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The Impact of Government Borrowing on Corporate Acquisitions: International Evidence

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ABSTRACT

This paper examines how variation in the supply of government debt affects corporate acquisition activity. Using data from 50 countries from 1991 to 2017, the paper finds that government debt issuance is strongly negatively associated with acquisition activity at the firm and aggregate levels. In response to increases in government borrowing, firms appear to make more value-enhancing deals. These effects are stronger for cash-financed deals and for financially stronger firms. Collectively, these findings suggest that rising government debt leads to "real crowding out" by affecting the firms' ability to make large investments.

Keywords: government debt; mergers and acquisitions

JEL classification: G34, H63

1 Introduction

Rising levels of government debt (once more) are prominent in much of the political and economic discourse around the world today. The reason is simple one: over the last decade public debt increased from 71% to 105% of GDP in economically advanced countries and from 36 to 48% of GDP in emerging and developing economies (IMF 2016). The deep economic contraction caused by the ongoing COVID-19 pandemic has further accelerated these trends as governments around the world have embarked on aggressive debt-financed stimulus programs.

This raises a natural question: how does government borrowing affect economy? Scholars have extensively examined the effects on government borrowing on macroeconomic growth (e.g., Reinhart, Reinhart, and Rogoff, 2012). However, we still know relatively little about the impact of government borrowing on real (corporate) sector.

This paper argues and provides novel evidence that the supply of government debt is an important determinant of corporate merger and acquisition (M&A) transactions and their value creation. M&As are one of the most important investment decisions and, due to their large size, typically require external financing and thus are particularly sensitive to the availability and cost of finance (e.g., Harford and Uysal, 2014). Hence, if government borrowing affects corporate investment, it is more likely to do so for acquisitions than for more routine capital expenditures. The paper addresses several related questions. First, to what extent do government debt issuances affect the propensity of firms to make takeover bids and the method of payment? Second, what types of bidders have the greatest sensitivity to government borrowing? Third, does government debt also affect the quality of bids and thus acquisition performance?

To motivate my empirical analysis, I draw on the literature on the "crowding-out" effect of government borrowing on corporate debt. The core argument in this literature dates back to Friedman (1984) and was more recently formalized and developed by Greenwood, Hanson, and Stein (2010) and Krishnamurthy and Vissing-Jorgensen (2012 and 2015). This literature is premised on the idea that bond markets are segmented because important classes of large institutional investors such as pension funds have a preference to maintain a relatively stable proportion of long-term and short- term safe debt securities in their portfolios. Furthermore, government and corporate bonds with the similar risk characteristics (credit ratings) and

maturity are considered as viable substitutes by investors. Nevertheless, investors prefer to hold government bonds over corporate bonds because the government bonds are safer and more widely acceptable as collateral (Krishnamurthy and Vissing-Jorgensen, 2012). Because governments therefore can issue debt on more favorable terms and in larger quantities than the private sector, the shifts in the supply of government bonds of certain maturity directly affect the ability of corporations to issue debt with similar risk and maturity characteristics. For example, an issuance of government long-term bonds results in a downward pressure on prices of all long-term bonds in the economy thus raising the required returns on both government and corporate bonds. Hence, this literature predicts that an increase in the supply of government bonds (holding other factors constant) raises the interest rates that investors demand for holding corporate bonds, leading to higher borrowing costs for firms and constraining firms' ability to raise debt capital.

Empirically, Demirci, Huang, and Sialm (2019) document a negative (crowding-out) effect of government debt on the use of debt financing by firms around the world. Greenwood et al. (2010) and Badoer and James (2016) provide evidence that maturity composition of U.S. Treasuries has a negative effect of on bond maturity of U.S. firms, and the impact is stronger for more creditworthy firms. Ma (2019), Graham et al. (2014) and Akkoyun et al. (2020) also document crowding-out effect of government debt on the use of debt financing of U.S. firms.

In sum, the crowding-out theories imply that the mechanism through which government debt issuance can affect major corporate investment decisions is the supply of credit to corporations. More specifically, to the extent a firm's ability to issue debt is an important driver of its major investment projects the firm's M&A decisions should respond negatively to increases in the supply of government debt. Furthermore, when acquisition bids are made, the government debt-induced constraints on issuing corporate debt should also constrain a bidder's payment choice. Specifically, increased government borrowing should reduce the ability and preference of bidders to finance offers with cash. This is because firms primarily fund the cash portion of acquisitions by issuing debt (see, for example, Bharadwaj and Shivdasani (2003) and Faccio and Masulis (2005)). Thus, the bidder's decision to make all or

partially cash-financed acquisitions should be particularly strongly influenced by the availability and the cost of external debt.

The crowding-out argument further implies that there should be an important heterogeneity in the effect of government borrowing on corporate M&A activity. According to Greenwood et al. (2010) and Krishnamurthy and Vissing-Jorgensen (2012), the crowding-out effect of government borrowing should be stronger for financially stronger firms whose debt is similar to government securities in terms of risk and maturity. However, Broner et al. (2014) argue that an increase in the supply of government debt could lead to the *economy-wide* tightening of credit constraints. In this case, the impact of government borrowing could be stronger for financially weaker firm that have restricted access to capital markets.

However, there are also reasons to expect the shifts in government debt issuance to have no effect on corporate investment. For example, Ma (2019) argues and shows that firms can substitute between debt and equity financing in response to shifts in relative valuations and supply in debt and equity markets. In addition, firms can use internally generated cash flows or cash reserves to fund M&As (Harford 1999). Therefore, whether and how government debt issuances affect major investment decisions of firms is an empirical question.

I examine the relation between government debt issuances and M&A activity on a large sample of firms and deals from 50 countries over the period 1991-2017. Using international data allows me to exploit the larger time-series and cross-country variation in the issuance of government debt, which strengthens my identification strategy.

My main tests estimate the effect of government borrowing on the acquisition likelihood and the total acquisition spending in a given year as a function of government debt issue and an extensive set of macroeconomic indicators, firm characteristics, and country (or firm) and year fixed effects. I find a significant negative relation between shifts in the supply of government debt and the propensity of firms to make acquisitions and the amount they spend on acquisitions. On average, a one standard deviation increase in the issuance of government debt (scaled by GDP) is associated with a 14% decrease in the domestic firms' acquisition likelihood over the next year. Moreover, consistent with deals being canceled rather than postponed, there is no evidence of a subsequent increase in M&A activity.

I conduct several robustness tests to make sure the results hold under different empirical specifications and sample restrictions. The strong link between debt supply and corporate acquisitions holds not just at the firm level, but also in the aggregate country-level tests which include both public and private firms.

Establishing a causal link between government debt issuance choices and firm investment decisions is challenging because the observed negative relation could be driven by other factors that correlate with both variables. For example, governments tend to issue more debt in bad economic times, precisely when corporate investment opportunities decline as well. The employed empirical framework attempts to control for such confounding effects by including time-varying firm and country characteristics (such as recent real GDP growth and thus the business cycle), country, year as well as firm fixed effects. The inclusion of those controls and fixed effects helps mitigate the concern the results might be picking up the effects of changes in overall economic and firm-specific conditions or are driven by some persistent unobserved omitted variables. Nevertheless, to further strengthen the (causal) interpretation of the results, I implement an instrumental variable (IV) approach where I use growth in military expenditures as an instrument for government debt issuance. Military expenditures are an important part of a country's budget but are less influenced by the economic conditions (that also influence corporate investment opportunities) than other government policies. Current events lend further support for the relevance of the instrument: in response to Russia's invasion of Ukraine, several major countries, such as Germany and Japan, have announced substantial increases in military spending (which clearly were not driven by the contemporaneous corporate investment conditions). The IV approach produces similar results, thus indicating that the effect of government borrowing on M&A is distinct from concurrent economic forces, unlikely to be explained by omitted variables, and could potentially be causal.

Importantly, the crowding-out impact of government debt supply on acquisitions is not uniform across deals and firms. The effect is observed only for cash-financed transactions, suggesting that government borrowing-induced constraints on issuing external capital indeed restrict the ability of local firms to make acquisition offers, especially cash-financed ones that require issuing further debt. The impact of debt is also significantly greater among financially

stronger firms as measured by firm size, firm profitability, and Whited-Wu (2006) index. This result is consistent with the argument in Greenwood et al. (2010) and Krishnamurthy and Vissing-Jorgensen (2012 and 2015).

I also examine whether variations in the supply of government debt are related to the acquisition performance. To wit, managers are more likely to be selective in their acquisition choices when faced with constrained access to debt financing. Therefore, we can expect that in response to increased government bond supply firms will pursue only the most value-enhancing acquisitions, which, in turn, will foster favorable market reactions to the news of their acquisitions. The results indicate that government borrowing is related to the quality of bids as measured by the market reaction to the acquisition announcements. The announcement returns to acquirers, especially the cash-financed ones and those made by firms with stronger balance sheets, are positively related to government debt issuances. A one standard deviation increase in the debt issuance is associated with a 0.23 percentage points increase in acquirer return, which is equivalent to a 25% increase at the sample mean. These positive value effects of debt are consistent with the argument that, when faced with restricted access to external finance, managers are forced to make fewer but higher quality (value-enhancing) deals.

Collectively, the findings are consistent with the view that shocks to the supply of government debt significantly influence the ability of corporations to make takeover bids, and the terms and the quality of transactions when firms do make acquisitions.

My findings are related to research on the effect of government borrowing on corporate actions. The related papers are Demirci et al. (2019) and Graham et al. (2014) who document a robust negative relation between government debt and corporate leverage in the U.S. and international data. Ma (2019) finds that as government bond supply falls, firms issue more debt and also repurchase more equity. While these papers focus on the capital structure implications of government debt, I study the investment decisions and thus describe a channel through which government debt directly affects real activity.

This study also contributes to the large literature that examines determinants of corporate M&A activity and the payment method. Several papers show that M&A likelihood is

related to the business cycle (Maksimovic and Phillips, 2001), political uncertainty (Bonaime, Gulen and Ion, 2018), product-market considerations (Hoberg and Phillips, 2010), corporate liquidity (Harford, 1999; Erel et al., 2019), industry supply-chain and trade relation (Ahern and Harford. 2014), market valuations (Shleifer and Vishny, 2003; Rhodes- Kropf, Robinson, and Viswanathan, 2005). In particular, this paper is related to Harford and Uysal (2014), who document a robust impact of firms' having debt ratings (proxy for access to debt markets) on M&A activities. This paper offers a fresh perspective on an important but unexplored driver of corporate M&A activity: the supply of government debt.

2 Data and Empirical Strategy

My sample starts with all firms in the annual Compustat and Compustat Global databases over the period 1991-2017 that have valid information on total assets and sales. In line with the finance literature, I exclude financial firms (6000– 6999) and regulated utilities (4900–4999). I further restrict the sample to countries with on average of at least 5 firms in every fiscal year to ensure a comprehensive set of firms in each country. The sample includes 564,853 firm-year observations across 50 countries.

The M&A data come from the Thomson Financial's M&A Database (the SDC) and includes all successful and unsuccessful deals announced between January 1, 1991 and December 31, 2017. I exclude LBOs, spinoffs, recapitalizations, self-tender offers, exchange offers, repurchases, partial equity stakes, acquisitions of remaining interest, privatizations, as well as deals in which the target or the acquirer is a government agency. The SDC is also the source of information on various deal characteristics such as announcement date, transaction value (in US$), deal method of payment, and SIC industry codes. After imposing these screens and eliminating duplicates, the M&A sample includes 380,078 (368,283 completed and 11,795 withdrawn) deals with a total disclosed transaction value of $18.3 trillion. Only 143,382 (38% of) transactions have nonmissing deal values totaling $28.5 billion. I therefore use two variables to measure M&A activity to reduce sample selection bias: the volume (number) of deals and the reported deal value. Of the transactions with disclosed value, 63,298 (30.47%) are all-cash deals and 22,636 (10.90%) are all-stock deals.

2.1 Regression specification and variable definition

I use a fixed-effects panel regression to examine the relation between variation in country-level government debt issuance and firm M&A decision. My baseline regression is:

$$Dependent\ variable_{ist} = \delta_{i,s,t} + \beta_1\ Government\ Debt\ Issue_{s,t-1} + \vartheta \times Country\ Controls_{s,t-1} + \gamma_j \times Firm\ Controls_{i,s,t-1} + country_s + year_t + \varepsilon_{ist} \quad \textbf{(1)}$$

where *i* indexes firm; *s* indexes countries; *t* indexes years; $country_s$ and $year_t$ are country and year fixed effects.

The dependent variable measures the acquisition activity of firm i in country s during year t. I primarily use two sets of dependent variables. First, I examine a {0,1} indicator variable for whether the firm makes at least one acquisition during year *t*. For this dependent variable, I examine the effect of government borrowing and control variables on the probability of making a takeover bid using a linear probability model, which Angrist and Pischke (2008) argues generates more transparent estimates of marginal effects. Importantly, linear models avoid well-known interpretation problems in probit or logit models when specifications include interaction terms and a large number of fixed effects (Ai and Norton, 2003; Greene, 2004). Nonetheless, because binary dependent variables are typically evaluated with probit or logit models, I verify and report that all my inferences remain the same when using a probit model instead. Second, I use the total value of the firm's acquisitions in year t scaled by firm lagged book assets. For this dependent variable, I use the OLS estimations but I obtain similar results when I use a Tobit estimation instead.

The country fixed effects remove any persistent country-specific differences in acquisition activity as well as the quality of legal institutions, accounting standards, culture, and other factors that could be related to M&A activity (e.g. Rossi and Volpin 2005; Ferreira et al., 2009). The year fixed effects account for transitory global factors, such as financial crises or technological improvements. I also obtain similar results when I include firm fixed effects or industry by country and industry by year fixed effects.

In all estimations, statistical inferences are based on heteroskedasticity-robust standard errors clustered by the two key dimensions of the panel: country and year.

Government debt issuance

To construct the measure of government debt supply in a given year, I obtain information on general government debt and its components from the IMF's Global Debt Database (https://www.imf.org/external/datamapper/datasets/GDD). Government debt consists of all liabilities that require payments of interest or principal by the debtor in the future where the debtor is the general government. General government gross debt is calculated based on the consolidation of debt of the following subsectors: central, state and local governments, and social security funds. Government debt can further be separated into external debt held by nonresidents of an economy and domestic debt held by nonresidents of an economy.

Following Graham et al. (2014) and Ma (2019) I measure the net issuance of government debt *Gov. Debt Issue* by a country *i* in year *t* as

$$Gov.Debt\ Issue = \frac{change\ in\ total\ outstanding\ government\ debt\ from\ year\ t-1\ to\ year\ t}{Country's\ nominal\ GDP\ in\ year\ t}$$

As noted by those two papers, change in total government debt and government debt issuance (the supply of new bonds) are highly correlated. The annual change in the government debt mainly consists of the new issuance (publicly auctioned or syndicated), buybacks, or redemptions of the debt. Using actual changes in government debt holdings instead of changes in the ratio of debt to GDP helps to isolate innovations to debt from contemporaneous shocks to GDP that might drive a mechanical link between changes in the debt-to-GDP ratio and outcome variables. It is important to normalize debt by the country GDP to control for the size of the country economy and thus identify economically meaningful changes in the supply of debt within the same country and across countries over time.

Control Variables

I include a large set of country-and firm-specific characteristics that previous research finds to be associated with M&A activity (e.g. Ferreira et al. 2009; Harford 1999). First, I control for underlying economic conditions that could influence or correlate with firm investment and financing decisions, namely the natural log of *Gross Domestic Product (GDP), GDP growth rate, GDP per capita, unemployment rate,* and *inflation rate*. To control for the effect of market

valuations on M&A activity I include *stock market return*. Because all regression models in this paper include country fixed effects, which fully absorb permanent or slowly changing country factors (such as legal origin, culture, size and resource endowment factors), I include only those variables that exhibit time-series variation. These country-level data come from the World Bank's *World Development Indicators* (WDI) Database and the IMF's International Financial Statistics (IFS). Macroeconomic data for Taiwan come from https://tradingeconomics.com.

To control for the general propensity of a firm to make a takeover bid in any given year I include the following firm characteristics that are likely to influence firms' acquisition decisions: firm profitability as measured by *EBITDA (*operating income)*/Assets* because firms with higher profitability are more likely to undertake acquisitions; firm size as measured by the natural *logarithm of assets* to control for a greater propensity of larger firms to make acquisitions as well as to have easier access to finance; *Stock Return* and *Market-to-Book assets* to control for investment opportunities and valuation; *Total debt/Assets* (*Leverage)* and *Cash Holdings/Assets* to control for financial capacity and internal liquidity.

The key regressors are predetermined with respect to the dependent variable and measured as of the prior fiscal or calendar year-end. Details on variable definitions and data sources are provided in Appendix A.

2.2 Proxies for firm financial strength

To evaluate which firms' M&A policies are more sensitive to variation in government borrowing, I focus on the degree of firms' financial strength. Financially stronger firms have greater financial flexibility, easier access to various sources of external finance as well as a lower cost of capital. As discussed earlier, the crowding-out arguments such as those developed in Greenwood et al. (2010) and Krishnamurthy and Vissing-Jorgensen (2015) suggest that shocks to the supply of government debt should have a greater impact on financing policies of financially stronger firms. This is because debt securities of such firms are a closer substitute for government securities than that of financially weaker firms. However, Broner et al. (2014) notes that an increase in the supply of government debt could tighten credit

constraints *economy-wide.* In this case, the impact of rising government debt could be stronger for financially weaker firms, who cannot easily switch to other sources of financing.

I follow the prior literature (e.g., Greenwood et al. 2010) and use firm size, firm profitability, and the index developed by Whited and Wu (2006) to measure financial strength. Firm size is measured using the book value of firm assets and firm profitability is measured as operating income (EBITDA) to book assets. The Whited-Wu index is constructed as (0.021* Long-term debt/Assets) –(0.044*Logarithm of total book assets) -(0.091*EBITDA/Assets) -(0.062*Dividend Payer Dummy)+(0.102*Three-digit SIC industry sales growth)-(0.035*Firm sales growth). By construction, the index is higher for more financially constrained firms. Whited and Wu and other studies have shown that these firm characteristics and the index are robust measures of firm financial health and access to capital markets.

2.3 Summary statistics

Table 1 details the countries in my sample, with summary information about key macroeconomic variables and the annual number and the deal volume of M&A deals per country averaged over the sample period. The table shows that as of the end of the sample period (2017) Japan and Greece had the highest level of government debt, 237% and 181% of the country's GDP respectively. In contrast, Hong Kong, and Russia had the lowest government debt, less than 1% and 16% of the country's GDP respectively. Most governments have been active in issuing debt over the sample period. On average, a typical government issues debt equal to about 5% of its country's GDP. For example, in a given year, on average, Brazil issued debt equal to 20% of its GDP. In contrast, Hong Kong retired its debt by about 1.6% per year.

The M&A activity varies substantially across countries. On average, 37.5% of firms in the Netherlands announce an acquisition in a given year while only 1.5% and 3% of firms in Taiwan and Korea announce an acquisition in a given year. Overall, firms from the U.S., the UK, Canada, Netherlands, Switzerland, Germany, and France are the most acquirers in the sample. These cross-country differences suggest that it is important to control for country factors and country fixed effects in acquisition activity estimations.

<Table 1 about here>

<Figure 1 about here>

Figure 1 plots the time-series relation between government debt issue scaled by GDP and aggregate M&A activity over the sample period. The figure presents preliminary evidence that M&As occur less frequently in years in which government issue more debt.

<Table 2 about here>

Table 2 reports summary statistics for the key variables used in the firm and deal-level regressions. In a given year, on average, 10.4% of the sample firms announce an acquisition and an average firm spends $24 million or about 1% of its lagged book assets on a transaction. Among the firms that made at least one acquisition bid during the sample period, the propensity to make a bid given year increases to 22.5%.

3 Main Results

3.1 Government borrowing and firm acquisition decisions: baseline results

This section establishes the effect of government borrowing on the firm likelihood of making an acquisition and the total spending on acquisitions in a given year as a function of the issuance of government debt and the aforementioned macro and firm-specific variables. Table 3 reports the results of different specifications of Eq. (1). The differences across specifications are the dependent variable, the econometric estimation method and the control variables included in the regressions. The sample size differs across specifications depending on the availability of control variables. All models include year and country (or firm) fixed effects, controlling for the influence of country-level or year-specific unobserved variables that may influence government borrowing and corporate M&A activities in a given country.

[Table 3 about here]

Panel A of Table 3 report the results of the linear probability and probit model estimations where the dependent variable takes a value of one if the fiscal year was one in which an acquisition was made by the corresponding firm and zero otherwise. Model 1 analyzes the firm propensity to make a takeover bid with the *Gov.Debt Issue* variable as the only independent variable. The results strongly support the hypothesis that a growth in government debt is associated with a lower likelihood of being an acquirer in the same calendar year: the coefficient estimate on *Gov.Debt Issue* is negative 0.309 and significant at the 1% level. The

inclusion of the country fixed effects means that the main coefficient of interest is identified from the variation in the debt issuance within the countries over time rather than from across the countries.

In Model 2, I include the macro control variables to mitigate concerns that *Gov.Debt Issue* may simply be picking up the effects of shifts in in overall economic conditions on the domestic firms' M&A decision. The inclusion of these county-level controls slightly increases the magnitude of the coefficient (in absolute terms) on *Gov. Debt Issue* to -0.346 and it remains highly significant at better than the 1% level which indicates that the effect of government borrowing on the average firm's propensity to make acquisitions appears to be distinct from any concurrent and potentially confounding changes in the country economic trends (business cycle). With respect to the macro variables in this and subsequent specifications, we can observe that the stock market returns tend to be positively, and the inflation rate tends to be negatively (but not consistently) associated with the propensity of domestic firms to engage in acquisition activity.

Model 3 uses a kitchen-sink specification including the full set of controls for firm characteristics that could be associated with acquisition decisions. This reduces the sample size but the absolute magnitude of the coefficient on *Gov. Debt Issue* further increases to -0.451 and remains significant at better than the 1% level. These findings suggest that the effect of government borrowing on firm M&A activity is distinct from both the macro and firm-specific control variables.

The signs on the control variables are generally as expected and similar to those in previous studies (e.g. Harford 1999). For example, larger firms (as measured by the book assets size), more profitable firms, and firms with higher cash balances and market valuation (as measured by the market-to-book ratio and annual stock return), are more likely to make an acquisition. The acquisition likelihood tends to decrease with more financial leverage.

Model 4 confirms these results by estimating a maximum likelihood probit model that any concerns about the use of the linear probability model, LPM, (instead of probit or logit models) with a binary variable as the dependent variable. The reported marginal effects show that the sign, magnitude and the statistical significance of the coefficient on the main variable

of interest produced by the probit model is very similar to that produced by the LMP. In untabulated analysis, I repeated all tests using the probit model and find that the key results remain unchanged.

Model 5 replaces country fixed effects with firm fixed effects to control for any time invariant firm-level factors that could affect firms' propensity to make acquisitions. The inclusion of the firm fixed effects (which subsume country fixed effects) means that the main coefficient of interest is now identified from the time-variation in government debt issuances within the same firm over time. I continue to document a strongly negative impact of government borrowing as the *Gov.Debt Issue* variable enters the regression with a coefficient of -0.272 that is significant at the 1% level. The adjusted-R^2 of the regression with firm fixed effects increases to 0.271 and its (unreported) F-statistics is 349.64.

I assess the economic magnitude of these results by calculating predicted changes in the acquisition likelihood that would result if a government debt issuance increases by one standard deviation (3.2% in Table 2) from its mean (4.5%). The point estimates in Model 3 with the full set of control variables suggest that a one standard deviation increase in the government debt issuance is associated with a 1.44 percentage point decrease in acquisition likelihood (=-0.451x3.2%). Given that the sample average probability of announcing a merger is 10.4%, a 1.44 percentage point decrease is economically meaningful, corresponding to a 14% of the unconditional probability. It is important to note that the economic magnitude of government debt issuance is also large relative to other determinants of M&As. For instance, the estimated marginal effects is similar to those of the market-to-book ratio and firm profitability, which are known to be the important drivers of acquisitions.

Panel B of Table 3 report results of the OLS and Tobit regressions that use the firm's total spending on acquisitions scaled by lagged firm assets as the dependent variable in otherwise identical specifications. The estimated coefficients on the issuance of government debt variable are negative and highly significant across all specifications. For example, in Model (3) with the comprehensive set of control variables, the coefficient on *Gov.Debt Issue* is -0.063 and it is significant at the 1% level. This indicates that, on average, firms spend significantly less on acquisitions in years when the supply of their government debt increases. A one standard

deviation increase in the issuance of government debt is associated with more than 20% decrease in the amount the typical firm spends on acquisitions (as a percentage of its lagged assets) in a given year. Therefore, the relation between within government borrowing and firm spending on acquisitions is not only statistically significant but also economically relevant. Finally, Models 4 and 5 verify the robustness of these results using a maximum likelihood Tobit model and the OLS regression with firm-fixed effects (instead of country fixed effects).

In sum, results in Table 3 show that the time-varying supply of government debt has a strong negative impact on acquisition decisions of firms around the world.

3.2 Robustness tests

In Table 4, I assess whether my baseline results are robust to additional controls and alternative sub-samples. Table 3 already showed that the results are robust to alternative estimation techniques such as probit and Tobit models. For the sake of brevity, I only report results for the linear probability estimations of the firm propensity to make an acquisition in a given year. The results for the deal volume regressions are similar and available upon request

[Table 4 about here]

Because my main tests estimate the likelihood that any given firm makes an acquisition bid in a particular year, Model 1 restricts the sample only to firms that, according to the SDC, announced at least one acquisition in the sample period (and thus conceivably could make a takeover bid in any given year). This requirement reduces the sample size by about half but the specification of the regression is otherwise remains the same. The produced estimates are similar to those in Table 3: the coefficient on *Gov.Debt Issue* is negative 0.785 and significant at better than the 1% level. In terms of economic significance, a one standard deviation increase in Gov.Debt is associated with a 3.5 percentage point or 15% of the unconditional mean decrease in the takeover propensity among the subsample of firms that have made at least one bid during the sample period.

Model 2 restricts the sample to countries with at least 10 firms in every fiscal year to ensure a comprehensive set of firms in each country in our analysis. The results are again consistent with the previous findings.

To test whether the effects of government debt are driven by the post-2008 financial crisis buildup in government debt, I split the sample into before and after the 2008 financial crisis periods. The results in Models 3 and 4 show that the negative effect of government debt issuance on M&A activity is present and strong in both subperiods.

As Table 1 shows, the country responsible for the most M&A deals in the sample is the United States. To ensure that the results are not driven by one country out of the 50 countries in the overall sample, Model 5 drops observations from the U.S. altogether. The coefficient on the *Gov. debt-Issue* variable in this regression remains negative and significant, indicating that the U.S. does not drive the results. In unreported analysis, I obtain similar results when dropping observations from the other countries with active M&A market such as the United Kingdom, Japan, Canada etc.

These results in Table 4, together with the results in Table 3, indicate that the main finding of this paper is highly robust, namely that an increase in the supply of government debt leads to a lower propensity of domestic firms to engage in takeover activity.

3.3 Instrumental variable analysis

Establishing a causal link between government debt issuances and firm investment decisions is challenging because the documented negative relation could be driven by other factors that correlate with both variables. For example, governments tend to issue more debt in bad economic times, precisely when investment opportunities for domestic firms decline as well. The ideal experiment for the identification of the causal effect of government borrowing issuance would be an instance of a material unexpected shock to government borrowing policy that is uncorrelated with investment opportunities for domestic firms. Unfortunately, such natural experiments do not appear to exist. Therefore, to address any lingering endogeneity concerns, I follow Demirci et al. (2019) and employ an instrumental variable (IV) analysis using an annual growth in military expenditures (scaled by GDP) as an instrument for government debt. This IV approach is motivated by research that posits that growth in military spending tends to be largely driven by geopolitical reasons and as such be less affected by the overall economic factors than other government fiscal policies (e.g., Ramey 2011). Current events lend

further support for the relevance of the instrument: in response to Russia's invasion of Ukraine, several major countries, such as Germany and Japan, have announced substantial increases in their military spending (which clearly were not driven by the contemporaneous corporate investment conditions in those countries).

In the context of this paper, the argument is that growth in military expenditures is correlated with government financial policies but uncorrelated with domestic firms' investment policies except through government borrowing and is unlikely to be affected by any characteristics of the company of interest. Information on military expenditures comes from the World Bank's World Development Indicators (WDI) Database. No information on military spending is provided for Hong Kong, Taiwan and Venezuela, thus resulting in the loss of 1,338 observations

[Table 5 about here]

Table 5 presents IV estimates of the equations modeling the acquisition likelihood in a given year. Column 1 of the table present the results of the first-stage regression that uses the government debt issuance as the dependent variable and growth in military spending as the instrument. The results are consistent with the expectation. The coefficient on the military spending variable is positive and significant, indicating that changes in military spending are positively associated with government debt issuances.

An instrument must meet both relevance and exclusion restriction conditions. The relevance of the instrument is testable using the first-stage multivariate F test. The reported F-statistics exceeds the commonly used threshold value of 10 for the identification of strong instruments (e.g., Stock and Yogo 2005). However, the exclusion condition that the instrument influences the outcome only through its effect on the endogenous variable is not directly testable and should be assessed based on economic arguments. As noted earlier, there are compelling economic reasons to expect growth in military spending to be a reasonable instrument. While Roberts and Whited (2012) note the limitations of commonly used econometric techniques for testing of the exclusion condition, it is still common in the literature to report relevant identification tests. The reported Kleibergen-Paap LM statistic indicates that the null underidentification hypothesis can be rejected. The Cragg-Donald Wald statistic is

greater than the Stock and Yogo (2005) recommended critical value for 10% maximal IV bias, suggesting the null hypothesis of weak instruments can be rejected.

Column 2 presents the results of the second-stage regression that uses the likelihood of acquisitions as the dependent variables and the full set of control variables (as in Model 3 of Table 3). The coefficient on *Gov.Debt Issue* is negative and similar in magnitude and statistical significance to the corresponding uninstrumented estimates in Table 3. This indicates that, after taking into account the possibility that government debt issuance are endogenous, I continue to find evidence of a negative relation between government debt issuance and firm M&A activity.

To summarize, the results so far strongly suggest that the observed influence of government borrowing on corporate M&A activity is unlikely to be a reflection of macroeconomic conditions, firm-specific characteristics or omitted variables. Consistent with previous studies showing that acquisitions are largely funded with external financing, the findings support the notion that fluctuations in government debt issuances play an important role in the firms' ability to undertake acquisitions.

3.4 Government borrowing and M&A payment choice

The results presented thus far suggest that variation in the supply of government debt lead to "real crowding out" by deterring firms from making large investments. To shed further light on how government debt influences corporate M&A behavior and thus investigate the mechanism and channel through which government borrowing affects corporate investment, in this and next section I test for heterogeneity in the government debt-M&A relation. In particular, I ask: what type of deals and would be acquirers are more sensitive to variation in government borrowing?

One key implication of the crowding-out view is that government debt issuance should have a particularly strong impact on cash offers, which generally require new debt financing (e.g., Faccio and Masulis (2005)). Therefore, we can expect that government debt issuance to be systematically associated with financing decisions in acquisitions.

In Table 6, I examine the effect of government borrowing on the acquisition payment form (as provided by the SDC). Panel A of the table reports results of the modified specifications of Eq. (1) from multinomial logit models and the OLS regressions described below. Panel B of the

table presents the marginal effects and corresponding standard errors for the main independent variable of interest - *Gov. Debt Issue.*

[Table 6 about here]

I start by estimating multinomial logit regressions with the dependent variable set to 0 (base outcome) if the firm does not make an acquisition at all in a given year, set to 1 if the firm makes an acquisition using cash to finance it, and set to 2 if the firm makes an acquisition using stock to pay for it. From the results in Models 1 and 2 in both panels of the table, we see that increases in government debt led to significant decreases in the probability of all cash-financed acquisition and no change in the probability of an all stock-financed acquisition. Thus, the negative effect of government debt appears to be concentrated in all-cash deals, consistent with the crowding-out argument.

However, it is well known that data on the payment methods in the SDC is incomplete (Faccio and Masulis 2005). Therefore, I broaden the definition of cash-financed deals to account for the cases with no disclosed payment method information but where the choice of targets most likely required payment to be in cash. In particular, Officer (2007) notes that owners of privately-held firms or subsidiaries almost always demand settlement in cash. Accordingly, I broaden the definition of all cash-financed transactions to include deals whether the target is a private firm or subsidiary (as identified by the SDC).

The results of the regressions using the alternative definition of cash and stock financed deals are displayed in Models 3 and 4 in both panels of the table. The issuance of government debt continues to negatively relate to the propensity of firms to make bids that are either financed with cash (as reported by SDC) or where the targets typically demand all cash payment. The likelihood of stock-financed acquisitions does not vary with the variation in government borrowing.

Finally, Models 5 and 6 of Panel A of the table present estimates of the equations predicting the total amount (as a fraction of lagged assets) that the average firm spends on acquisitions financed with cash and stock, respectively. The results show that government debt issuance has a strong negative effect on the cash-financed value of the deals, and it is not related to the stock-financed value of the bids.

Some of the control variables also have significant (and expected) effects on the payment form. From the estimates in Models 5 and 6 we observe that larger firms, which tend to have more stable cash flows and easier access to debt markets, are more likely to make all-cash deals. Firms with higher market-to-book ratios and stock returns, which according to Martin (1996) and Shleifer and Vishny (2003) could indicate either higher growth opportunities or stock overvaluation, are less likely to make cash--financed offers and more likely to make stock-financed acquisitions.

In sum, the results in this section lend support to the prediction of the crowding-out view that increases in government borrowing primarily constrain firm ability to make cash-financed acquisitions.

3.5 Heterogeneity of the effect across firms

In this section I exploit cross-sectional variation provided by the panel data to answer the question: Which firms' M&A decisions are more (and less) sensitive to variation in government debt issuance? The crowding-out framework in Greenwood et al. (2015) predicts that the impact of government debt issuance on corporate investment decisions should be stronger for financially stronger (more creditworthy) firms whose debt is a closer substitute to government debt than that of less creditworthy firms. Broner et al. (2014), however, note that the credit reallocation from the private sector to the government caused by rising government debt can exacerbate credit constraints economy-wide. This is turn implies that it is financially weaker firms that would be affected more by increases in government debt issuance.

As described in Section 2.2, I use three popular proxies to capture a firm's financial strength: its book assets size, operating profitability and its Whited-Wu index value. For each country and each year, I rank firms according to their lagged size, profitability and the Whited-Wu index values into *High*, *Medium* and *Low* terciles and create corresponding dummy (indicator) variables. For example, a *High Firm Profit* dummy takes a value of one for those firms in the top tercile of the country-year distribution of operating profitability. Firms are considered financially stronger if their size and profitability are in the top (*High*) terciles or if their Whited-Wu index value is in the bottom (*Low*) tercile of country-year distribution of those

variables. Conversely, financially weaker firms are firms whose size and profitability are in the bottom terciles or whose Whited-Wu index value is in the top tercile.

To test for the hypothesized differential M&A responses across firm types, I expand the main specification by interacting the independent variable with a particular proxy and examining the effect of each proxy in a separate regression. Estimating the interacted regression specification, as opposed to estimating the specification separately for different sub-samples, allows for an easier statistical comparison of the coefficients of different interactions[1].

Table 7 reports the results of the interaction regressions performed for each proxy. For presentation purposes and brevity, the table display only the estimated coefficients on the interactions of *Gov.Debt Issue* with the dummy variables corresponding to the top, medium and bottom terciles for each proxy. I also present the p-values from the Wall test of the difference between the coefficients on *Gov.Debt Issue* for the top and bottom terciles of each proxy.

[Table 7 about here]

The first column shows that larger firms experience the largest decline in their acquisition propensity in response to increases in government debt issuances relative to medium and small size firms. Specifically, the coefficient estimates on *Gov.Debt Issue* interacted with the *High Firm Size* dummy is -0.700 and on *Gov.Debt Issue* interacted with *Med Firm Size* is -0.385. These two coefficient estimates are significant at the 1% level. In stark contrast, the coefficient estimate on *Gov.Debt Issue* interacted with *Low Firm Size* is statistically indistinguishable from zero at conventional levels.

The second and third columns of the table investigate the association between firms' acquisition response to government debt issuances and firm profitability and the Whited-Wu index. The results are very similar to those for firm size. For example, firms with relatively high profitability experience a significantly larger decline in their acquisition propensity (the coefficient is -0.641) following an increase in government debt issuance relative to firms with medium (-0.316) and low profitability (-0.225). Similarly, the coefficient on *Gov.Debt Issue* for firms with low values of the Whited-Wu index (and thus greater financial strength) is almost

[1] I thank an anonymous referee for suggesting this approach.

twice as large as for firms with medium values of the index. The differences between the coefficient estimates on the interactions of *Gov.Debt Issue* with the top and bottom quartiles for each proxy are all significant at better than the 5% level.

To summarize, the results in this section demonstrate that, consistent with the crowding-out argument, financially stronger and thus more creditworthy firms exhibit a greater acquisition propensity sensitivity to increases in government debt issuance.

3.6 Quality of Acquisitions

The results thus far show that government borrowing influences both the ability of firms to undertake acquisitions and the financing terms of the acquisitions. I now turn to the question of whether fluctuations in the issuance of government debt also influence the quality of undertaken acquisitions. The argument is that managers are more likely to be selective in their acquisition choices when they face constraints on raising external (debt) funding. On this ground, I hypothesize that in a response to a growth in government debt potential acquirers, especially the more affected ones, will pursue only the most value-enhancing acquisitions. Following a long tradition in the finance literature, I rely on cumulative abnormal stock returns (CAR) for acquirers to measure the expected value created (or destroyed) for the acquiring firms' shareholders by the transaction (e.g., Betton et al. 2008).

The CARs are computed using the market model relative to a local equity market index (the CRSP Index for US stocks and the local stock market equity index reported by Datastream for non-US stocks). Following Fuller et al. (2002), I use abnormal returns cumulated over the five days (-2, +2) surrounding the announcement date, but the results are similar if I use abnormal returns cumulated over a three-day window (-1, +1) or a ten-day window (-5, +5). Table 2 reports descriptive statistics for the CARs. The median five-day acquirer CAR is 0.92%. Such positive albeit small acquirer gains are similar to those reported in other M&A studies and reflects the fact that the test sample mostly consists of the acquisition of private targets where the returns to acquirers tend to be positive (see Fuller et al., 2002).

To test whether government debt issuance is related to acquisition wealth effects, I use a specification similar to that Eq. (1) with acquirer CAR as the dependent variable. The

regression also includes two additional control variables, the natural log of total transaction value and an indicator variable indicating whether the deal was for a private target. Table 8 presents the regression results.

[Table 8 about here]

Model 1 shows that for the full sample of deals an increase in government borrowing is positively associated with acquirer CAR. The coefficient of 0.06 implies that, on average, a one-standard-deviation increase in government debt issuance increases acquirer CAR by 0.23 percentage points, which is equivalent to about a 25% increase at the sample mean.

This result does, however, mask important differences related to the deal payment form and acquirer creditworthiness. Models 2 and 3 report the results for the sub-sample of all-cash financed and the sub-sample of other deals (such as stock or mixed-financed deals). The estimated coefficient on *Gov.Debt Issue* is positive and statistically significantly different from zero only in the sub-sample of all-cash transactions, exactly the ones that have shown to be most affected by the variation in debt issuance.

Specifications in Models 4 through 6 examine whether there are differences in market reactions to acquirers with different degrees of financial strength as measured by the Whited-Wu (WW) index. The results for the other proxies for financial strength are similar and omitted in the interest of brevity. To test for the differences across firm characteristics in a parsimonious manner, I create interactions of the *Gov. Debt issue* variable with dummy variables for the low, medium and high WW index firms.

The results in these specifications reveal that the interactions of *Gov. Debt Issue* with the *Low WW* dummy variables enter the regressions for the full sample of deals in Model 4 and all cash-financed deals in Model 5 with positive and statistically significant coefficients, while the coefficient estimates for the interactions of the government debt issuance variable with the high and medium WW index dummies are statistically insignificant from zero in all of those models. The results are thus consistent with the observed differential response of acquisition activity to government debt issuance across firms with different financial strength.

Overall, the positive effects of government debt on acquirer CARs documented in Table 8 are in line with the idea that managers of acquirers affected by increases in the supply of

government debt undertake the most value-enhancing acquisitions in periods of when increased government debt supply crowds out both firms' debt financing and major investments.

4 Additional Evidence

4.1 Dynamic Relation between government borrowing and acquisition activity

Is the impact of the issuance of government debt in a given year on subsequent firm acquisition activity temporary and does it reverse over longer time horizons? To examine the long-run evolution of M&A activity following government debt issuance, I modify my baseline model by including up to three additional lags of the *Gov.Debt Issue* variable (that is, issuances in years -2, -3, and -4 relative to M&A activity in year 0). If the decline in acquisition activity that we observed above is due to firms delaying rather than foregoing acquisitions, we should observe opposite-positive-coefficients associated with the increase in the government debt when modeling acquisition activity over the future years.

The results in Table 9 indicate is that the crowding-out effect of the issuance of government debt in a given year on subsequent M&A activity lasts for about two years and then largely disappears (or hard to detect statistically). Specifically, the results in Model 4 including all four lags of government debt issuance show that the most recent government debt issuance has the strongest negative impact on corporate M&A activity while debt issuances in all the other years have statistically weak or no effects. Importantly, there is no evidence of a reversal in the negative impact of government borrowing on acquisition activity in the subsequent years as none of the coefficients on the lagged *Gov.Debt Issue* variables are positive.

[Table 9 about here]

The full dynamic relation between the supply of debt and M&A activity can also be seen in an impulse response function using Jorda's (2005) local projections. More specifically, I estimate a VAR at the aggregate country-level using the government debt issuance-to-GDP variable and the natural log of the total number of M&As. The specifications also include the country and year fixed effects. Figure 2 shows the response of a country-level M&A activity to a

positive shock to government debt issuance, along with 90% confidence intervals computed using standard errors clustered on country and year. The estimates show that a shock to government debt issuance leads to a large negative effect on takeover activity in the subsequent year, and the effect appears to persist for about four years. About four years after the original shock, the aggregate M&A activity starts returning to the same level where it began. While the long-run changes in M&A activity are an interesting result they are not the focus of my study due to the difficulty of precisely tracing out the long-term impact of debt issuance on corporate activity.

[Figure 2 about here]

4.2 Composition of government debt issuance and acquisition activity

In this section, I further explore the main effect by decomposing general government debt issues into externally and domestically financed debt and by decomposing debt issues into issuances by government sectors.

Government debt can be financed either by domestic or foreign investors. If the new debt issuance by the government is largely financed by foreign investors that would likely leave more domestic funds available for local firms. Therefore, to the extent government borrowing crowds out domestic firms' debt issues, it is natural to expect a stronger relation between the acquisition propensity of domestic firms and domestically-financed government debt. I test this conjecture in Model 1 of Table 10, where I repeat the baseline analysis by replacing *Gov. Debt issue/GDP* with *Domestic-Funded Gov. Debt issue/GDP* and *Foreign-Funded Gov. Debt issue/GDP.* The information on foreign (externally) funded amount of government debt comes from the IMF. Domestic government debt is calculated as the difference between total government debt outstanding and externally funded government debt. The results show that the magnitude and statistical significate of the point estimate for *Domestic-Funded Gov. Debt issue/GDP* is similar to the estimates for total government debt reported previously (such as those in Table 3). In stark contrast, the coefficient estimate for *Foreign-Funded Gov. Debt issue* is insignificant suggesting that the negative relation between firms' decision to initiate takeover

bids and government borrowing is driven by domestic investor-funded debt issues rather than foreign investor-funded. This result is thus consistent with the crowding-out argument.

[Table 10 about here]

The IMF defines total government debt as debt issued by the central government and local governments such as provinces or states. There is a significant variation in the relative magnitude of local and central government debt across the sample countries. For example, local government debt amounts to about 5% of general government debt in Ireland while it amounts to more than 50% in Switzerland. To examine the relative importance of these two government debt issuers, in Model 2 I repeat my baseline analysis by replacing *Gov. Debt issue/GDP* with *Central Gov. Debt issue/GDP* and *Local Gov. Debt issue/GDP.* The results reveal a strong negative relation between *Central Gov. Debt issue* and the firm acquisition likelihood, with similar magnitude and statistical significance of point estimates to that for general government debt issuance (such as those in Table 3). Although the coefficient on *Local Gov. Debt issue* is also negative, it is not statistically different from zero. These results thus suggest that it is debt issued by central governments that drives the observed negative impact of the supply of overall government debt on corporate acquisition activity in my sample.

4.3 Aggregate tests

The analysis in this paper thus far was conducted using data on publicly-traded firms, which allowed me to control for firm-specific determinants of corporate acquisition choices. However, an important limitation of such analysis is that it omits private acquirers who account for most M&A deals worldwide. To confirm the effects of government debt issuance on the overall activity of the takeover market I now repeat the main tests using aggregated country-level data that include both public and private bidders.

Table 11 displays the results of the regressions relating the country-level annual M&A activity to the issuance of government debt and macro controls.

[Table 11 about here]

Model 1 analyzes the natural log of total number of deals and finds that the aggregate number of acquisition bids declines when a government issues more debt. The point estimate

on *Gov. Debt Issue* is -1.556, which suggests that for a one standard deviation increase (8% in the aggregate sample) in government debt issuance, the total number of deals decreases by 6.3%[2]. Given that the average annual number of deals for all countries in the sample is about 263, this translates into a decrease of close to 16.7 deals per year. Therefore, the relation between within-country changes in the supply of government debt and aggregate corporate M&A activity is not only statistically significant but also economically important. I obtain similar results when I use the aggregate value (amount) of transactions as the dependent variable.

Models 2 and 3 present the effects of government borrowing on the number of cash-financed deals and stock financed deals. The results suggests that the negative effect of government borrowing is concentrated in cash-financed deals (which are implicitly debt-financed transactions) and there no similar impact on stock-financed deals.

In Models 4 and 5, I compare the effect of government borrowing on the number of deals involving foreign vs domestic acquirers targeting domestic companies. We can observe a statistically and economically large negative association between domestic M&A activity and government borrowing. In contrast, a government's decision to issue more debt has no impact on the number of M&A deals initiated by foreign acquirer targeting domestic firms. These results thus further indicate that an increase in government borrowing has a negative impact only on the investment policies of domestic firms (via the crowding-out channel).

In sum, the results of the aggregate-level analysis present the same picture as the firm-level tests: increases in government debt issuance lead to lower levels of M&A transactions, especially those that require external debt financing.

5 Conclusion

This paper provides evidence of a strong link between government debt issuances and the market for corporate control. Using cross-country and time series variation in the issuance of government debt (relative to GDP), I show that government borrowing is associated with a marked decline in the number and volume of M&A. In response to increases in government

[2] Note that because the dependent variable (number of deals) is in logarithmic form, the coefficient estimates represent percentage change effects of the unit change in the independent variable.

borrowing, firms appear to make better quality deals and thus receive more favorable market reaction to acquisition announcements. Importantly, the effects are concentrated in bidders who are expected to be more sensitive to the crowding-out effect of government debt issuances-financially stronger firms whose debt is more likely to be a closer substitute to government debt in investors' portfolios.

Understanding the effect of government debt growth on real sector is central to the policy debate on the design of optimal fiscal and monetary policies. This topic has received renewed interest among economists and policymakers in the aftermath of the global financial crisis and the economic fallout from the COVID-19 pandemic. Many commentators suggest that, in the current environment of historically low interest rates, increased government borrowing have little cost for the economy. The findings in this paper, however, indicate that government capital raising activities might have a negative (crowding-out) impact on major corporate investments (at least in countries with an active market for corporate control). It indeed appears that investor funds used to purchase the government debt are funds that cannot be employed by private businesses.

Nevertheless, it is important to stress that the findings in this article do not necessarily suggest that government borrowing decisions negatively affect the efficiency of other types of corporate decisions or overall country welfare. While government borrowing appear to reduce the amount of major corporate investment, governments could use debt issuance proceeds to boost its spending on research or other productivity-increasing investment. In addition, changes in the money supply should be carefully considered for the comprehensive understanding of the overall economic effects of government borrowing decisions. The scholarly and policy implications of these issues make them an important area for future research.

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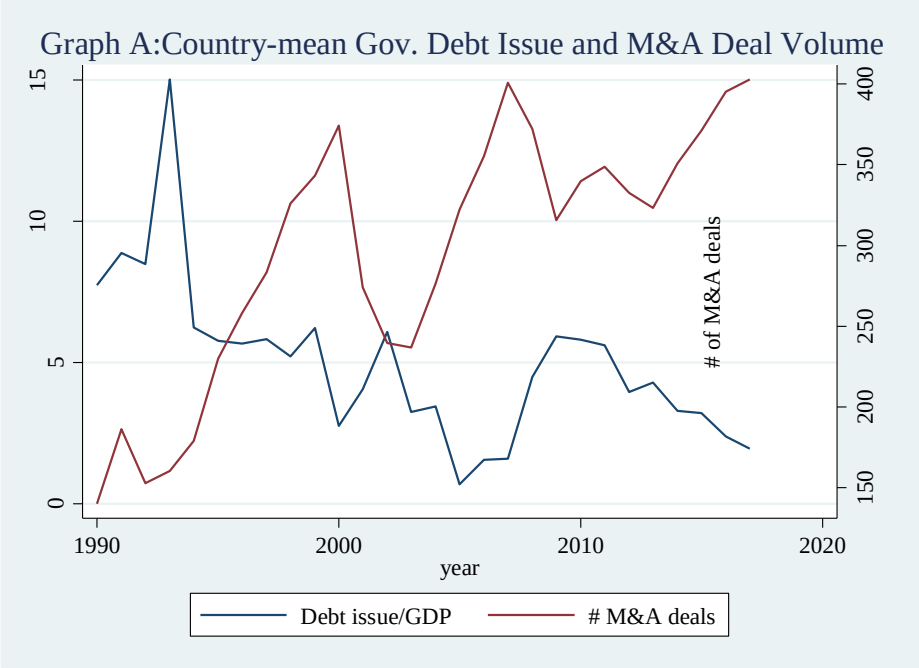
Tables and figures

Figure 1: Government Debt Issuance and Aggregate M&A activity

This figure depicts the time-series relation between *Government debt issue/GDP* and two measures of *M&A activity* for the whole sample between 1991 and 2017.



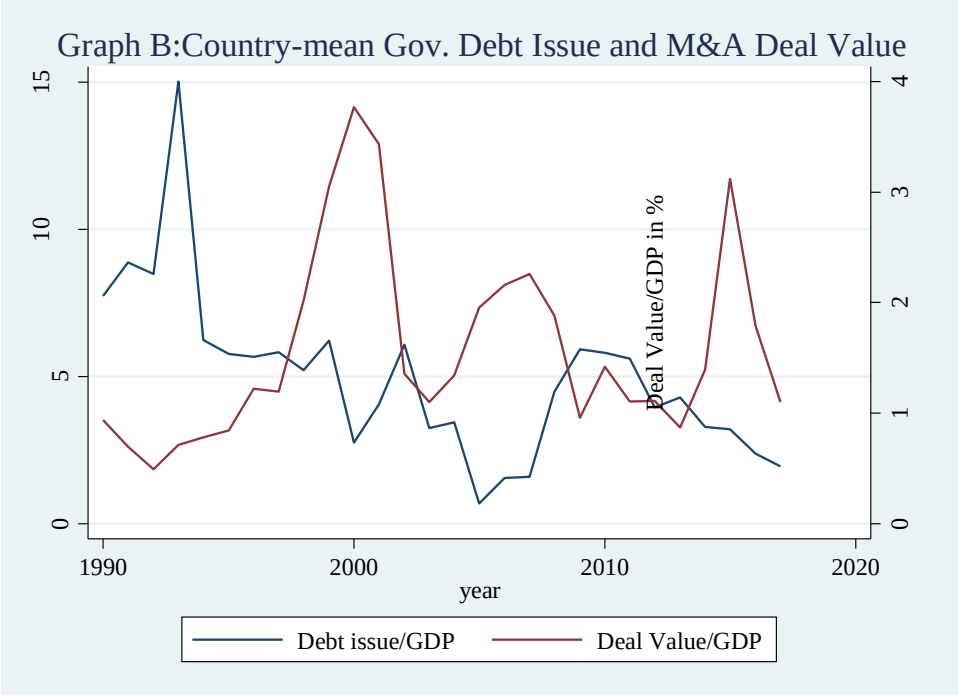


Figure 2: Impulse Responses: Government Debt Issuance and M&A activity

This figure shows the response of the natural log of the number deals in a country to a shock to government debt issuance scaled by GDP. The impulse responses are from a VAR with country and year fixed effects estimated on the 50 country sample over the period 1991-2017. Dashed lines represent 90% bootstrapped confidence intervals.

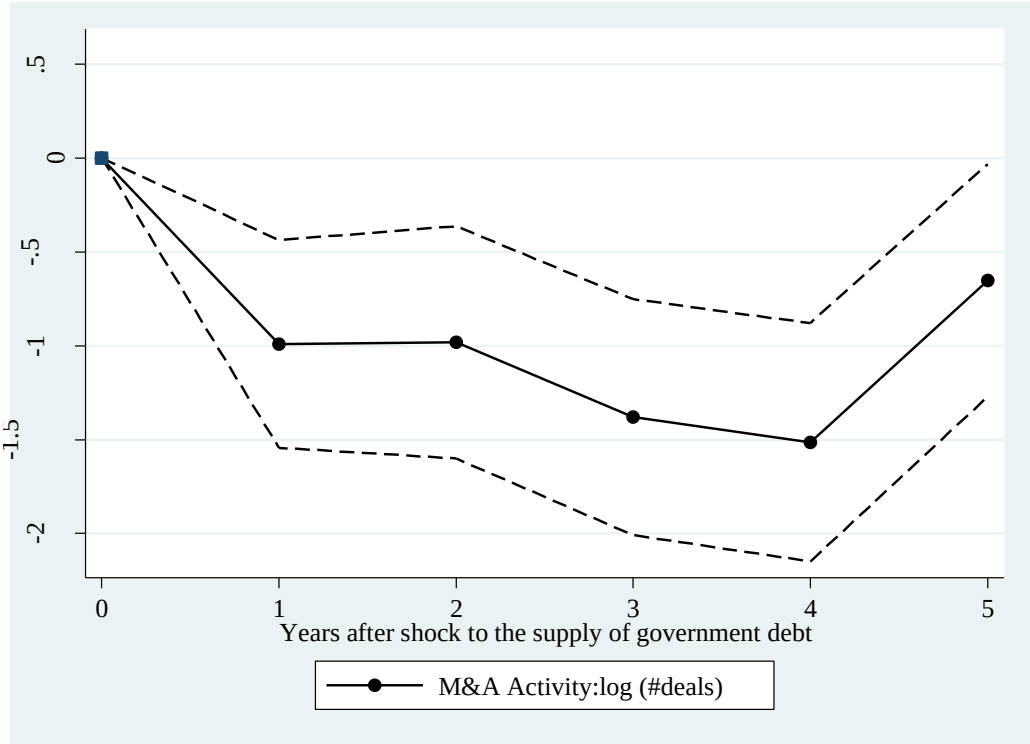


Table 1 Summary Statistics

This table shows the yearly averages of the key country-level variables. Government Debt is gross government debt divided by GDP. Financial development index captures how deep, accessible and efficient financial markets and institutions (Source: Svirydzenka (2016)).

Country	Yearly Log of GDP: Average	Gov. debt/GD: Begin	Gov. debt/GDP: End	Gov. debt issue/GDP	All M&A deals	M&A deals by Compustat / Global firms	Number of Compustat firms	Make takeover (0;1): Sample Average
argentina	12.56	55.82	52.13	8.69	705	38	893	0.032
australia	13.19	17.05	40.81	1.73	13873	3459	19249	0.119
austria	12.54	56.33	78.55	3.27	2140	372	1564	0.15
belgium	12.75	122.22	103.42	3.49	2878	444	1990	0.138
brazil	13.68	102.9	83.08	20.59	3087	431	4713	0.058
bulgaria	10.06	170.64	33.45	15.3	247	19	440	0.039
canada	13.77	71.76	89.73	4.14	22456	3452	13959	0.166
chile	11.43	82.68	23.6	0.1	593	99	2272	0.033
china	14.83	6.5	46.96	4.11	11611	3638	46147	0.059
colombia	11.62	33.29	49.35	4.84	350	61	514	0.088
cyprus	9.52	47.48	97.45	4.89	247	33	739	0.024
czech republic	11.82	18.3	34.67	2.02	833	15	203	0.059
denmark	12.36	68.25	35.29	0.72	3567	604	2688	0.121
finland	12.12	14.27	61.33	3.19	4598	722	2589	0.166
france	14.5	34.44	96.8	4.01	17614	3806	13084	0.162
germany	14.81	39.49	63.85	2.76	17905	2815	12876	0.133
greece	12.19	59.82	181.78	8.43	871	163	3258	0.039
hong kong	12.29	25.21	0.06	-1.62	3223	337	12031	0.022
hungary	11.55	74.25	71.65	6.66	495	37	324	0.059
india	13.39	47.12	71.18	9.31	4475	1575	47615	0.026
indonesia	12.41	42.52	28.77	5.13	725	136	5894	0.018
ireland	12.09	97.95	68.56	3.97	2308	857	1533	0.252
israel	11.8	147.32	60.84	6.57	1006	372	4628	0.059
italy	14.33	89.1	131.83	5.23	5724	707	4140	0.118
japan	15.38	66.85	237.65	6.78	17824	7419	89689	0.062
korea, rep.	13.49	10.39	43.7	2.46	3603	1183	32593	0.03
luxembourg	10.37	5.07	22.95	1.18	593	80	549	0.077
malaysia	11.67	81.35	54.12	3.09	5194	1819	15197	0.086
mexico	13.56	59.79	54.03	5.11	1000	274	1921	0.098
netherlands	13.32	73.97	56.45	1.78	7438	1642	3450	0.233
new zealand	11.47	58.4	29.95	0.47	1860	296	1792	0.117
norway	12.41	31.68	36.49	2.08	3755	716	3435	0.135
pakistan	11.41	75.48	63.57	7.31	72	16	3584	0.004

peru	11.7	34.9	23.41	7.46	334	57	1306	0.028
philippines	11.38	56.81	39.92	4.66	498	113	2266	0.038
poland	12.37	90.15	50.62	5.73	1628	454	6702	0.054
portugal	12.08	56.31	125.68	5.55	829	107	965	0.082
romania	11.72	1.03	35.07	4.83	252	8	1259	0.004
russian fed	13.42	116	15.53	9.91	5347	316	2239	0.069
singapore	11.58	77.46	104.68	7.11	3185	778	8555	0.065
slovak rep.	11.05	21.53	50.86	3.83	139	11	150	0.06
south africa	12.21	33.33	49.78	4.57	2289	588	4199	0.099
spain	13.8	40.02	98.36	4.72	6771	579	2558	0.141
sweden	12.78	43.39	40.84	1.99	8204	2410	8116	0.162
switzerland	12.83	27.73	41.81	1.6	5331	1484	4236	0.204
taiwan	12.74	24.95	35.65	1.64	835	387	23679	0.015
thailand	12.09	32.18	32.61	2.06	792	208	8614	0.021
turkey	12.78	33.45	28.26	10.29	779	140	3403	0.035
united kingdom	14.61	29.41	87.52	3.88	36646	10036	28999	0.192
united states	16.29	60.46	105.2	4.73	142887	33188	98331	0.189

Table 2 Summary statistics

This table presents summary statistics (means, standard deviations, percentiles, and the number of observations) for the dependent variable (number of deals) and the key variables of interest used in the regressions models we estimate.

Variable	Mean	St. dev.	p25	median	p75	Obs.
Firm level analysis:						
Gov. debt issue/GDP	0.045	0.032	0.022	0.042	0.069	563515
Make acquisition in year t (1/0)	0.104	0.305	0	0	0	564853
Acquisition value/Assets $_{t-1}$	0.01	0.051	0	0	0	508251
Make acquisition in year t if firm made at least 1 acquisition	0.225	0.417	0	0	0	261438
Acquisition value/Assets $_{t-1}$ if firm made at least 1 acquisition	0.018	0.072	0	0	0	240001
Acquisition value in year t ($m)	23.905	757.949	0	0	0	564853
Log of assets $_{t-1}$	7.153	3.052	4.929	7.045	9.385	508251
EBITDA/Assets $_{t-1}$	0.019	0.2	0.006	0.049	0.096	507506
Debt/Assets $_{t-1}$	0.232	0.213	0.045	0.195	0.356	502291
Cash/Assets $_{t-1}$	0.159	0.162	0.042	0.108	0.22	454408
Deal level analysis						
Gov. debt issue/GDP	0.039	0.062	0.015	0.036	0.059	98197
Acquirer CAR (in %)	0.0092	0.08	-0.023	0.006	0.043	81679
Target premium (in %)	0.204	0.245	0.04	0.16	0.316	4125

Table 3 Government debt issuance and corporate acquisition activity

The table presents results from the baseline linear probability and probit regressions of firm acquisition activity as measured by the indicator for making at least one acquisition during the fiscal year and the total amount spent on acquisitions divided by lagged assets. The sample consists of all publicly traded firms in the Compustat North America and Compustat Global Annual database from 1991 to 2017. Detailed variable definitions are in Appendix A. Robust standard errors clustered at the country and year level are in brackets. ∗, ∗∗ and ∗∗∗ indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. Dependent variable: Make acquisition: 1/0				
	(1)	(2)	(3)	(4)	(5)
Variables	OLS	OLS	OLS	Probit	Firm FE
Gov.Debt Issue/GDP $_{t-1}$	-0.309***	-0.346***	-0.451***	-0.449***	-0.272***
	[0.096]	[0.108]	[0.125]	[0.133]	[0.083]
Log (GDP) $_{t-1}$		-0.001	0	-0.005	0.008
		[0.021]	[0.020]	[0.028]	[0.013]
Log GDP per capita $_{t-1}$		0.018	0.013	0.013	0.012
		[0.025]	[0.027]	[0.034]	[0.020]
GDP Growth rate $_{t-1}$		0	-0.002	-0.002	-0.001
		[0.001]	[0.001]	[0.001]	[0.001]
Unemployment rate $_{t-1}$		0.314	0.131	0.183	0.071
		[0.205]	[0.178]	[0.222]	[0.127]
Market return $_{t-1}$		0.012**	0.005	0.014	0.005
		[0.006]	[0.007]	[0.009]	[0.006]
Inflation rate $_{t-1}$		0.017	-0.186*	-0.187*	-0.216***
		[0.058]	[0.098]	[0.096]	[0.076]
Ln(Assets) $_{t-1}$			0.028***	0.023***	0.009***
			[0.002]	[0.001]	[0.002]
EBITDA/Assets $_{t-1}$			0.104***	0.111***	0.065***
			[0.019]	[0.014]	[0.013]
Debt/Assets $_{t-1}$			-0.026*	-0.029**	-0.088***
			[0.013]	[0.012]	[0.013]
Cash/Assets $_{t-1}$			0.019	0.027*	0.069***
			[0.016]	[0.015]	[0.016]
Market-book assets$_{t-1}$			0.013***	0.010***	0.009***
			[0.002]	[0.001]	[0.002]
Firm stock Return $_{t-1}$			0.015***	0.016***	0.010***
			[0.003]	[0.002]	[0.002]
Country FE	Yes	Yes	Yes	Yes	No
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE					Yes
Observations	563,515	516,852	329,238	328,952	329,238
Adjusted R-squared	0.048	0.045	0.081		0.271

	Panel B. Dependent variable: Value of acquisitions/Assets$_{t-1}$				
	(1)	(2)	(3)	(4)	(5)
Variables	OLS	OLS	OLS	Tobit	Firm FE
Gov.Debt Issue/GDP $_{t-1}$	-0.060***	-0.056***	-0.063***	-0.727***	-0.046***
	[0.017]	[0.013]	[0.016]	[0.175]	[0.011]
Log (GDP) $_{t-1}$		0.008***	0.006**	0.022	0.006**
		[0.002]	[0.002]	[0.037]	[0.002]
Log GDP per capita $_{t-1}$		0.005***	0.005***	0.053	0.005***
		[0.002]	[0.001]	[0.043]	[0.002]
GDP Growth rate $_{t-1}$		0	0	-0.003	-0.000
		[0.000]	[0.000]	[0.002]	[0.000]
Unemployment rate $_{t-1}$		-0.012	-0.02	0.344	-0.014
		[0.015]	[0.013]	[0.292]	[0.015]
Market return $_{t-1}$		0.001	0	0.014	0.000
		[0.001]	[0.001]	[0.013]	[0.001]
Inflation rate $_{t-1}$		-0.002	-0.003	-0.153	-0.003
		[0.006]	[0.004]	[0.140]	[0.009]
Ln(Assets) $_{t-1}$			0	0.022***	-0.003***
			[0.000]	[0.003]	[0.001]
EBITDA/Assets $_{t-1}$			0.014***	0.144***	0.012**
			[0.005]	[0.039]	[0.005]
Debt/Assets $_{t-1}$			-0.001	-0.028	-0.010**
			[0.001]	[0.018]	[0.004]
Cash/Assets $_{t-1}$			0.003	0.057***	0.012**
			[0.002]	[0.016]	[0.006]
Market-book assets$_{t-1}$			0.002***	0.016***	0.002***
			[0.000]	[0.002]	[0.001]
Firm stock Return $_{t-1}$			0.003***	0.027***	0.002***
			[0.001]	[0.005]	[0.001]
Country FE	Yes	Yes	Yes	Yes	No
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE					Yes
Observations	507,702	466,612	329,238	329,238	329,238
Adjusted R-squared	0.05	0.05	0.066		0.227

Table 4 Robustness tests

The table presents estimates from the regressions of the firm propensity to make an acquisition in a fiscal year. The sample consists of all publicly traded firms in the Compustat North America and Compustat Global Annual database from 1991 to 2017. Detailed variable definitions are in Appendix A. Robust standard errors clustered at the country and year level are in brackets. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Variables	Firms made 1 deal	Country-year>9 obs	year<2008	Year>=2008	non-USA
	(1)	(2)	(3)	(4)	(5)
Gov.Debt Issue/GDP $_{t-1}$	-0.785***	-0.588***	-0.247**	-0.218***	-0.385***
	[0.225]	[0.138]	[0.098]	[0.075]	[0.139]
Log (GDP) $_{t-1}$	-0.002	-0.004	-0.029	0.055**	-0.000
	[0.041]	[0.018]	[0.020]	[0.027]	[0.018]
Log GDP per capita $_{t-1}$	0.039	0.017	-0.065***	0.080**	0.015
	[0.052]	[0.025]	[0.018]	[0.034]	[0.026]
GDP Growth rate $_{t-1}$	-0.003	-0.002	0.001	-0.000	-0.002
	[0.003]	[0.002]	[0.001]	[0.001]	[0.001]
Unemployment rate $_{t-1}$	0.388	0.296	-0.285	0.200	0.174
	[0.371]	[0.240]	[0.340]	[0.151]	[0.166]
Market return $_{t-1}$	0.025	0.009	0.013*	0.014	0.001
	[0.015]	[0.009]	[0.007]	[0.009]	[0.006]
Inflation rate $_{t-1}$	-0.300**	-0.255**	-0.298**	0.185**	-0.166*
	[0.130]	[0.104]	[0.115]	[0.091]	[0.094]
Ln(Assets) $_{t-1}$	0.031***	0.030***	0.032***	0.026***	0.027***
	[0.002]	[0.003]	[0.003]	[0.003]	[0.002]
EBITDA/Assets $_{t-1}$	0.148***	0.105***	0.133***	0.070***	0.091***
	[0.024]	[0.020]	[0.019]	[0.013]	[0.019]
Debt/Assets $_{t-1}$	-0.040*	-0.033*	-0.019	-0.032**	-0.023*
	[0.024]	[0.016]	[0.015]	[0.015]	[0.013]
Cash/Assets $_{t-1}$	0.079***	0.016	0.028*	0.009	0.027
	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
Market-book assets$_{t-1}$	0.020***	0.015***	0.015***	0.012***	0.013***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Firm Stock Return $_{t-1}$	0.024***	0.018***	0.015***	0.018***	0.015***
	[0.004]	[0.003]	[0.003]	[0.004]	[0.003]
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	167,763	298,691	170,013	159,225	299,161
Adjusted R-squared	0.071	0.080	0.093	0.067	0.070

Table 5 Instrumental Variable Estimates

The table presents results from the instrumental variable (IV) regression where the dependent variable is the indicator for making at least one acquisition during the fiscal year. The growth in military spending is the instrument in Model 1. The sample consists of all publicly traded firms in the Compustat North America and Compustat Global Annual database from 1991 to 2017. Detailed variable definitions are in Appendix A. Robust standard errors clustered at the country and year level are in brackets. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	1st stage:	2nd stage:
	Gov. debt issue	
Variables	/GDP	Acquire (1/0)
Change in military spending /GDP $_{t-1}$	0.016***	
	[0.000]	
Gov.Debt Issue/GDP $_{t-1}$		-0.614***
		[0.111]
Log (GDP) $_{t-1}$	-0.054***	-0.040***
	[0.001]	[0.014]
Log GDP per capita $_{t-1}$	0.015***	0.031***
	[0.000]	[0.005]
GDP Growth rate $_{t-1}$	-0.004***	-0.004***
	[0.000]	[0.001]
Unemployment rate $_{t-1}$	0.104***	0.217***
	[0.002]	[0.044]
Market return $_{t-1}$	0.009***	0.012***
	[0.000]	[0.004]
Inflation rate $_{t-1}$	0.113***	-0.134***
	[0.001]	[0.033]
Ln(Assets) $_{t-1}$	0.000***	0.029***
	[0.000]	[0.000]
EBITDA/Assets $_{t-1}$	-0.001***	0.102***
	[0.000]	[0.004]
Debt/Assets $_{t-1}$	-0.002***	-0.025***
	[0.000]	[0.003]
Cash/Assets $_{t-1}$	0.003***	0.021***
	[0.000]	[0.004]
Market-book assets $_{t-1}$	-0.000***	0.013***
	[0.000]	[0.000]
Firm Stock Return $_{t-1}$	0.002***	0.017***
	[0.000]	[0.001]
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	328,952	328,952
R-squared		0.079
Sanderson-Windmeijer multivariate		
F-test of excluded instruments:	362	
Kleibergen-Paap rk LM p-value	<0.01	
Cragg-Donald Wald F statistic	56	

Table 6: The effect of government debt issuance on acquisition payment method

This table presents estimates from regressions that a firm makes different types of acquisitions during the fiscal year. Models (1) through (4) displays results from the multinomial logit regression, in which the dependent variable includes the indicator of the year when a firm makes at least one acquisition with equity payment, makes acquisitions with purely cash payment, or does not make any acquisitions (base outcome) during the fiscal year. Models (5) through (6) displays results from the total amount of cash and stock spent on acquisitions scaled by lagged assets in a fiscal year. Detailed variable definitions are in Appendix A. Robust standard errors clustered at the country and year level are in brackets. The symbols $*$, $**$ and $***$ indicate statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: Multinomial Logit and OLS regressions of the method of payment

	Multinomial Logit				Total value of ../Assets$_{t-1}$	
	Cash (1/0)	Stock (1/0)	Cash (1/0)	Stock (1/0)	Cash Acqs	Stock Acqs
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Gov.Debt Issue/GDP$_{t-1}$	-0.019***	0.004	-0.013***	0.001	-0.001***	0.001
	[0.005]	[0.004]	[0.003]	[0.004]	[0.000]	[0.002]
Log (GDP) $_{t-1}$	-1.077**	0.045	-0.906***	0.206	-0.056**	-0.048***
	[0.473]	[0.611]	[0.280]	[0.539]	[0.028]	[0.018]
Log GDP per capita $_{t-1}$	0.621	1.272***	0.658**	1.221***	0.052**	0.071***
	[0.461]	[0.327]	[0.301]	[0.279]	[0.023]	[0.018]
GDP Growth rate $_{t-1}$	-0.004	-0.026	0.006	-0.015	-0.001	-0.001
	[0.019]	[0.023]	[0.013]	[0.019]	[0.001]	[0.001]
Unemployment rate $_{t-1}$	4.259*	0.032	2.308*	-1.814	-0.053	0.026
	[2.188]	[6.217]	[1.403]	[5.752]	[0.111]	[0.153]
Market return $_{t-1}$	0.278*	0.511***	0.087	0.327*	-0.009	0.007
	[0.148]	[0.164]	[0.092]	[0.180]	[0.007]	[0.006]
Inflation rate $_{t-1}$	5.310***	4.686**	3.508***	2.922*	0.173***	0.049
	[1.405]	[2.042]	[0.915]	[1.655]	[0.061]	[0.057]
Ln(Assets) $_{t-1}$	-0.295***	-0.108***	-0.252***	-0.060***	0.010***	0.002*
	[0.022]	[0.023]	[0.022]	[0.019]	[0.002]	[0.001]
EBITDA/Assets $_{t-1}$	-2.514***	-2.530***	-1.860***	-1.857***	0.098***	0.018**
	[0.362]	[0.375]	[0.197]	[0.281]	[0.026]	[0.008]
Debt/Assets $_{t-1}$	0.236	-0.385*	0.285**	-0.345**	-0.017	-0.016***
	[0.259]	[0.217]	[0.144]	[0.159]	[0.013]	[0.004]
Cash/Assets $_{t-1}$	-0.564*	-0.334	-0.230	0.018	0.030***	0.011
	[0.336]	[0.541]	[0.191]	[0.405]	[0.009]	[0.012]
Market-book assets$_{t-1}$	-0.097***	0.067**	-0.094***	0.076**	-0.006***	0.005***
	[0.021]	[0.028]	[0.020]	[0.031]	[0.001]	[0.001]
Stock Return $_{t-1}$	-0.142***	0.061	-0.157***	0.050	-0.010***	0.009***
	[0.047]	[0.051]	[0.021]	[0.031]	[0.003]	[0.002]
Country and Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	305,462	305,462	328,068	328,068	329,591	329,591

Panel B: Marginal effects of multinomial logit for Gov.Debt Issue/GDP $_{t-1}$. Delta-method standard errors arebelow the coefficients in brackets.

	Cash (1/0)	Stock (1/0)	Cash (1/0)	Stock (1/0)
	(1)	(2)	(3)	(4)
Gov.Debt Issue/GDP $_{t-1}$	-0.366	-0.075	-0.421	-0.086
	[0.093]	[0.046]	[0.138]	[0.054]

Table 7 Cross-sectional heterogeneity in effect of government debt on acquisition likelihood

This table presents estimates from the OLS regression where the dependent variable is the indicator for making at least one acquisition during the fiscal year. For each country and each year, I rank firms according to their lagged size, profitability and the Whited-Wu index into High, Medium and Low terciles For example, a *High Firm Profit* dummy takes a value of one for those firms in the top tercile of country-year distribution of firm profitability. Definitions and sources of all other variables are provided in Appendix A. Robust standard errors clustered at the country and year level are in brackets. The symbols ∗, ∗∗ and ∗∗∗ indicate statistical significance at the 10%, 5% and 1% level, respectively.

VARIABLES	(1)	(2)	(3)
Gov.Debt Issue *High Firm Size	-0.700***		
	[0.157]		
Gov.Debt Issue*Med Firm Size	-0.385***		
	[0.136]		
Gov.Debt Issue *Low Firm Size	-0.167		
	[0.153]		
Gov.Debt Issue *High Firm Profit		-0.641***	
		[0.150]	
Gov.Debt Issue *Med Firm Profit		-0.316***	
		[0.138]	
Gov.Debt Issue *Low Firm Profit		-0.225**	
		[0.155]	
Gov.Debt Issue *Low Whited-Wu index			-0.714***
			[0.171]
Gov.Debt Issue *Med Whited-Wu index			-0.394***
			[0.139]
Gov.Debt Issue *High Whited-Wu index			-0.188
			[0.150]
P-Value for the differences between Gov.Debt Issue *High and Gov.Debt Issue *Low groups	0.013	0.0693	0.0214
Indicators for high size, high profitability or low WW index firms	0.006	0.059***	0.057***
	[0.018]	[0.015]	[0.019]
Indicators for low size, low profitability or high WW index firms	-0.001	0.028	0.015
	[0.011]	[0.020]	[0.010]
Country and Firm Control Variables	Yes	Yes	Yes
Interaction of control variables with high, med and low financial strength indicators	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	329,238	329,238	329,238
Adjusted R-squared	0.083	0.084	0.084

Table 8 Government debt issuance and acquirer returns.

The table reports the coefficients from the regressions of acquirer 5-day (-2, +2) cumulative abnormal announcement returns (CAR). CARs are computed using the market model relative to a local equity market index (the CRSP Index for US stocks and the local stock market equity index for non-US stocks). Robust standard errors clustered at the country and year level are in brackets. The symbols *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	All deals	All cash	Other deals	All deals	All cash	Other deals
Gov.debt issue/GDP $_{t-1}$	0.060**	0.103***	0.034			
	[0.029]	[0.031]	[0.041]			
Gov. debt*Low WV index				0.070**	0.097***	0.049
				[0.032]	[0.033]	[0.040]
Gov. debt*Med WV index				0.019	0.066	-0.025
				[0.030]	[0.047]	[0.040]
Gov. debt*High WV index				0.091	0.187	0.052
				[0.069]	[0.127]	[0.087]
Low WV index Dummy				0.003	0.020	-0.005
				[0.010]	[0.018]	[0.014]
Med WV index Dummy				0.010	0.026	0.004
				[0.010]	[0.016]	[0.014]
Log (GDP) $_{t-1}$	0.040	0.041	0.026	0.039	0.043	0.025
	[0.028]	[0.035]	[0.038]	[0.030]	[0.036]	[0.039]
Log GDP per capita $_{t-1}$	-0.040	-0.055	-0.014	-0.039	-0.057	-0.011
	[0.029]	[0.034]	[0.040]	[0.031]	[0.035]	[0.041]
GDP Growth rate $_{t-1}$	0.001	0.000	0.000	0.001	0.000	0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Unemployment rate $_{t-1}$	0.022	-0.044	0.084	0.021	-0.040	0.082
	[0.047]	[0.061]	[0.057]	[0.046]	[0.061]	[0.056]
Market return $_{t-1}$	-0.004	-0.012***	0.001	-0.004	-0.013***	0.001
	[0.004]	[0.005]	[0.005]	[0.004]	[0.005]	[0.006]
Inflation rate $_{t-1}$	0.021	0.004	0.039	-0.000	-0.000	0.012
	[0.067]	[0.061]	[0.092]	[0.061]	[0.061]	[0.085]
Log (Deal Value)	0.005***	0.004***	0.006***	0.005***	0.004***	0.006***
	[0.001]	[0.000]	[0.002]	[0.001]	[0.000]	[0.002]
Ln(Assets) $_{t-1}$	-0.008***	-0.007***	-0.009***	-0.007***	-0.006***	-0.007***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Market-to-book assets $_{t-1}$	-0.00***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
12-month stock run-up	-0.002*	-0.000	-0.003**	-0.002	0.000	-0.002**
	[0.001]	[0.002]	[0.001]	[0.001]	[0.002]	[0.001]
EBITDA/Assets $_{t-1}$	-0.003	-0.007	-0.001	0.000	-0.007	0.002
	[0.002]	[0.009]	[0.004]	[0.002]	[0.009]	[0.003]
Debt/Assets $_{t-1}$	0.009**	0.001	0.009*	0.006	0.001	0.008
	[0.004]	[0.007]	[0.005]	[0.004]	[0.007]	[0.005]
Cash/Assets $_{t-1}$	-0.008**	-0.001	-0.002	-0.005	-0.001	-0.005
	[0.003]	[0.007]	[0.006]	[0.004]	[0.007]	[0.006]
Private target dummy	0.001	0.001	0.001	0.001	0.001	0.001
	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.002]
Country and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,274	12,931	19,343	32,274	12,931	19,343
Adjusted R-squared	0.042	0.029	0.054	0.045	0.029	0.056

Table 9 Government debt issuance and acquisition likelihood: Dynamics

This table presents estimates from the OLS regressions where the dependent variable is the indicator for making at least one acquisition during the fiscal year. Definitions and sources of all variables are provided in Appendix A. Robust standard errors clustered at the country and year level are in brackets. The symbols ∗, ∗∗ and ∗∗∗ indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Dependent variable: make acquisition (1/0)			
Variables	(1)	(2)	(3)	(4)
Gov.Debt Issue/GDP $_{t-1}$				-0.442***
				[0.120]
Gov. debt issue/GDP$_{t-2}$	-0.336***			-0.098*
	[0.116]			[0.056]
Gov. debt issue/GDP$_{t-3}$		-0.127		-0.023
		[0.085]		[0.046]
Gov. debt issue/GDP$_{t-4}$			-0.093	-0.050
			[0.069]	[0.045]
Log (GDP) $_{t-1}$	0.002	0.017	0.023	0.001
	[0.029]	[0.026]	[0.024]	[0.022]
Log GDP per capita $_{t-1}$	0.009	0.005	0.005	0.014
	[0.027]	[0.030]	[0.030]	[0.026]
GDP Growth rate $_{t-1}$	-0.001	-0.001	-0.000	-0.002
	[0.001]	[0.001]	[0.001]	[0.001]
Unemployment rate $_{t-1}$	0.172	0.127	0.117	0.138
	[0.195]	[0.188]	[0.180]	[0.195]
Market return $_{t-1}$	0.006	0.003	0.002	0.006
	[0.007]	[0.006]	[0.006]	[0.007]
Inflation rate $_{t-1}$	-0.186*	-0.207**	-0.216**	-0.169*
	[0.102]	[0.099]	[0.100]	[0.098]
Ln(Assets) $_{t-1}$	0.028***	0.028***	0.028***	0.028***
	[0.002]	[0.002]	[0.002]	[0.002]
EBITDA/Assets $_{t-1}$	0.105***	0.106***	0.106***	0.105***
	[0.019]	[0.019]	[0.019]	[0.019]
Debt/Assets $_{t-1}$	-0.028**	-0.028**	-0.028**	-0.027**
	[0.013]	[0.013]	[0.013]	[0.013]
Cash/Assets $_{t-1}$	0.018	0.018	0.017	0.019
	[0.015]	[0.015]	[0.016]	[0.016]
Market-book assets$_{t-1}$	0.013***	0.013***	0.013***	0.013***
	[0.002]	[0.002]	[0.002]	[0.002]
Stock Return $_{t-1}$	0.015***	0.015***	0.015***	0.016***
	[0.002]	[0.002]	[0.002]	[0.003]
Country and Year FE	Yes	Yes	Yes	Yes
Observations	328,772	328,225	322,287	322,287

Table 10 Government debt issuance and acquisition likelihood: heterogeneity by debt type

This table presents estimates from the regressions where the dependent variable is the indicator for the firm making at least one acquisition during the fiscal year. Definitions and sources of all variables are provided in Appendix A. Robust standard errors clustered at the country and year level are in brackets. The symbols ∗, ∗∗ and ∗∗∗ indicate statistical significance at the 10%, 5% and 1% level, respectively.

Variables	(1)	(2)
Foreign-Funded Gov.Debt Issue/GDP $_{t-1}$	-0.841	
	[2.052]	
Domestic-funded Gov.Debt Issue/GDP $_{t-1}$	-0.230***	
	[0.071]	
Central Gov. Debt Issue/GDP $_{t-1}$		-0.362***
		[0.086]
Local Gov. Debt Issue/GDP $_{t-1}$		-0.136
		[0.413]
Log (GDP) $_{t-1}$	0.026	0.001
	[0.023]	[0.018]
Log GDP per capita $_{t-1}$	-0.043**	-0.050***
	[0.018]	[0.014]
GDP Growth rate $_{t-1}$	-0.002	0.001
	[0.001]	[0.000]
Unemployment rate $_{t-1}$	0	-0.092
	[0.081]	[0.140]
Market return $_{t-1}$	0.013**	-0.002
	[0.006]	[0.006]
Inflation rate $_{t-1}$	-0.213***	-0.237**
	[0.076]	[0.092]
Ln(Assets) $_{t-1}$	0.028***	0.029***
	[0.003]	[0.003]
EBITDA/Assets $_{t-1}$	0.079***	0.102***
	[0.014]	[0.020]
Debt/Assets $_{t-1}$	-0.025	-0.023*
	[0.015]	[0.013]
Cash/Assets $_{t-1}$	0.022	0.017
	[0.022]	[0.018]
Market-book assets$_{t-1}$	0.012***	0.012***
	[0.002]	[0.002]
Stock Return $_{t-1}$	0.014***	0.015***
	[0.003]	[0.003]
Country and Year FE	Yes	Yes
Observations	241,214	291,459
R-squared	0.07	0.086

Table 11 Aggregate (country-year) M&A activity and government debt issuance

This table reports the results of the OLS regressions relating the effect of government debt issuance in year t on the aggregate M&A activity. The key independent variable in all tables is *Gov. debt issue$_t$/GDP*. All variables are defined in Appendix A. . Robust standard errors clustered at the country and year level are in brackets. The symbols ∗, ∗∗ and ∗∗∗ indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Dependent variable is the log of number of				
Left-hand-side variables	All deals	cash deals	stock deals	cross-border deals targeting local firms	domestic deals targeting local firms
	(1)	(2)	(3)	(4)	(5)
Gov.Debt Issue/GDP $_{t-1}$	-1.556***	-3.485***	-2.077	-0.463	-1.800***
	[0.570]	[1.250]	[1.922]	[0.613]	[0.642]
Log (GDP) $_{t-1}$	1.439**	0.009	-0.262	1.220**	1.482*
	[0.697]	[1.010]	[2.180]	[0.553]	[0.768]
Log GDP per capita $_{t-1}$	-1.030	0.703	0.700	-0.755	-1.104
	[0.836]	[1.185]	[2.650]	[0.647]	[0.923]
GDP Growth rate $_{t-1}$	0.018**	0.021*	0.017	0.037***	0.011
	[0.007]	[0.012]	[0.011]	[0.007]	[0.007]
Unemployment rate $_{t-1}$	-2.538*	0.311	1.807	-2.735**	-2.418
	[1.461]	[1.749]	[3.115]	[1.062]	[1.620]
Market return $_{t-1}$	0.192***	0.205***	0.350***	0.246***	0.177***
	[0.043]	[0.073]	[0.077]	[0.039]	[0.046]
Inflation rate $_{t-1}$	0.060*	0.208***	1.970	-0.000	0.085**
	[0.032]	[0.048]	[1.274]	[0.030]	[0.036]
Country and Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,074	1,074	1,074	1,074	1,074
Adjusted R-squared	0.906	0.839	0.831	0.909	0.887

Appendix A Variable definition

Variable	Description and Source
Firm-level variables (Compustat for U.S. and Canadian firms or Compustat Global for non-U.S. firms).	
Acquire(1/0)	Indicator variable equal to one if a firm announces at least one acquisition during the fiscal year
Acquisition Value/Assets	The total dollar amount of all acquisition made by the firm during a year divided by lagged total assets
Ln(Asset)	Log of total assets in US dollars
Profitability	EBITDA/Total Assets
Market-to-Book	Market Value of Equity+book debt// Total Book Assets
Cash holding	Cash and cash equivalent/Total Assets
Leverage	(Short-Term Debt + Long-Term Debt)/Total Assets
Sales Growth	[Net sales(t)-Net sales(t-1)]/Net sales(t-1)
Industry dummy	Industries based on Fama and French (1997) classification
Whited and Wu (2006) index	=0.021* Long-term debt/Assets –0.044*Log of total book assets -(0.091*EBITDA/Assets) -(0.062*Dividend Payer Dummy) +(0.102*3-digit SIC industry sales growth)-(0.035*Firm sales growth).
Deal-level variables (Thomson Financial's Global M&A Database)	
CAR[-2,+2]	Cumulative abnormal return from day -1 to day +1 relative to the acquisition announcement date. Abnormal returns are calculated from the market model estimated from day –260 to day –100 relative to the announcement date with at least 60 days of returns available.
Public Target	Indicator variable denoting the acquisition of public target
Subsidiary Target	Indicator variable denoting the acquisition of subsidiary target
Cash deals	Deal financed mainly with cash as identified by SDC (SDC Items "Percent Cash =100" or "Consideration structure =CASHO")
Stock deals	Deals financed mainly with shares as identified by SDC (SDC Items "Percent Stock =100" or "Consideration structure = SHARES").
Macroeconomic variables (IMF Global Debt , World Bank Indicators and BIS)	
Gov. Debt Issue/GDP	Change in total outstanding government debt scaled by nominal GDP
GDP	Log of real gross domestic product in U.S. dollars
GDP Growth	Annual percentage growth rate of GDP in constant US dollars
GDP Per Capita	Log of real gross domestic product per capita in U.S. dollars
Stock market return	Local stock market index return
Military spending	Country total spending on military in USD
Inflation	Inflation, consumer prices (annual %)