, Craig, Andrew Karolyi, and Rene M. Stulz, 2013, The U.S. left behind? Financial globalization and the rise of IPOs outside the U.S., *Journal of Financial Economics* 110, 546-573.
- , 2017, The U.S. listing gap, *Journal of Financial Economics* 123, 464-487.
- Doidge, Craig, Kathleen M. Kahle, Andrew Karolyi, and Rene M. Stulz, 2018, Eclipse of the public corporation or eclipse of the public markets?, *Journal of Applied Corporate Finance* 30, 8-16.
- Ewens, Michael and Joan Farre-Mensa, 2019, The Deregulation of the Private Equity Markets and the Decline in IPOs, *working paper*.
- Gao, Xiaohui, Jay R. Ritter, and Zhongyan Zhu, 2013, Where have all the IPOs gone?, *Journal of Financial and Quantitative Analysis* 48, 1663-1692.
- Gompers, Paul A., and Josh Lerner, 1998, What drives Venture Capital Fundraising?, *working paper*.
- Groh, Alexander P., and Heinrich von Liechtenstein, 2009, How attractive is central Eastern Europe for risk capital investors?, *Journal of International Money and Finance* 28, 625 – 647.
- Groh, Alexander P., Heinrich von Liechtenstein, and Karsten Lieser, 2010, The European Venture Capital and Private Equity Country Attractiveness Indices, *Journal of Corporate Finance* 16, 205 – 224.
- Guler, Isin, and Mauro F. Guillen, 2010, Institutions and the Internationalization of US Venture Capital Firms, *Journal of International Business Studies* 41, 185 – 205.
- Guo, Shourun, Edith S. Hotchkiss, and Weihong Song, 2011, Do Buyouts (Still) Create Value?, *Journal of Finance* 66, 479 - 517.
- Harris, Robert S., Tim Jenkinson, and Steven N. Kaplan, 2014, PE Performance: What Do We Know?, *Journal of Finance* 69, 1851-1882.
- Jeng, Leslie A., and Philippe C. Wells, 2000, The determinants of Venture Capital Funding: Evidence Across Countries, *Journal of Corporate Finance* 6, 241 – 289.
- Kaplan, Steven N., and Per Stromberg, 2009, Leveraged Buyouts and Private Equity, *Journal of Economic Perspectives* 23, 121-146.
- King, Robert G., and Ross Levine, 1993, Finance and Growth: Schumpeter Might be Right, *Quarterly Journal of Economics* 108, 717 – 737.
- La Porta, Rafael, Florencio Lopez-De-Silanes, Andrei Shleifer, and Robert W. Vishny, 1997, Legal Determinants of External Finance, *Journal of Finance* 52, 1131 – 1150.
- Levine, Ross, 1998, The Legal Environment, Banks, and Long-Run Economic Growth, *Journal of Money, Credit and Banking* 30, 596-613.

———, 1999, Law, Finance, and Economic Growth, *Journal of Financial Intermediation* 8, 8 – 35.

Levine, Ross and Sara Zervos, 1998, Stock Markets, Banks, and Economic Growth, *American Economic Review* 88, 537-558.

Wright, Mike, Jonathan Kissane, and Andrew Burrows, 2004, Private Equity in EU Accession Countries of Central and Eastern Europe, *Journal of Private Equity* 73, 32 – 46.

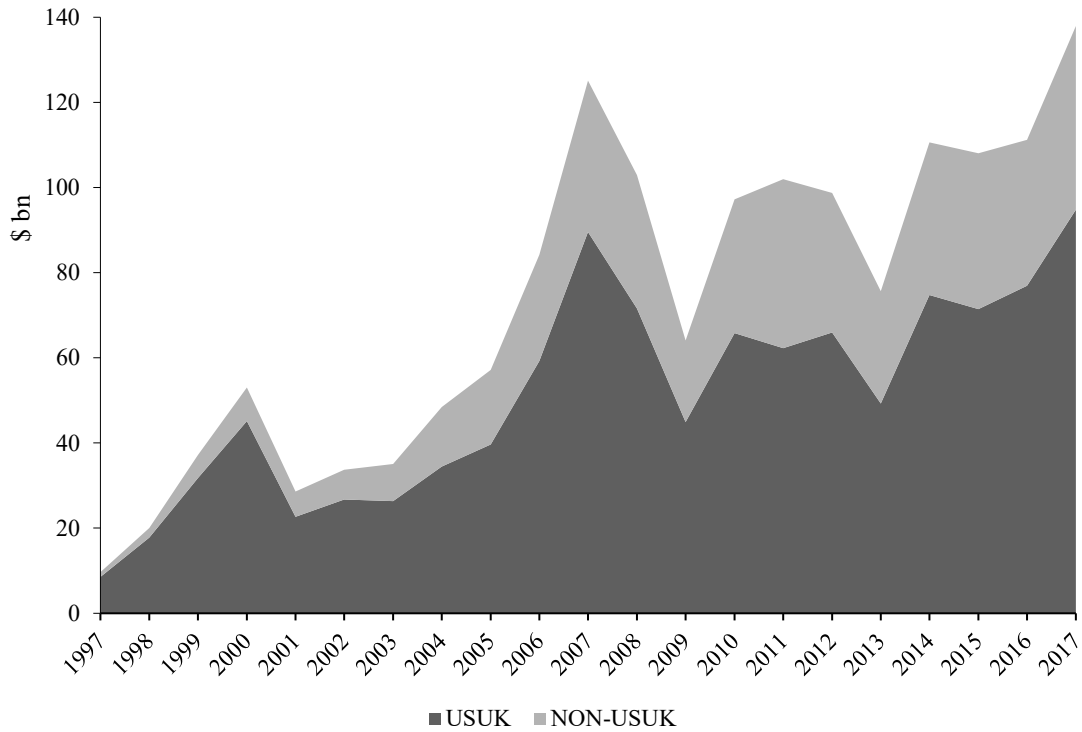


Figure 1: Global private equity investments, 1997-2017. This figure plots the time series of total global private equity investments over the last two decades. The U.S. and U.K. (USUK, darker shading) are plotted separately from all other countries (NON-USUK, lighter shading). Data, provided by Burgiss, are summed across deal-level equity investments classified by location of the corporate headquarters.

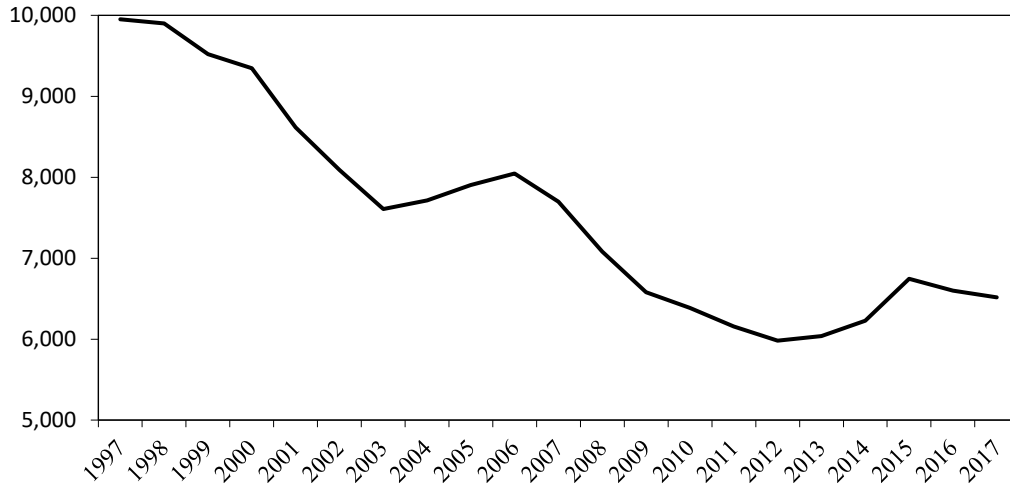


Figure 2: Number of publicly-listed companies in the U.S. and U.K., 1997-2017. This figure plots the number of publicly listed companies in the U.S. and U.K. over the last two decades. There is a significant decline in the number of public companies in the U.S. and U.K. Data are from the World Bank.

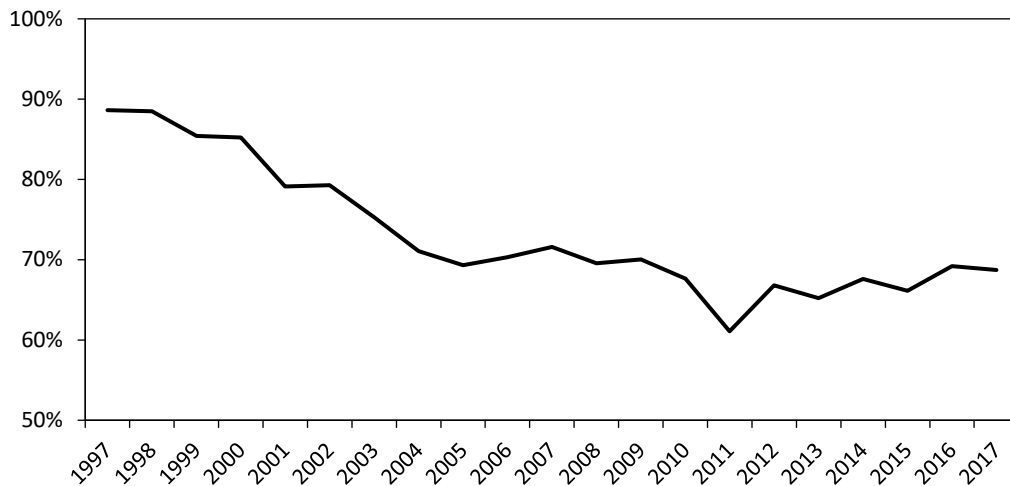


Figure 3: Total private equity investment in the U.S. and U.K. as a percentage of global total, 1997-2017. This figure plots the time series of the ratio of private equity investments in the U.S. and U.K. to global private equity investments over the last two decades. The ratio has significantly declined from 90% to 70%.

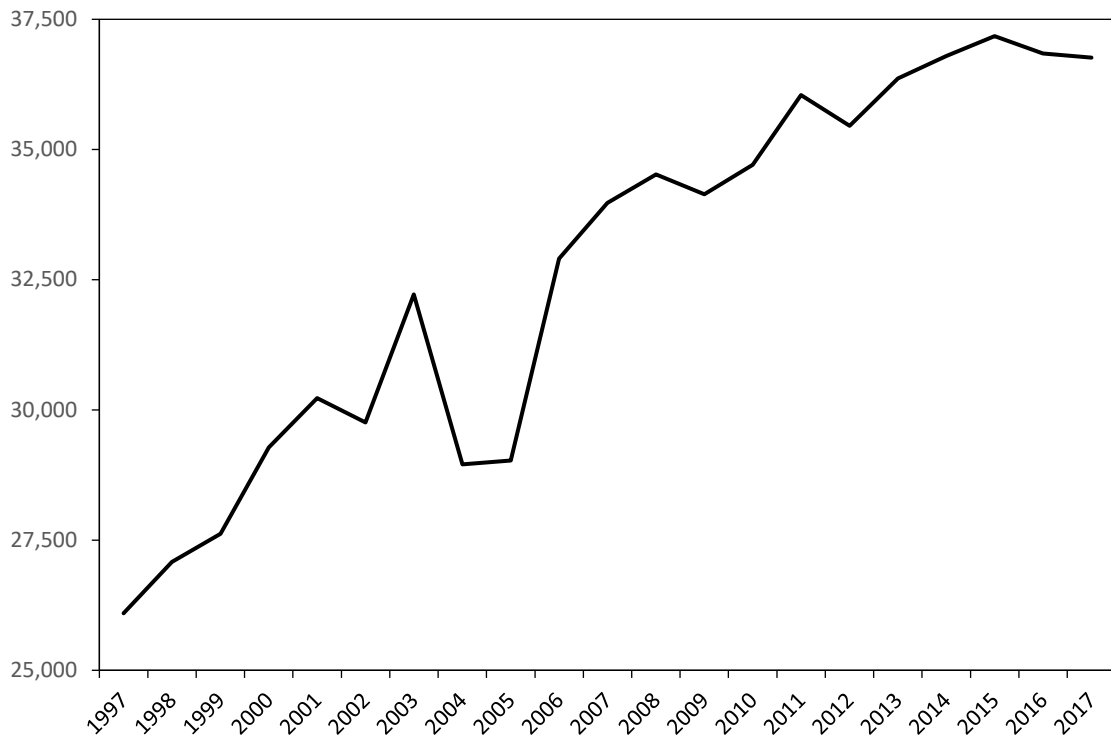


Figure 4: Number of global public companies excluding the U.S. and U.K., 1997-2017. This figure plots the number of publicly listed companies in the world excluding the U.S. and U.K. over the last two decades. Although the number has been increasing steadily, there seems to be a recent leveling off.

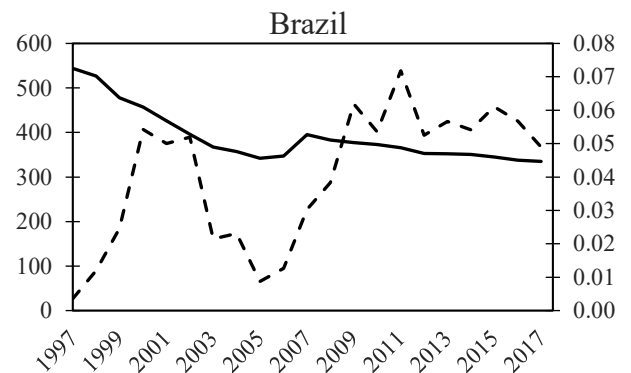
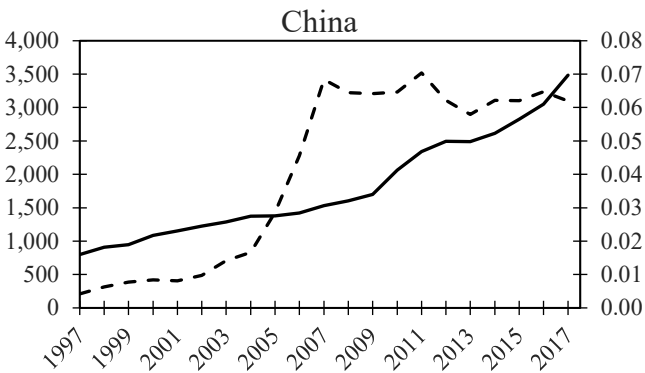
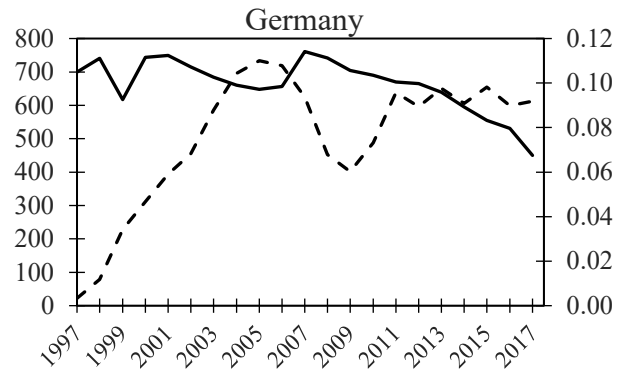
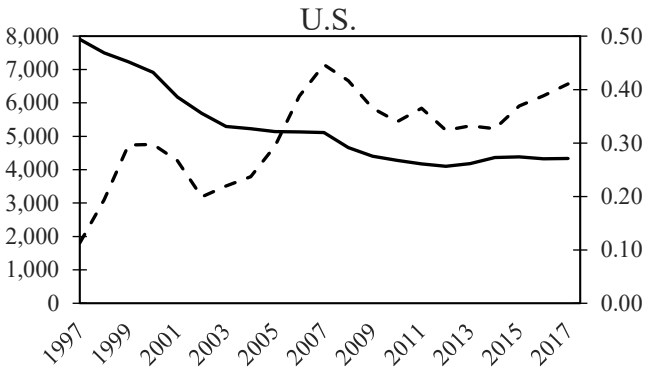


Figure 5: Number of publicly-listed companies and total private equity investment as a percent of GDP, 1997-2017. This figure plots the time series of the number of publicly listed companies and total private equity investment as a percent of GDP for the U.S., Germany, China, and Brazil over the last two decades. The solid line, on the left scale, graphs the number of publicly listed companies and the dashed line, on the right scale, graphs total private equity invested as a percent of GDP.

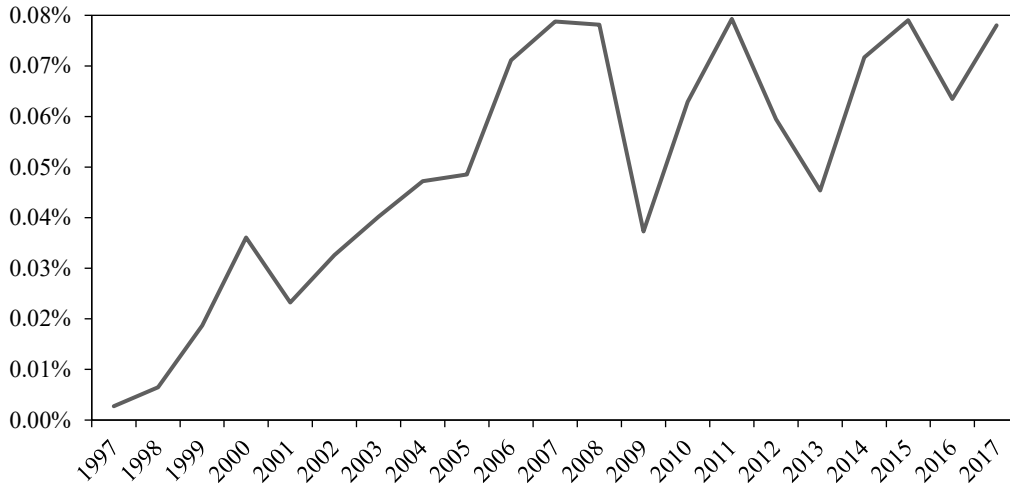


Figure 6: Total private equity investment as a percent of GDP for the largest 8 economies excluding the U.S. and U.K., 1997-2017. This figure plots the time series of the ratio of PE to GDP for the largest 8 economies in the world excluding the U.S. and U.K. over the last two decades. Private equity investments have been increasing for those economies over the last two decades.

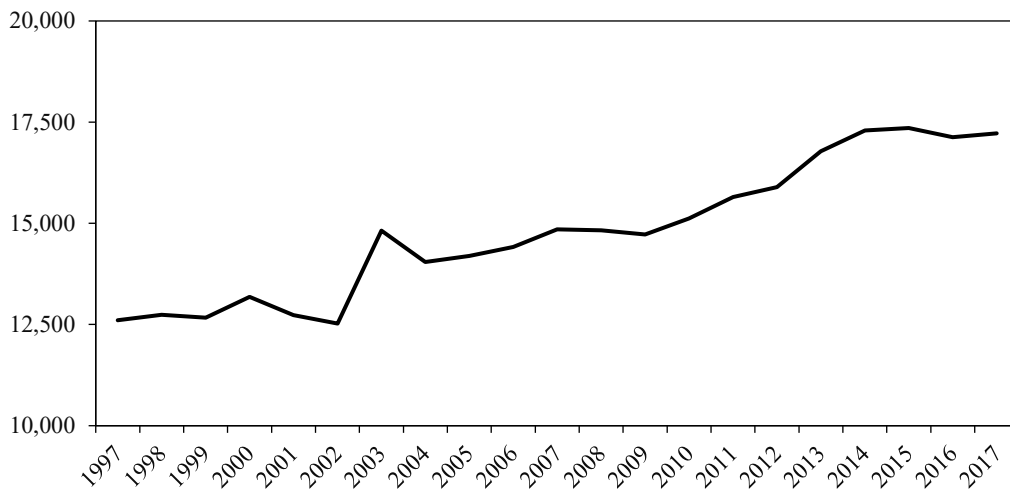


Figure 7: Number of publicly-listed companies for the largest 8 economies excluding the U.S. and U.K., 1997-2017. This figure plots the number of publicly listed companies for the largest 8 economies in the world excluding the U.S. and U.K. over the last two decades.

Table 1: Size of Public Equity Markets for Largest Ten Economies

This table presents the evolution of public markets for the largest ten economies over the period of 1997 – 2017. Panel A presents annual total market capitalization of all publicly listed companies as a percentage of GDP for each country. Panel B presents number of publicly listed companies in each country.

Panel A: Public Market Cap (% of GDP)

	U.S.	China	Japan	Germany	U.K.	France	India	Italy	Brazil	Canada
1997	125.6	21.5	47.2	37.2	133.1	46.4	30.4	23.3	28.8	154.8
1998	142.6	22.6	60.5	48.8	139.9	65.5	24.5	35.9	18.6	171.2
1999	153.4	30.4	97.7	65.1	177.1	100.6	39.5	58.3	37.9	214.2
2000	147.4	48.2	64.6	65.1	156.3	106.2	31.1	67.3	34.5	103.8
2001	132.1	39.3	52.6	54.9	132.2	85.3	22.3	45.4	33.3	83.5
2002	101.1	31.7	50.3	33.0	104.7	64.7	25.0	37.7	24.9	117.2
2003	124.5	30.9	66.4	43.1	118.7	73.7	45.9	39.2	42.0	102.0
2004	133.6	22.9	73.9	42.4	117.1	73.6	54.7	43.9	49.4	115.1
2005	130.4	17.6	96.2	42.0	121.1	80.1	67.4	43.1	53.2	126.7
2006	141.6	41.6	101.8	54.5	140.2	104.7	87.1	52.8	64.1	129.3
2007	137.8	126.1	95.9	61.2	124.7	103.1	149.5	48.7	98.0	149.3
2008	78.8	38.7	61.8	29.6	64.3	50.4	53.9	21.8	34.9	66.7
2009	104.3	70.0	63.2	37.8	94.0	72.3	97.4	26.3	80.2	122.3
2010	115.3	66.2	67.1	41.8	121.8	72.3	97.4	27.3	69.9	134.6
2011	100.6	45.2	54.0	31.5	118.7	54.3	55.2	21.9	46.9	106.9
2012	115.3	43.3	56.1	41.9	112.1	67.4	69.1	21.3	49.8	112.9
2013	143.2	41.3	88.1	51.6	119.0	81.9	61.3	26.2	41.3	114.8
2014	150.3	57.5	90.3	44.6	109.9	73.1	76.4	28.0	34.4	116.3
2015	137.6	74.3	111.5	50.7	106.3	85.6	72.1	34.8	27.2	102.6
2016	146.2	65.7	100.6	49.1	107.9	87.4	68.4	31.8	42.2	130.6
2017	164.8	71.7	128.0	61.2	116.9	106.3	87.9	37.8	46.5	143.7

Table 1: Size of Public Equity Markets for Largest Ten Economies (continued)*Panel B: Number of Publicly Listed Companies*

	U.S.	China	Japan	Germany	U.K.	France	India	Italy	Brazil	Canada
1997	7,905	799	1,805	700	2,046	740	5,843	235	544	1,937
1998	7,499	909	1,818	741	2,399	784	5,724	243	527	1,991
1999	7,229	947	1,889	617	2,292	1,144	5,789	270	478	1,538
2000	6,917	1,086	2,055	744	2,428	1,185	5,853	297	457	1,507
2001	6,177	1,154	2,103	749	2,438	936	5,795	294	426	1,278
2002	5,685	1,223	2,119	715	2,405	874	5,650	295	396	1,252
2003	5,295	1,285	2,174	684	2,311	817	5,644	271	367	3,578
2004	5,226	1,373	2,276	660	2,486	787	4,725	269	357	3,597
2005	5,145	1,377	2,323	648	2,757	749	4,763	275	342	3,719
2006	5,133	1,421	2,391	656	2,913	730	4,796	284	347	3,790
2007	5,109	1,530	2,389	761	2,588	707	4,887	301	395	3,881
2008	4,666	1,604	2,374	742	2,415	673	4,921	294	383	3,836
2009	4,401	1,700	2,320	704	2,179	652	4,955	291	377	3,727
2010	4,279	2,063	2,281	690	2,105	617	5,034	290	373	3,771
2011	4,171	2,342	2,280	670	1,987	586	5,112	311	366	3,980
2012	4,102	2,494	2,294	665	1,879	562	5,191	303	353	4,030
2013	4,180	2,489	3,408	639	1,857	500	5,294	285	352	3,810
2014	4,369	2,613	3,458	595	1,858	495	5,541	290	351	3,948
2015	4,381	2,827	3,504	555	2,365	490	5,835	356	345	3,799
2016	4,331	3,052	3,535	531	2,267	485	5,820	387	338	3,368
2017	4,336	3,485	3,598	450	2,179	465	5,615	339	335	3,278

Table 2: Size of PE Investments for Largest Ten Economies

This table presents the evolution of private equity markets for ten economies in the sample over the period of 1997 – 2017. Panel A presents the total amount of private equity capital invested per year for each country. Panel B presents the total amount of private equity capital invested as a percentage of GDP.

Panel A: PE Capital Invested (\$ millions)

	U.S.	China	Japan	Germany	U.K.	France	India	Italy	Brazil	Canada
1997	12,999	113	0	121	409	19	8	19	0	244
1998	26,059	66	11	183	1,307	119	10	119	140	549
1999	43,253	118	46	881	4,643	1,055	7	183	229	950
2000	60,372	210	216	2,018	5,489	1,253	89	1,284	362	1,099
2001	28,474	120	178	1,177	3,614	791	57	350	790	469
2002	31,590	126	311	1,855	5,739	2,042	79	457	88	592
2003	31,433	378	400	3,369	4,576	739	22	2,114	335	361
2004	40,762	513	263	3,789	5,032	2,814	27	850	72	1,650
2005	43,196	399	336	4,169	7,791	2,953	200	1,157	197	1,089
2006	64,399	1,799	883	4,327	9,387	3,451	1,072	3,342	12	980
2007	93,130	3,038	1,384	3,939	15,330	4,848	1,718	2,880	336	1,357
2008	74,367	4,398	1,697	3,100	9,117	2,727	2,426	3,443	1,386	1,908
2009	48,019	2,425	987	1,533	4,547	1,007	1,194	1,827	491	577
2010	65,277	4,897	1,484	2,819	10,473	3,288	2,103	747	2,303	805
2011	61,981	7,032	2,034	4,596	7,539	4,102	3,167	1,925	1,319	1,347
2012	63,859	5,397	1,282	4,107	8,289	2,157	1,187	935	2,151	1,754
2013	45,742	4,660	688	2,130	7,404	1,650	1,244	1,833	871	1,396
2014	71,182	7,846	749	5,545	8,123	2,248	2,498	918	1,495	1,888
2015	66,405	8,215	552	3,070	9,268	2,804	3,932	2,058	1,379	1,860
2016	74,344	5,229	456	2,736	6,158	2,632	2,195	3,513	1,003	1,832
2017	88,011	9,823	1,039	4,122	9,098	2,783	2,843	2,036	937	1,660

Table 2: Size of PE Investments for Largest Ten Economies (continued)*Panel B: PE Capital Invested (% of GDP)*

	U.S.	China	Japan	Germany	U.K.	France	India	Italy	Brazil	Canada
1997	0.097	0.008	0.000	0.003	0.017	0.001	0.001	0.001	0.000	0.024
1998	0.187	0.004	0.000	0.005	0.052	0.005	0.002	0.006	0.011	0.056
1999	0.298	0.007	0.001	0.027	0.185	0.047	0.001	0.010	0.025	0.093
2000	0.404	0.012	0.003	0.071	0.228	0.063	0.013	0.077	0.038	0.102
2001	0.190	0.006	0.003	0.043	0.157	0.041	0.008	0.021	0.100	0.045
2002	0.207	0.006	0.005	0.064	0.232	0.098	0.011	0.026	0.012	0.056
2003	0.201	0.017	0.007	0.099	0.164	0.029	0.003	0.099	0.044	0.030
2004	0.251	0.020	0.004	0.101	0.157	0.100	0.003	0.036	0.008	0.121
2005	0.258	0.014	0.005	0.113	0.240	0.105	0.019	0.049	0.017	0.072
2006	0.374	0.052	0.016	0.116	0.279	0.119	0.092	0.138	0.001	0.060
2007	0.532	0.071	0.025	0.095	0.410	0.151	0.117	0.108	0.020	0.076
2008	0.433	0.082	0.029	0.071	0.269	0.080	0.174	0.123	0.070	0.106
2009	0.284	0.041	0.016	0.038	0.162	0.032	0.076	0.071	0.025	0.036
2010	0.378	0.070	0.023	0.072	0.371	0.108	0.109	0.031	0.091	0.043
2011	0.357	0.083	0.030	0.110	0.256	0.128	0.156	0.076	0.045	0.067
2012	0.360	0.058	0.019	0.106	0.283	0.073	0.059	0.041	0.080	0.088
2013	0.253	0.045	0.012	0.053	0.249	0.054	0.062	0.080	0.033	0.070
2014	0.383	0.071	0.015	0.134	0.252	0.074	0.116	0.040	0.057	0.099
2015	0.344	0.070	0.012	0.086	0.302	0.109	0.176	0.106	0.072	0.113
2016	0.380	0.045	0.009	0.075	0.221	0.102	0.092	0.180	0.053	0.115
2017	0.441	0.079	0.021	0.109	0.337	0.105	0.105	0.102	0.045	0.098

Table 3: Descriptive Statistics

This table provides summary statistics on the main variables used in the paper. Panels A and B provide summary statistics for country- and industry-level variables, respectively. Variables are defined in Appendix Table A1.

	N	Mean	Median	Std. Dev.	Min.	Max.
<i>Panel A: Country-Level</i>						
Buyout Invested (\$ millions)	1,830	805.000	1.276	4,770.000	0.000	76,800.000
Buyout Capital per GDP (%)	1,828	0.036	0.001	0.073	0.000	0.666
GDP PC Growth (%)	1,793	2.078	2.205	3.737	-22.551	23.941
Unemployment (% change)	1,705	-0.003	-0.048	1.233	-7.983	9.400
Stocks Traded (% of GDP)	1,439	39.886	16.889	57.934	0.072	357.005
Credit to Private (% of GDP)	1,572	75.747	62.482	51.280	7.008	218.160
Rule of Law	1,342	0.649	0.680	0.925	-1.427	2.100
Investor Reform	1,830	0.067	0.000	0.250	0.000	1.000
Contract Reform	1,830	0.063	0.000	0.243	0.000	1.000
<i>Panel B: Industry-Level</i>						
Buyout Invested (\$ millions)	34,770	42.000	0.000	371.000	0.000	16,700.000
Buyout Capital per GDP (%)	34,770	0.002	0.000	0.009	0.000	0.150
Employment Growth (%)	16,837	3.299	1.828	4.580	-1.650	9.653
CAPEX Growth (%)	17,304	10.398	7.538	22.249	-15.729	39.706

Table 4: Univariate Comparisons

The table presents mean (median) comparisons. Columns 1 and 2 present means (medians), and Column 3 presents p -values for the difference in means (medians) using a t -test (Wilcoxon rank-sum test) in both Panels. Panel A compares means (medians) of country-years with and without buyout capital. Panel B compares means (medians) for country-industry-years with and without buyout capital. Panel C compares means (medians) of country-years with high versus low amounts of buyout capital among the country-years with positive buyout investments. Panel D compares means (medians) of country-industry-years with high versus low amounts of buyout capital among the country-industry-years with positive buyout investments. Variables are defined in Appendix Table A1.

<i>Buyout versus No Buyout</i>			
	1	2	3
	Buyout Mean (Median)	NON-Buyout Mean (Median)	p -Value Mean (Median) Difference
<i>Panel A: Country-Level</i>			
GDP PC Growth (%)	2.16 (2.07)	1.98 (2.42)	0.31 (0.49)
Unemployment (% change)	-0.09 (-0.12)	0.12 (0.03)	0.00 (0.00)
Stocks Traded (% of GDP)	56.86 (33.81)	18.42 (7.48)	0.00 (0.00)
Credit to Private (% of GDP)	91.25 (90.66)	55.01 (39.88)	0.00 (0.00)
Rule of Law	0.81 (0.99)	0.32 (0.33)	0.00 (0.00)
Investor Reform	0.09 (0.00)	0.04 (0.00)	0.00 (0.00)
Contract Reform	0.10 (0.00)	0.02 (0.00)	0.00 (0.00)
<i>Panel B: Industry-Level</i>			
Employment Growth	3.65 (2.87)	3.14 (1.26)	0.00 (0.00)
CAPEX Growth	9.79 (7.17)	10.65 (7.75)	0.12 (0.31)
<i>HIGH-Buyout versus LOW-Buyout</i>			
	1	2	3
	HIGH Buyout Mean (Median)	LOW Buyout Mean (Median)	p -Value Mean (Median) Difference
<i>Panel C: Country-Level</i>			
GDP PC Growth (%)	2.02 (1.83)	2.29 (2.32)	0.06 (0.00)
Unemployment (% change)	-0.10 (-0.16)	-0.09 (-0.08)	0.90 (0.44)
Stocks Traded (% of GDP)	74.20 (47.94)	40.69 (21.19)	0.00 (0.00)
Credit to Private (% of GDP)	102.56 (101.47)	79.36 (69.95)	0.00 (0.00)
Rule of Law	1.14 (1.48)	0.44 (0.36)	0.00 (0.00)
Investor Reform	0.07 (0.00)	0.10 (0.00)	0.00 (0.00)
Contract Reform	0.13 (0.00)	0.07 (0.00)	0.00 (0.00)
<i>Panel D: Industry-Level</i>			
Employment Growth	3.82 (3.23)	3.48 (2.53)	0.01 (0.00)
CAPEX Growth	9.45 (7.13)	10.16 (7.34)	0.22 (0.29)

Table 5: Determinants of Buyout Investments – Country Level

This table presents results of our Tobit regressions where the left-censored dependent variable is the annual total dollar amount of buyout capital invested in a country scaled by its GDP. Variables are defined in Appendix Table A1. Standard errors are clustered by country and reported in parentheses. Models include differing fixed effects (FE) noted in the bottom section of the table. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5
GDP PC Growth _t	0.028 (0.096)	0.006 (0.097)	0.055 (0.109)	0.037 (0.100)	-0.166 (0.110)
GDP PC Growth _{t-1}	-0.044 (0.083)	-0.018 (0.081)	-0.041 (0.093)	0.005 (0.079)	-0.041 (0.089)
GDP PC Growth _{t-2}	-0.025 (0.082)	0.002 (0.082)	0.011 (0.096)	-0.034 (0.083)	-0.086 (0.089)
Unemployment _t	-0.515** (0.222)	-0.365* (0.204)	-0.390* (0.224)	-0.648*** (0.209)	-0.561*** (0.203)
Unemployment _{t-1}	-0.123 (0.289)	-0.028 (0.292)	-0.022 (0.297)	-0.133 (0.271)	-0.015 (0.267)
Unemployment _{t-2}	-0.328 (0.222)	-0.325* (0.203)	-0.314* (0.201)	-0.298 (0.197)	-0.206 (0.197)
Stocks Traded _{t-1}	0.038*** (0.014)	0.036** (0.014)	0.034** (0.014)	0.029*** (0.010)	0.016** (0.007)
Credit to Private _{t-1}	0.013 (0.018)	0.006 (0.018)	0.007 (0.018)	0.092*** (0.024)	0.050** (0.023)
Rule of Law	3.120*** (0.667)	3.441*** (0.678)	3.479*** (0.688)	5.484** (2.394)	7.083*** (2.719)
Investor Reform	1.661 (1.292)	1.038 (1.349)	1.660 (1.391)	2.465* (1.336)	2.949** (1.469)
Contract Reform	3.739** (1.613)	1.889 (1.554)	2.621* (1.510)	3.900** (1.705)	3.838** (1.657)
N	1,013	1,013	1,013	1,013	1,013
N Uncensored	747	747	747	747	747
Time Trend	No	Yes	No	No	No
Year FE	No	No	Yes	No	Yes
Country FE	No	No	No	Yes	Yes
Pseudo-R ²	0.042	0.047	0.056	0.104	0.121

Table 6: Determinants of Buyout Investments – Industry Level

This table presents results of our Tobit regressions where the left-censored dependent variable is the annual total dollar amount of buyout capital invested in a country-industry scaled by the GDP of the country. Variables are defined in Appendix Table A1. Standard errors are clustered by country and industry and reported in parentheses. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5	6
Employment Growth _t	0.016** (0.006)	0.019*** (0.006)	0.018*** (0.006)	0.006 (0.006)	0.014** (0.006)	0.000 (0.006)
Employment Growth _{t-1}	0.013* (0.006)	0.015** (0.007)	0.015** (0.007)	0.004 (0.006)	0.010 (0.006)	0.000 (0.007)
Employment Growth _{t-2}	0.025*** (0.007)	0.028*** (0.007)	0.029*** (0.007)	0.017*** (0.006)	0.024*** (0.007)	0.016** (0.006)
CAPEX Growth _t	-0.003 (0.003)	-0.001 (0.001)	-0.003 (0.003)	-0.002 (0.001)	-0.002 (0.002)	0.000 (0.001)
CAPEX Growth _{t-1}	-0.004 (0.004)	-0.002 (0.002)	-0.003 (0.003)	-0.002 (0.002)	-0.002 (0.002)	0.000 (0.001)
CAPEX Growth _{t-2}	-0.001 (0.001)	-0.000 (0.001)	0.000 (0.002)	0.000 (0.001)	0.000 (0.001)	0.002* (0.001)
GDP PC Growth _t	-0.000 (0.012)	0.008 (0.012)	-0.002 (0.014)	-0.001 (0.011)	0.006 (0.013)	-0.022 (0.016)
GDP PC Growth _{t-1}	-0.003 (0.012)	-0.003 (0.012)	-0.003 (0.013)	-0.009 (0.011)	-0.013 (0.014)	-0.002 (0.014)
GDP PC Growth _{t-2}	-0.011 (0.011)	-0.007 (0.012)	-0.010 (0.013)	-0.009 (0.012)	-0.013 (0.014)	-0.020 (0.019)
Unemployment _t	-0.055** (0.027)	-0.024 (0.028)	-0.022 (0.028)	-0.056** (0.027)	-0.094*** (0.030)	-0.056* (0.034)
Unemployment _{t-1}	-0.009 (0.028)	-0.028 (0.030)	-0.033 (0.031)	-0.015 (0.028)	-0.008 (0.031)	0.044 (0.035)
Unemployment _{t-2}	-0.058** (0.029)	-0.062** (0.029)	-0.094*** (0.031)	-0.058** (0.029)	-0.059* (0.032)	-0.066* (0.035)
Stocks Traded _{t-1}	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.002*** (0.001)	0.002** (0.001)
Credit to Private _{t-1}	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)	0.017*** (0.002)	0.006*** (0.002)
Rule of Law	0.522*** (0.095)	0.598*** (0.098)	0.591*** (0.099)	0.492*** (0.082)	0.756** (0.336)	0.903** (0.379)
Investor Reform	-0.280 (0.241)	0.538** (0.238)	0.482** (0.241)	0.302 (0.223)	0.586** (0.336)	0.479* (0.277)
Contract Reform	0.407** (0.176)	0.073 (0.179)	0.133 (0.187)	0.477*** (0.164)	0.559*** (0.181)	0.508*** (0.188)
N	10,784	10,784	10,784	10,784	10,784	10,784
N Uncensored	3,894	3,894	3,894	3,894	3,894	3,894
Time Trend	No	Yes	No	No	No	No
Year FE	No	No	Yes	No	No	Yes
Industry FE	No	No	No	Yes	No	Yes
Country FE	No	No	No	No	Yes	Yes
Pseudo-R ²	0.037	0.043	0.046	0.072	0.093	0.142

Table 7: Determinants of Relative Buyout Activity

This table presents results of our Tobit regressions where the left-censored dependent variable is the annual total dollar amount of buyout capital invested in a country scaled by FDI Inflows in Columns 1-3 and Gross Fixed Capital Formation in Columns 4-6. Variables are defined in Appendix Table A1. Standard errors are clustered by country and reported in parentheses. Models include differing fixed effects (FE) noted in the bottom section of the table. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5	6
	<i>Buyout / FDI</i>			<i>Buyout/GFCF</i>		
GDP PC Growth _t	-0.051 (0.046)	-0.056 (0.042)	-0.070 (0.058)	-0.537 (0.563)	-0.228 (0.466)	-0.760 (0.543)
GDP PC Growth _{t-1}	-0.039 (0.032)	-0.025 (0.027)	-0.034 (0.026)	-0.321 (0.401)	-0.152 (0.341)	-0.227 (0.368)
GDP PC Growth _{t-2}	-0.005 (0.004)	-0.045 (0.028)	-0.038 (0.031)	-0.443 (0.411)	-0.624 (0.533)	-0.812 (0.699)
Unemployment _t	-0.078 (0.092)	-0.096 (0.083)	-0.066 (0.087)	-1.853* (1.071)	-2.316** (0.932)	-2.117** (0.916)
Unemployment _{t-1}	-0.065 (0.086)	-0.055 (0.068)	-0.040 (0.066)	0.279 (1.336)	-0.145 (1.138)	-0.419 (1.141)
Unemployment _{t-2}	-0.127* (0.007)	-0.082 (0.064)	-0.063 (0.067)	-1.481 (0.915)	-1.069 (0.777)	-0.780 (0.777)
Stocks Traded _{t-1}	0.005 (0.007)	0.005 (0.004)	0.001 (0.003)	0.153** (0.071)	0.133*** (0.044)	0.058* (0.030)
Credit to Private _{t-1}	0.009 (0.006)	0.020** (0.009)	0.007 (0.008)	0.016 (0.089)	0.389*** (0.102)	0.221** (0.089)
Rule of Law	0.078*** (0.025)	1.318 (0.083)	1.738* (0.098)	15.088*** (3.166)	19.604* (10.111)	25.319** (11.809)
Investor Reform	0.141 (0.518)	0.971*** (0.368)	0.908** (0.388)	1.072 (6.167)	8.763** (4.108)	9.916* (5.249)
Contract Reform	0.123 (0.501)	0.860*** (0.303)	0.693** (0.326)	6.019 (6.428)	6.558 (4.370)	7.033* (4.128)
N	971	971	971	1,002	1,002	1,002
N Uncensored	718	718	718	746	746	746
Year FE	Yes	No	Yes	Yes	No	Yes
Country FE	No	Yes	Yes	No	Yes	Yes
Pseudo-R ²	0.026	0.069	0.078	0.043	0.093	0.105

Table 8: Impact of Legal Environment on Contract Enforcement Reforms

This table presents results of our Tobit regressions where the left-censored dependent variable is the annual total dollar amount of buyout capital invested in a country scaled by its GDP. Interactions of reforms with measures of country governance are included. Standard errors are clustered by country and reported in parentheses. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5	6
GDP PC Growth _t	-0.162 (0.109)	-0.166 (0.109)	-0.171 (0.110)	-0.178 (0.109)	-0.160 (0.116)	-0.158 (0.117)
GDP PC Growth _{t-1}	-0.036 (0.088)	-0.041 (0.089)	-0.061 (0.091)	-0.063 (0.091)	-0.051 (0.091)	-0.048 (0.089)
GDP PC Growth _{t-2}	-0.072 (0.091)	-0.086 (0.089)	-0.132 (0.089)	-0.130 (0.089)	-0.089 (0.086)	-0.082 (0.084)
Unemployment _t	-0.553*** (0.201)	-0.561*** (0.204)	-0.477** (0.205)	-0.473** (0.204)	-0.492** (0.198)	-0.488** (0.200)
Unemployment _{t-1}	-0.016 (0.267)	-0.015 (0.268)	-0.028 (0.269)	-0.030 (0.269)	-0.043 (0.262)	-0.042 (0.261)
Unemployment _{t-2}	-0.211 (0.198)	-0.205 (0.197)	-0.242 (0.201)	-0.239 (0.201)	-0.289 (0.189)	-0.297 (0.189)
Stocks Traded _{t-1}	0.011** (0.005)	0.012** (0.005)	0.012** (0.006)	0.013** (0.005)	0.011** (0.005)	0.011** (0.006)
Credit to Private _{t-1}	0.047** (0.023)	0.050** (0.023)	0.047** (0.023)	0.047** (0.023)	0.061*** (0.020)	0.061*** (0.020)
Investor Reform	2.013 (1.235)	2.942* (1.556)	1.407 (1.446)	2.417* (1.409)	1.049 (1.765)	2.655* (1.447)
Contract Reform	3.190** (1.590)	3.815* (2.313)	3.704** (1.507)	2.903 (1.507)	2.918* (1.554)	2.390* (2.207)
Rule of Law (RL)	6.922*** (2.675)	7.080*** (2.736)			6.340** (2.575)	6.207** (2.593)
RL * Investor Reform	3.185*** (1.167)					
RL * Contract Reform		2.042*** (0.871)				
Regulatory Quality (RQ)			6.978*** (2.445)	7.025*** (2.435)		
RQ * Investor Reform			2.767** (1.149)			
RQ * Contract Reform				1.723*** (0.604)		
Corruption Index (TI)					0.042 (0.039)	0.042 (0.042)
TI * Investor Reform					0.110** (0.052)	
TI * Contract Reform						0.026** (0.011)
N	1,013	1,013	1,013	1,013	959	959
N Uncensored	747	747	747	747	728	728
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo-R ²	0.122	0.122	0.123	0.123	0.129	0.129

Table 9: Impact of Higher Education on Contract Enforcement Reforms

This table presents results of our Tobit regressions where the left-censored dependent variable is the annual total dollar amount of buyout capital invested in a country scaled by its GDP. Interactions of reforms with measures of education are included. Variables are defined in Appendix Table A1. Standard errors are clustered by country and reported in parentheses. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5	6
GDP PC Growth _t	-0.276 (0.226)	-0.286 (0.224)	-0.317 (0.243)	-0.319 (0.243)	-0.165 (0.111)	-0.168 (0.109)
GDP PC Growth _{t-1}	-0.122 (0.109)	-0.125 (0.109)	-0.071 (0.135)	-0.066 (0.137)	-0.038 (0.088)	-0.043 (0.090)
GDP PC Growth _{t-2}	-0.062 (0.112)	-0.051 (0.111)	-0.099 (0.127)	-0.092 (0.127)	-0.077 (0.089)	-0.088 (0.089)
Unemployment _t	-0.724*** (0.221)	-0.689*** (0.219)	-0.569** (0.248)	-0.569** (0.251)	-0.565*** (0.205)	-0.577*** (0.204)
Unemployment _{t-1}	-0.327 (0.281)	-0.315 (0.281)	-0.169 (0.287)	-0.163 (0.289)	-0.020 (0.267)	-0.022 (0.268)
Unemployment _{t-2}	-0.089 (0.258)	-0.088 (0.257)	-0.155 (0.269)	-0.174 (0.268)	-0.208 (0.201)	-0.206 (0.200)
Stocks Traded _{t-1}	0.019** (0.008)	0.019** (0.007)	0.025** (0.011)	0.025** (0.010)	0.012** (0.006)	0.011** (0.005)
Credit to Private _{t-1}	0.038 (0.029)	0.043 (0.029)	0.065** (0.033)	0.067** (0.033)	0.044* (0.024)	0.049** (0.023)
Rule of Law	8.350** (3.492)	7.373** (3.448)	4.993** (3.848)	4.968 (3.863)	7.405*** (2.725)	7.229*** (2.771)
Investor Reform	1.444 (2.285)	3.669** (1.750)	2.542** (2.256)	1.654** (1.671)	2.972 (2.231)	3.097** (1.574)
Contract Reform	2.745** (1.280)	0.035 (3.736)	4.518 (1.968)	6.875 (5.554)	3.410** (1.633)	5.021 (6.049)
Education (EDUC)	0.023 (0.084)	0.044 (0.080)				
EDUC * Investor Reform	0.087** (0.034)					
EDUC * Contract Reform		0.055*** (0.002)				
Education Expense (EXP)			1.164 (1.787)	1.441 (1.893)		
EXP * Investor Reform			3.521** (1.444)			
EXP * Contract Reform				3.362** (1.608)		
Internet Usage (INT)					-0.008 (0.045)	-0.004 (0.086)
INT* Investor Reform					0.117*** (0.043)	
INT * Contract Reform						0.118** (0.056)
N	760	760	629	629	1,010	1,010
N Uncensored	562	562	562	562	744	744
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo-R ²	0.112	0.117	0.123	0.122	0.123	0.123

Table 10: Are reforms more prevalent in OECD, High Rule of Law, and High Education Countries?

This table presents mean comparisons of investor and contract reforms across subsamples created based on OECD vs. NON-OECD, High Rule of Law versus Low Rule of Law, and High Education versus Low Education. Results indicate that the prevalence of reforms is not significantly different across the subsamples on average.

Subsample:	OECD	NON-OECD	High Rule-of-Law	Low Rule-of-Law	High Education	Low Education
Investor Reform	0.062	0.072	0.054	0.075	0.065	0.068
<i>p</i> -value of Mean Difference	0.410		0.078*		0.822	
Contract Reform	0.058	0.068	0.067	0.060	0.077	0.057
<i>p</i> -value of Mean Difference	0.390		0.571		0.124	

Table 11: Determinants of Buyout Investments – Country-Years with Positive Investment

This table presents results of OLS regressions where dependent variable is the annual total dollar amount of buyout capital invested in a country scaled by its GDP on a subsample of country-years with positive investment. Variables are defined in Appendix Table A1. Standard errors are clustered by country and reported in parentheses. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5
GDP PC Growth _t	-0.113 (0.090)	-0.088 (0.092)	-0.148 (0.111)	-0.008 (0.109)	-0.129 (0.112)
GDP PC Growth _{t-1}	-0.054 (0.081)	-0.058 (0.078)	-0.048 (0.079)	-0.097 (0.087)	-0.068 (0.088)
GDP PC Growth _{t-2}	-0.036 (0.079)	-0.024 (0.079)	-0.023 (0.097)	-0.008 (0.074)	-0.046 (0.087)
Unemployment _t	-0.464** (0.188)	-0.383** (0.172)	-0.355* (0.180)	-0.426** (0.185)	-0.391** (0.165)
Unemployment _{t-1}	-0.107 (0.261)	-0.142 (0.257)	-0.197 (0.262)	-0.201 (0.258)	-0.241 (0.255)
Unemployment _{t-2}	-0.210 (0.242)	-0.199 (0.232)	-0.158 (0.241)	-0.145 (0.242)	-0.076 (0.237)
Stocks Traded _{t-1}	0.026** (0.012)	0.026** (0.012)	0.026* (0.013)	0.034*** (0.010)	0.025** (0.010)
Credit to Private _{t-1}	0.002 (0.017)	-0.001 (0.017)	-0.003 (0.017)	0.083*** (0.024)	0.062*** (0.022)
Rule of Law	2.791*** (0.576)	2.954*** (0.572)	3.006*** (0.585)	2.685 (2.508)	3.801 (2.502)
Investor Reform	0.896 (1.357)	0.047 (1.398)	0.547 (1.367)	0.470 (1.276)	1.339 (1.369)
Contract Reform	1.661 (1.467)	0.758 (1.532)	1.288 (1.559)	3.046** (1.394)	3.774** (1.552)
N	747	747	747	747	747
Time Trend	No	Yes	No	No	No
Year FE	No	No	Yes	No	Yes
Country FE	No	No	No	Yes	Yes
R ²	0.172	0.182	0.183	0.348	0.369

Table 12: Determinants of Buyout Investments – OECD versus Rest

This table presents results of our Tobit regressions where the left-censored dependent variable is the annual total dollar amount of buyout capital invested in a country scaled by its GDP. We include an OECD dummy and interact it with the reform and public and credit market development variables. Variables are defined in Appendix Table A1. Standard errors are clustered by country and reported in parentheses. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5
GDP PC Growth _t	-0.166 (0.109)	-0.167 (0.109)	-0.165 (0.109)	-0.166 (0.109)	-0.169 (0.109)
GDP PC Growth _{t-1}	-0.041 (0.089)	-0.036 (0.087)	-0.041 (0.089)	-0.036 (0.089)	-0.045 (0.091)
GDP PC Growth _{t-2}	-0.086 (0.089)	-0.073 (0.091)	-0.086 (0.089)	-0.081 (0.089)	-0.075 (0.090)
Unemployment _t	-0.561*** (0.203)	-0.551*** (0.202)	-0.561*** (0.204)	-0.565*** (0.208)	-0.572*** (0.207)
Unemployment _{t-1}	-0.015 (0.267)	-0.012 (0.266)	-0.015 (0.268)	-0.029 (0.269)	-0.004 (0.267)
Unemployment _{t-2}	-0.206 (0.197)	-0.213 (0.198)	-0.206 (0.198)	-0.204 (0.198)	-0.224 (0.191)
Stocks Traded _{t-1}	0.016** (0.008)	0.019** (0.010)	0.021** (0.009)	0.016 (0.013)	0.017** (0.008)
Credit to Private _{t-1}	0.050** (0.023)	0.045* (0.024)	0.050** (0.023)	0.049** (0.023)	0.019 (0.042)
Rule of Law	7.084** (2.719)	7.558** (2.709)	7.085*** (2.729)	7.233*** (2.729)	7.498*** (2.779)
Investor Reform	2.949* (1.569)	0.587 (1.220)	2.958* (1.578)	2.866* (1.559)	2.774* (1.471)
Contract Reform	3.838** (1.657)	3.452** (1.634)	3.877 (2.499)	3.875** (1.617)	3.889** (1.618)
OECD	7.628** (3.810)	7.797** (3.758)	7.627** (3.818)	4.464 (4.146)	2.525** (6.451)
OECD * Investor Reform		5.037** (2.117)			
OECD * Contract Reform			4.088** (1.881)		
OECD * Stocks Traded				0.024 (0.016)	
OECD * Credit to Private					0.044 (0.045)
N	1,013	1,013	1,013	1,013	1,013
N Uncensored	747	747	747	747	747
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Pseudo-R ²	0.121	0.122	0.121	0.121	0.121

Table 13: Determinants of VC Investments – Country Level

This table presents results of our Tobit regressions where the left-censored dependent variable is the annual total dollar amount of venture capital invested in a country scaled by its GDP. Variables are defined in Appendix Table A1. Standard errors are clustered by country and reported in parentheses. Significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

	1	2	3	4	5
GDP PC Growth _t	0.053* (0.032)	0.062* (0.033)	0.056 (0.036)	0.011 (0.017)	0.009 (0.020)
GDP PC Growth _{t-1}	0.000 (0.033)	0.008 (0.034)	0.007 (0.037)	0.004 (0.025)	0.004 (0.027)
GDP PC Growth _{t-2}	0.023 (0.028)	0.031 (0.029)	0.062** (0.030)	0.009 (0.022)	0.033 (0.026)
Unemployment _t	-0.049 (0.091)	-0.010 (0.087)	-0.024 (0.087)	-0.083 (0.073)	-0.055 (0.067)
Unemployment _{t-1}	-0.062 (0.071)	-0.035 (0.070)	-0.000 (0.072)	-0.091* (0.050)	-0.034 (0.047)
Unemployment _{t-2}	-0.092* (0.050)	-0.095 (0.069)	-0.105 (0.074)	-0.034 (0.059)	-0.029 (0.058)
Stocks Traded _{t-1}	0.014** (0.006)	0.014** (0.006)	0.013** (0.006)	0.009*** (0.003)	0.006** (0.003)
Credit to Private _{t-1}	0.008 (0.005)	0.006 (0.006)	0.006 (0.006)	0.019*** (0.007)	0.013** (0.006)
Rule of Law	0.283 (0.239)	0.365 (0.246)	0.402* (0.245)	0.091 (0.820)	0.118 (0.867)
Investor Reform	0.994 (0.685)	1.388* (0.715)	1.404** (0.716)	0.344 (0.537)	0.171 (0.524)
Contract Reform	0.486 (0.355)	0.035 (0.428)	0.030 (0.418)	0.173 (0.359)	0.147 (0.406)
N	1,013	1,013	1,013	1,013	1,013
N Uncensored	591	591	591	591	591
Time Trend	No	Yes	No	No	No
Year FE	No	No	Yes	No	Yes
Country FE	No	No	No	Yes	Yes
Pseudo-R ²	0.070	0.077	0.083	0.280	0.301

Appendix Table A1: Variable Definitions

This table provides variable definitions and data sources for the variables used in the analysis.

Buyout Invested (BURGISS)	The annual total amount of buyout capital invested in a country (or industry) (\$ million)
Buyout Capital per GDP (BURGISS)	The amount of buyout capital invested in a country (or industry) as a percentage of GDP (%)
GDP PC Growth (WDI)	The annual growth in gross domestic product over population (%)
Unemployment (WDI)	The annual change in the year-end national unemployment rate (%)
Stocks Traded (WDI)	The sum of the number of shares traded multiplied by their respective matching prices in a country-year as a percentage of GDP (%)
Credit to Private (WDI)	The total amount of financial credit provided to the private sector as a percentage of GDP (%)
Rule of Law (WGI)	Rule of law estimate capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Investor Reform (DOING BUSINESS)	A dummy that takes the value 1 for country-years following a country's implementation of an investor protection reform
Contract Reform (DOING BUSINESS)	A dummy that takes the value 1 for country-years following a country's implementation of a contract enforcement reform
Employment Growth (DATASTREAM)	The annual growth rate in industry employment of all public companies (%)
CAPEX Growth (DATASTREAM)	The annual growth in industry capital expenditures of all public companies (%)
Regulatory Quality (WGI)	Regulatory quality estimate capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
Corruption Index (TRANSPERANCY INTERNATIONAL)	Corruption index from Transparency International that ranks countries by their perceived levels of public sector corruption, as determined by expert assessments and opinion surveys
Education (WDI)	Ratio of total tertiary enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Tertiary education is the successful completion of education at the secondary level (%)
Education Expense (WDI)	General government expenditure on education expressed as a percentage of GDP (%)
Internet Usage (WDI)	Number of people using the internet as a percentage of total population (%)
FDI Inflows (WDI)	It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy.

Gross Fixed Capital Formation (WDI)

It includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.
