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Corruption Scrutiny and Corporate Investment: Evidence from China

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Abstract

We examine whether corporate corruption scrutiny affects corporate investment in China. A corruption news index (CNI) containing firm-specific measures of corruption scrutiny is developed by tracking all articles in the press about corruption for all firms trading on the Shanghai and Shenzhen stock exchanges between 2000 and 2011. This index is included in a traditional model of investment. We find that a standard deviation increase in CNI leads to an initial 6 percent decline in investment, a 9 percent decline the following year, but no effects after two years. Thus, anticorruption campaigns appear to carry temporary costs for corporate investment.

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I. Introduction

It is generally agreed that corruption causes, or at least is associated with, a variety of undesirable social and economic outcomes—lower income, lower economic growth, social unrest, etc.[1] For that reason, it is common for countries to introduce systemic anticorruption campaigns in an effort to curtail widespread corruption.

But the implementation of anticorruption policies, or any policy for that matter, by definition generates a policy change that may trigger a period of heightened policy uncertainty. The uncertainty may stem for a variety of reasons. For instance, just after the policy change is implemented, there may be uncertainty regarding what the new policy actually is, the extent of its coverage, the degree to which is perceived to be credible, the degree to which it is enforced, etc. Given that policy uncertainty has been found to reduce investment spending and be detrimental to overall economic activity and growth, it is not clear that the implementation of anticorruption campaigns—which, to be credible, need to be long-lasting—will lead to a smooth and steady improvement of economic outcomes, at least in the short run. Attaining the long-term benefits of a relatively low or controlled corruption environment is not costless and may entail a bumpy ride during the short to medium term. Therefore, it is important from an academic and policy-making perspective to measure empirically the side effects of cleaning up corruption.

The purpose of this paper is to shed light on this issue by examining the case of China. Evaluating China's experience in this area can be quite illuminating, as in recent years its government has ramped up efforts to contain and control corruption, a problem with which the country has struggled for at least three decades. Besides targeting official corruption, the most recent campaign aims to control corruption at the corporate level as well. Although the Chinese government

[1] See Rose-Ackerman (1999) for evidence on lower income levels; Mauro (1995) and Li, Xu, and Zou (2000) for lower growth; and Manion (2004) for evidence on social unrest. It should be noted that this list is not comprehensive. For example, corruption has also been shown to reduce the flow of foreign direct investment (Wei 2000). For a more complete list, see Ramirez (2014).

has implemented anticorruption programs in the past, the current campaign represents an escalation of those efforts both at the official and corporate levels.

This study evaluates the side effects that the shift in China's anticorruption enforcement have had on corporate investment spending. To motivate our empirical tests, we rely on the growing theoretical and empirical literature demonstrating that policy uncertainty can be detrimental to investment spending (e.g., Gulen and Ion 2013; Julio and Yook 2012).[2] The mechanism that explains the adverse effect of uncertainty on investment spending is straightforward: given that capital expenditures are sunk costs and therefore largely irreversible, the value of avoiding risk increases with an unpredictable policy environment.[3] In such an environment, therefore, firms tend to delay capital investment, at least until after the nature of uncertainty has been resolved.

In some respects, this mechanism also applies when firms operate in the context of institutionalized corruption. Businesses operating in a relatively corrupt environment learn over time the rules of the game; hence, the modus operandi in the steady-state may entail engaging in corrupt practices (tax avoidance, payment of bribes to circumvent rules or regulations or to speed up paperwork, etc.). The implementation of an aggressive anticorruption campaign disrupts this equilibrium, and—at least during the short term—may introduce a significant amount of uncertainty. The rules of the game have shifted, and relearning must take place. This kind of policy change is widespread and applies to all businesses.

But the implementation of a widespread anticorruption campaign can also introduce firm-specific uncertainty. By its very nature, engaging in corruption (say, paying a bribe to circumvent a specific regulation) is a transaction between a specific firm and another party (say a government official). A policy change may not necessarily prevent this transaction from taking place unless the firm perceives that its own probability of getting caught has increased sufficiently. Therefore, the

[2] Recent research has also shown that policy uncertainty can adversely affect economic growth. See, for example, Bernanke (1983); Bloom, Bond, and Van Reenen (2007); and Rodrik (1991). Wang, Chen, and Huang (2014)—using the Baker, Bloom, and Davis (2013) index of policy uncertainty—looks at how economic policy uncertainty affects corporate investment in China.

[3] See Pindyck (1991) for a survey of the effect of uncertainty and irreversibility on investment spending.

awareness of an increase in corruption scrutiny, as well as enforcement, tends to be firm-specific.

Over the last few years, articles in the popular press in China reflect an increase in corporate corruption crackdowns, as well as an associated increase in policy uncertainty. In fact, the crackdowns have resulted in a number of high-profile cases of corruption that the government has recently investigated.[4] Newspaper articles have also been reporting that the heightened scrutiny of corporate corruption has resulted in greater uncertainty in the business environment.[5]

The perception of a ramp-up in the control of corporate corruption in China can be evaluated more formally. Figure 1 displays an aggregate corporate corruption index, which we constructed for the 1994 to 2013 period.[6] The index can be used as a more reliable and systemic indication of the extent to which the scrutiny of corporate corruption has increased in China in recent years, particularly after 2010.

In this study, we investigate the extent to which anticorruption enforcement has affected the dynamics of corporate investment spending in China over the 2000 through 2011 period. To do this, we estimate a variety of reduced-form investment specifications that include a variable that captures scrutiny of corporate corruption—a constructed firm-specific index of corruption news, similar to the index displayed in Figure 1, but for each corporation in our sample. Heightened corporate scrutiny should result in a higher incidence of corruption cases reported in the press, which is what our index captures. The estimated investment model, augmented by the inclusion of this index, enables us to evaluate the extent to which corruption news affects corporate investment.

Our results indicate that heightened corporate scrutiny, measured by the firm-specific corruption news index, results in a moderate but temporary decline in

[4] See, for example, an article by Reuters released on November 7, 2013, entitled "China COSCO Exec Flagged in Government Corruption Investigation."

[5] See, for example, a recent article published by the *Wall Street Journal,* entitled "Multinationals Feel the Pressure in China." http://stream.wsj.com/story/latest-headlines/SS-2-63399/SS-2-325525/.

[6] To construct the index, we tracked all printed articles in Chinese-language newspapers (domestic or foreign) that contain the keywords "公司" and one of the following corruption terms in Chinese: "腐败"、"贪污"、"受贿"、"行贿"、"贿赂"、"双规"、"假账"、and "撤职." We then divided the number of these articles by the number of all articles with the keyword "公司" multiplied by 100. See the data section of this paper for more details as well as sources.

investment spending, lasting approximately two years. Specifically, a one standard deviation increase in the corruption news index is associated with a contemporaneous decline in investment spending of nearly 6 percent, and a 9 percent decline in the subsequent year. After the second year, however, the effect dissipates, suggesting that the decline is largely transitory.

A number of papers (which we survey in the literature section that follows) investigate the effect of different measures of corruption on investment spending in a variety of countries, including China. Our work differs from them in many respects, as we highlight in the literature section. Nonetheless, it is worth mentioning that our focus is not so much on investigating how corruption per se affects investment spending but, rather, on how the policy uncertainty generated by corporate anticorruption campaigns may have affected corporate investment behavior. In this regard, our paper falls more within the literature that investigates how policy uncertainty induced by heightened corruption scrutiny affects corporate investment performance (Gulen and Ion 2013; Julio and Yook 2012).

Our results suggest that concerns about the possible adverse effects of the recent anticorruption campaign in China are not warranted. Given the well established finding that lower corruption produces significant social and economic benefits, especially in the long run, the short-run costs that we find weigh relatively little against the expected benefits.

The rest of the paper is organized as follows: Section II provides a brief overview of the literature that investigates corruption and firm-level investment in China. Section III discusses the data used in this paper. Section IV discusses the empirical methodology, while section V reports the main results. Section VI offers some concluding remarks.

II. Review of the Literature on Corruption and Firm-Level Investment

Over the last decade, a number of papers have examined the extent to which corruption affects firm-level investment in particular and overall corporate performance in general. The majority of the evidence that has been gathered points toward a negative effect of corruption on firm growth. This result is not surprising

considering that corruption, in one way or another, ends up distorting the economic environment in which the firm operates, thereby reducing the firm's efficiency. Bribes, for example, can be considered a form of tax that distorts the use of corporate funds, channeling funds away from more productive uses and, instead, toward inefficient uses. Other forms of corruption, such as nepotism and patronage, also adversely distort firm efficiency. Therefore, firms that engage in excessive corruption are sacrificing long-term performance for short-term gain. Naturally, this argument implies that if corruption were contained or even reduced, firm performance would improve.

Recent examples of papers that report how corruption affects firm performance include Gaviria (2002) and Athanasouli, Goujard, and Sklias (2012). Gaviria, using the World Bank 1999 survey conducted among middle and top managers in Latin America, finds that corruption is associated with lower sales growth at the firm level. His findings indicate that corruption reduces firm competitiveness and therefore adversely affects the firm's growth. Athanasouli, Goujard, and Sklias use firm-level data from Greece and find that corruption adversely affects firm performance. In yet a third example of papers that study the relationship between corruption and firm performance, Sahakyan and Stiegert (2012) use survey data for Armenian businesses, and their findings, too, indicate that corruption adversely affects a firm's growth and performance.[7]

Nonetheless, based on theoretical models and empirical evidence, some researchers have argued that the relationship between corruption and firm performance is not necessarily negative and in fact may even be positive. There are at least two reasons for this claim: (a) corruption may have the effect of circumventing inefficient regulation (Huntington 1968), and (b) sometimes corruption provides a more efficient mechanism for delivering public goods and services to firms (Beck and Maher 1986), thereby enhancing their performance. Empirically, Cai, Fang, and Xu (2011) find that corruption (measured as entertainment and travel costs) has a significant negative effect on firm

[7] See also Asiedu and Freeman (2009) for evidence from Latin America and Sub-Saharan Africa.

productivity, while at the same time positive stock returns for a large sample of firms in China.

More recently, using data for a large set of firms in China, Wang and You (2012) find that corruption actually enhances firm growth. In addition, they argue that to some extent corruption can be seen as a substitute for financial development. Their results, therefore, suggest that some form of corruption can actually be beneficial at the firm level. However, even if corruption is beneficial for the individual firm, it can still be harmful to the economy as a whole. Hence, firm-level evidence suggesting that corruption enhances firm performance does not necessarily translate to corruption being beneficial to overall economic growth.

Part of the reason different papers have different implications for the effect of corruption on firm performance and overall economic growth has to do with how corruption is actually defined and measured. Generally speaking, research that relies on surveys tends to highlight one aspect of corruption, while research that relies on accounting measures (such as entertainment and travel costs, days spent dealing with government ministries, etc.) tends to pick up several aspects of corruption.

But as indicated in the introduction, we do not rely on these standard measures of corruption—either surveys or accounting measures—because our objective is not to investigate how corruption per se affects investment spending. Instead, we seek to investigate how the policy uncertainty that stems from the government's corporate anticorruption campaigns affects corporate investment behavior.

III. Data

To evaluate our models empirically, we use corporate financial data as well as data on corruption scrutiny at the firm level. Because this last variable was expressly constructed for this study, we discuss it first.

III.A. Corruption News Index

To measure the intensity of corruption scrutiny, we hand-collected newspaper articles on corruption for each firm in our sample, which consists of all

firms that traded on the Shenzhen and Shanghai stock exchanges between 2000 and 2011. In particular, using Chinese-language newspapers, we tracked all articles that mention the name of any company in our sample and that also mention particular keywords associated with corruption. Using the Factiva search engine,[8] for each company in our sample and for each year we constructed the corruption news index (CNI) as follows:

$$CNI_{name,t} = \frac{"Name_t"+"Terms_t"}{"Name_t"}$$

Where "Name" refers to the name of the company in our sample, and "Terms" is a list of corruption terms in Chinese. Because there is more than one way of expressing the concept of "corruption" in Chinese, we included a large array of terms. These are "腐败" (fubai)、"贪污" (tanwu)、"受贿" (shouhui)、"行贿" (xinghui)、"贿赂" (huilu)、"双规" (shuanggui)、"假账" (jiazhang)、and "撤职" (chezhi). We excluded articles that contained the following keywords: "禁止腐败"(jinzhifubai), "反腐败" (fanfubai).

For example, one of the companies in our sample is the Shenzhen Fountain Corp. (深圳世纪星源股份有限公司). To construct the CNI for this company, we first used the Factiva search engine to track all articles that included the name of the company in a given year. This means that for each year, we searched for "深圳世纪星源" (as well as its variations) in Chinese-language newspapers. The resulting number from this search is the denominator of the CNI.

To construct the numerator, we track all articles (in the same year) that included the name of the company plus one or more of the corruption terms listed above. Thus, for example, for the Shenzhen Fountain Corporation, the numerator is the total number of articles that the following string of keywords produced for each year: "深圳世纪星源" AND ("腐败" OR "贪污" OR "受贿" OR "行贿" OR "贿赂" OR "双规" OR "假账" OR "撤职") NOT ("禁止腐败" OR "反腐败").

[8] The imposed filters in the Factiva search engine were "All Newspapers" and "Language: Simplified Chinese." We eliminated obituaries and recurrent news from stock quotes, as well as repeated articles.

Undoubtedly, a mechanically constructed index of corruption news is not perfect. There are at least two concerns that merit further discussion and analysis. One stems from the ongoing debate about the influence of the government on the coverage—a debate about objectivity and bias in the reporting of corruption news in China. Some researchers argue that this topic can be considered politically sensitive (Zhu, Lu, and Shi 2013).[9]

The second concern is that the mechanical process we follow to retrieve news about corporate corruption may instead be retrieving primarily articles that can be classified as "noise"—articles that happen to contain both the name of the company and one or more of the keywords but are not really related to a corruption incident involving the company.

Despite these concerns, we have two reasons for believing that the constructed index is sufficiently accurate for our purposes. First, our sources include all newspapers (in Chinese) covered by Factiva. These include private domestic newspapers as well as foreign ones (such as the Chinese version of the *Wall Street Journal*). Thus, the range of sources behind the index extends well beyond government-owned newspapers in China.

The second reason is based on a robustness analysis of the constructed index. Specifically, we constructed a *second* index of corporate corruption news using, instead, all English-language newspapers—domestic and foreign sources. The procedure used for the construction of this second index is analogous to the one used for the Chinese-language newspapers, but using instead the English translations (as accurate as possible) of the keywords and the company names. We use the English version of the index to verify the accuracy of the Chinese-language version, in terms of both coverage and signal content of the articles. If the retrieval process generated mostly noise, we would not necessarily expect to observe a

[9] The debate centers on the extent to which state control over the media in China compromises the contents and standards of the press. Some researchers (e.g., Zhou 2000) argue that the control is very severe, while others (Esarey 2005; Stockmann 2013; Stockmann and Gallagher 2011; and Zhu, Lu, and Shi 2013) point out that the mass media in China has seen a steady liberalization over the years as a result of commercialization. This latter group of researchers maintains that although the media is still under state control, it has enough latitude to engage in in-depth reporting of most (if not all) important aspects of Chinese society.

correlation between the two constructed indices. Since the newspaper sources are different, Chinese-language noise articles would not necessarily be correlated with English-language noise articles.

A regression of the English version of the index on the Chinese version can also be used to evaluate the concern that the content of the Chinese-language index is corrupted by possible limitations in coverage or by systematic bias. If the reporting of corporate corruption news were systematically different between the two versions and the English-language (primarily foreign) newspapers did indeed face fewer limitations in coverage, we would not expect to observe a systematic correlation between the two indices.

To formally test the robustness of the constructed index, we estimate a variety of regressions where the dependent variable is the English version of the index, and the main independent variable is the Chinese-based version. Alternative specifications (with a different set of controls) help verify the robustness of the relationship between the constructed indices.

Table 1 presents the regression results. All regressions were estimated in levels with fixed effects in order to control for time-invariant firm characteristics. The results strongly indicate that there is a tight relationship between the English version of the index and the Chinese version. For example, the specification in the first column indicates that there is a strong contemporaneous correlation between the two indices, even without year effects.

The second regression examines whether the lagged Chinese index is also helpful in explaining variation in the English version of the index. This lagged relationship may take place if the English version of the index captures primarily the reporting of foreign newspapers, which may focus their attention only on salient cases, after they have generated considerable media attention in Chinese. The results reported in the second column lend support to that possibility. The lagged value of the Chinese version of the index still carries some explanatory power for the English version.

The last two columns report the regression results, after including a more complete set of covariates—year effects, the contemporaneous and lagged values of

the Chinese version of the index combined, and the log of assets. Year effects control for any macroeconomic shifts that may influence the results. The log of assets is included to control for the possibility that larger corporations may receive more media attention. But once again, the results point toward a tight relationship between the two indices. In the most complete regression, for example, the estimated complete effect of a one-unit increase in the Chinese version of the index on the English version is 0.872, and it is statistically significant at the 0.001 level.[10] This magnitude translates into an elasticity of 0.44, implying that a 1 percent increase in the Chinese version of the index leads to a 0.44 percent increase in the English version. This magnitude fits well with straightforward intuition, suggesting that almost 50 percent of corporate corruption news in Chinese newspapers passes through as news in English-language newspapers.

III.B. Summary Statistics

Balance-sheet, income-statement, and other financial variables for the companies in our sample were obtained from CSMAR, the Chinese equivalent of Compustat. In order to eliminate (or at least reduce) the influence of extreme observations (outliers) on the empirical results, we trimmed the sample to companies with yearly changes in assets no greater than 25 percent (in terms of absolute value). This trimming effectively eliminates the potentially influential effect of extreme swings (caused, for example, by M&A activity) for firms in the sample.[11]

Summary statistics are presented in Table 2. The first variable listed is gross investment relative to beginning-of-period total assets, I/K. Its mean is 0.058, which suggests that the average company in the sample was adding about RMB 6 for every RMB 100 it had in assets. Since the denominator of this variable includes all assets

[10] The complete effect is the sum of the contemporaneous (0.638) and lagged (0.234) effects. Statistical significance is computed using the Delta method.

[11] It is worth pointing out that our results are robust to various trimming cut-offs. Specifically, we estimated the same regressions with trimming cut-offs up to 75 percent, and the results were quite similar. For the sake of completeness, we also estimated the regressions for the entire sample (with no trimming). Although the results were qualitatively similar to the trimmed sample, the magnitudes tended to be larger (albeit more unstable), suggesting that extreme observations were unduly influencing the results.

and not just plant and equipment, this ratio reflects a very healthy investment rate, consistent with the fast economic growth that China experienced over the sample period.

The next variable listed is the Chinese-language corruption news index (in thousands), abbreviated as CNI. The estimated average is 0.455, indicating that for every 100 articles that mention the name of the company, approximately 5 of them also include one of the corruption keywords. Unsurprisingly, this variable is very noisy—the standard deviation is 6.4, and the range goes from 0 to 23.3. These statistics suggest that for at least a few firms in the sample, corporate corruption has received significant newspaper visibility.

The next variable is "exposure," defined as the total number of articles per year that mention the name of the company per 100 articles. This variable captures media visibility. Its mean is approximately 0.6, and the standard deviation is about 0.73. Hence exposure is less volatile than the corruption news index.

Tobin's q is defined as the firm's capitalization divided by total assets. Its mean is 0.036, which seems rather low. This can be explained by the fact that we exclude debt from the definition of Tobin's q.[12] The table also indicates that the average company had 5.21 billion of RMB in total assets (approximately US$868 million). Thus, these companies are not "small" firms. They include some of the largest state-owned enterprises in terms of assets.

The relatively low debt-asset and interest expense-asset ratios suggest that the companies in our sample were not, on average, heavily indebted. In fact, the reported mean debt-asset ratio of 0.292 implies a debt-equity ratio of over 2.4, a healthy figure for large, publicly traded corporations. Nonetheless, only about 50 percent of the companies reported debt figures. For this reason, in some of our regressions we exclude debt and interest rate ratios.

[12] Our characterization of Tobin's q differs somewhat from the more standard definition, which is the market value of equity plus debt, divided by total assets. We excluded debt from the definition because it was not reported for every company in the sample. Nonetheless, even if we include it (for the somewhat smaller sample), the results are virtually identical.

The sales-asset ratio suggests that, on the whole, these companies have been quite profitable. This observation is consistent with the generally healthy figure that the investment rate suggests, and it is consistent with the rapid economic growth China experienced during the sample period.

IV. Empirical Methodology

To capture the effect of corruption news on firm investment, we estimate a model of investment spending augmented by the inclusion of the constructed CNI variable. Formally, our model is

$$\left(\frac{I_{i,t}}{K_{i,t-1}}\right) = a + \sum_{j=0}^{n} \alpha_j \left(CNI\right)_{i,t-j} + \sum_{j=0}^{n} \beta_j \left(Exposure\right)_{i,t-j} + \boldsymbol{\gamma}\mathbf{X}_{i,t} + \varepsilon_{i,t} \qquad (2)$$

Where $\left(I_{i,t}/K_{i,t-1}\right)$ is gross investment spending at time *t* relative to beginning-of-period total assets for firm *i*. "CNI" is the constructed corruption news index, "Exposure" is the measure of media visibility described in the data section above, and $\mathbf{X}_{i,t}$ is a vector of firm-specific control variables. These controls include Tobin's q (defined as the firm's capitalization relative to beginning-of-period total assets), the log of total assets, the ratio of sales to beginning-of-period total assets, the ratio of cash and short-term equivalents to beginning-of-period total assets, cash flow divided by beginning-of-period total assets, total debt to beginning-of-period total assets, and interest expense relative to beginning-of-period total assets. In the next paragraph we provide a justification for the inclusion of these control variables.

CNI is the variable of interest. We use the point estimate of its coefficient and standard error to determine the extent to which corporate corruption scrutiny affects investment spending. The variable is permitted to enter the model both contemporaneously and with lags. This functional form is adopted in order to introduce more flexibility into the model. In addition, this functional form permits a more generalized dynamic estimation of the effect of corruption news. The same logic applies to the "Exposure" variable.

The control variables included in (2) are standard in the empirical investment literature. The inclusion of Tobin's (1969) q in the model is motivated by

the neoclassical model of firm investment in the presence of internal adjustment costs (Summers 1981). In the absence of asymmetric information problems or other financial frictions, this variable should be a sufficient statistic for determining investment spending. However, when asymmetric information is an issue, or when the cost of adjustment is nonlinear, a more complex investment spending specification is warranted. These additional complexities are captured by the inclusion of the other control variables. For example, the sales-asset ratio captures the accelerator model of investment, and the log of assets controls for the possible influence of size on investment growth. A life-cycle theory of firm growth would predict that as firms become larger and more mature, the set of investment opportunities should decline. On the other hand, the log of assets could pick up the influence of visibility or reputation in financial markets. If larger firms are perceived to be more reputable and thus less likely to fail, it may be easier for them to finance investment spending. This type of consideration may be important when asymmetric information problems in financial markets are severe (Fazzari, Hubbard, and Petersen 1988).

The inclusion of both the ratio of cash and short-term equivalents to total assets (cash/assets) and the ratio of cash flow to total assets (cash flow/assets) is also motivated by the empirical literature on investment spending under the presence of asymmetric information problems. When such information problems are an issue, companies tend to rely more on internal sources of funds (short-term assets, cash flow, etc.) to finance investment expenditures. Some theoretical and empirical studies in this literature recommend the inclusion of debt and interest expenses as additional indicators or controls for asymmetric information problems.[13]

[13] The importance of internal sources of funds for financing investment expenditures has been documented empirically since at least the 1950s (e.g., Meyer and Kuh 1957; Duesenberry 1958). The sensitivity of investment to various measures of internal funds has also been used as an indicator of liquidity constraints (Fazzari, Hubbard, and Petersen 1988; Hoshi, Kashyap, and Scharfstein 1991; and others). Kaplan and Zingales's (1997) criticism of Fazzari, Hubbard, and Petersen's (1988) interpretation of investment-cash flow sensitivities has resulted in a debate that continues to be the subject of further theoretical and empirical work. For example, Erickson and Whited (2000) recommend the inclusion of debt ratios to help correct for measurement problems in the reduced-form specification. For a recent contribution on this topic, see Bond and Söderbom (2013).

We estimate equation (2) using Feasible Generalized Least Squares because this technique has been shown to produce more accurate results when panel heteroscedasticity and panel autocorrelation problems are suspected (Greene 2012; Hansen 2007). Panel heteroscedasticity may be an issue in our case because the variance of the errors may change from firm to firm (cross-sectional heteroscedasticity), as well as temporally within each firm. Although our sample period is one of rapid growth in China, firm-specific growth rates may be quite different in the cross-section, and over time. The inclusion of fixed effects (as is common with longitudinal data) does capture time-invariant cross-sectional variation, but it is unable to control for time-varying heteroscedasticity.

Panel autocorrelation, too, is likely to be an issue in our case because corruption investigations tend to be long-lasting. Once an investigation is initiated, firm-specific corruption news tends to display a fair amount of autocorrelation.

Given these potential problems, we implement Feasible GLS regressions, allowing for panel-specific heteroscedasticity as well as panel-specific first-order serial correlation.[14]

V. Regression Results

To investigate the effect of corporate corruption scrutiny on investment spending we estimate a variety of specifications based on equation (2). The results are reported in Tables 3 through 8 and are discussed in the sub-sections that follow.

V.A. Baseline Regression Results

The baseline regression estimates for equation (2) are reported in Table 3. The first two regressions report the effect of the contemporaneous (column (1)) and lagged (column (2)) corruption news index and exposure variables, without the inclusion of debt to assets or interest expense relative to assets. The last two regressions include these two controls. The nested form adopted for the inclusion of

[14] It is worth pointing out that we also estimated the main regressions using standard OLS with firm fixed effects. In most specifications, the estimated coefficients were similar in magnitude and statistical significance.

these two variables ensures robustness in the regression results. Because a significant number of firms in our sample did not report debt or interest expense on a regular basis, the inclusion of these variables in the regression entailed a substantial reduction in the number of observations. To demonstrate that our results are not driven by the more complete-reporting firms, we present our results with and without these controls.

Regardless of the specification considered, the results in Table 3 indicate that a rise in a firm's corruption news index is associated with a decline in its investment spending. The contemporaneous effect is estimated to be between -0.08 and -0.13, and it is statistically significant at standard levels. The lagged index is also negative and significant, indicating that the effect appears to be persistent.[15]

The estimated coefficients of the remaining control variables are for the most part significant and with signs that fit well with expectations. For example, an increase in Tobin's q is associated with a rise in investment spending, consistent with the neoclassical theory of investment under internal adjustment costs. The log of assets is also a statistically important variable, indicating that size is an important determinant of investment expenditures. The significance of this variable may be an indication that economies of scale are present. This result is not surprising inasmuch as for most of this period, China's economic growth averaged over 8 percent per year.

The results also indicate that the effect of the sales-asset ratio on investment is sensitive to the regression specification. While the effect is positive and statistically significant in the first two regressions, it is negative in the last two. Hence, the effect of this variable does not appear to be very robust. Since the sample of firms changes substantially between the first two regressions and the last two, we cannot rule out the possibility that the lack of robustness for this variable is due to the change in the sample. Nonetheless, it is worth highlighting that the point estimate of the CNI coefficient, which is the main focus of our study, is not materially affected across the specifications.

[15] In the dynamic version of the model (see additional discussion below), the issue of persistence is addressed in more detail.

The cash-asset ratio, which captures all liquid assets (cash and short-term equivalents) relative to the beginning-of-period assets, enters negatively in the regressions, while the cash flow-asset ratio coefficient is positive (and statistically significant). These two effects are not inconsistent with the possibility that firms in our sample may be experiencing the effects of financial frictions. When these frictions are important, investment spending is most likely financed by drawing either from liquid assets (implying a negative relationship between investment spending and cash holdings) or from current cash flow (implying a positive relationship with investment spending).

For firms that report debt and interest expenditures, the regressions suggest a positive association between these variables and investment spending. Intuitively, the effect of debt (and interest expenditures) on investment is likely to be nonlinear: at low to moderate levels, a marginal increase in the debt-asset ratio may be an indication that firms are able to tap external markets to finance some investment spending. But this relationship is unlikely to be sustained as the level of debt rises. Highly indebted firms are normally unable to obtain additional external funds easily or cheaply, and therefore, at such levels, the relationship between debt and investment may be zero, or even negative. Since the average firm in our sample has relatively low to moderate levels of debt (relative to assets), the observed positive relationship between this variable and investment spending is consistent with expectations.

The last variable included (in column (4)) is "WGI," the World Bank's Worldwide Governance Indicator of corruption control for China. The inclusion of this variable is aimed at ensuring that the statistical importance of the constructed corruption index is robust to variation over time in overall corruption levels in China. But as the results indicate, the corruption index is not materially affected by the inclusion of WGI.

V.B. Standardized Regressions

Although the results reported in Table 3 suggest that scrutiny of corporate corruption is associated with lower investment, they say little about the importance

of this variable in explaining investment spending relative to the other covariates included.

To better ascertain the relative importance of CNI, we report in Table 4 the same specifications as reported in Table 3, but with all variables standardized. This procedure enables the coefficients to be interpreted as the effect of a one standard deviation increase in the independent variables, as opposed to a one unit increase. The estimated coefficients are therefore comparable to each other.

The results indicate that the importance of the corruption index for explaining investment spending is relatively low—in all specifications the magnitude (in absolute terms) of the corruption index coefficient is either the lowest or second lowest among all the covariates included. A glance at the magnitude of the estimated coefficients shows that the most important variables are cash flow (relative to assets), Tobin's q, and (perhaps to a lesser extent) a firm's holding of cash assets relative to total assets, as well as the debt-asset ratio. This ranking is not inconsistent with straightforward intuition. After all, a large literature has documented the importance of these variables for explaining investment spending at the corporate level.

V.C. Dynamic Panel Data Model

The regression results presented in Table 3 indicate that the corruption scrutiny variable is statistically important for explaining corporate investment spending. The regression results of Table 4 suggest that the importance of this variable is low *relative* to the other covariates. Neither set of results, however, says much about the absolute size of the effect or about its impact on investment over time.

To shed some light into this issue, we estimate a dynamic version of equation (2). In particular, we introduce a lagged dependent variable as well as additional lags of all the covariates.[16] As is well known, when a lagged dependent variable is

[16] The choice of the number of lags included in the dynamic regression was made on the basis of overall statistical significance. Standard information criteria (e.g., AIC, HQIC) suggest similar lag orders.

included in a panel regression, a correlation between the lagged dependent variable and the error term is automatically introduced. For that reason, we fit a linear dynamic model based on the Blundell and Bond (1998) system dynamic GMM procedure.[17]

Table 5 presents the results of the dynamic version of the model. Because the purpose is to measure the temporal effect of the corruption scrutiny index, holding other factors constant, we include all covariates in the specification. Another advantage of including all covariates in a dynamic setting is that their inclusion serves as a robustness check to alternative specifications.

The results indicate that the corruption index is still a statistically important explanatory variable. The contemporaneous and lagged regression coefficients for this variable are statistically significant at the 5 percent level or better.

To get a better sense of how this variable affects investment over time, in Figure 2 we present the implied dynamic effects on corporate investment. A one standard deviation shock in the corruption news index is associated with a 6 percent decline in investment contemporaneously, and a nearly 9 percent decline a year later. The effects, however, dissipate after year 1. In year 2 and onward, the results indicate the impact is statistically nil.

V.D. Reverse Causality and Possible Endogeneity

An important issue that we address is the possibility of endogeneity in the corruption news index. A company with a very robust rate of investment, for example, may be more likely to be the subject of scrutiny if government officials suspect that the rapid investment likely came about through bribes. In such a case, we would expect a feedback effect from investment to more corruption news in the future. If this mechanism is at play, the effect of corruption on investment (an effect estimated above) may simply be the result of an endogeneity bias.

[17] The system GMM procedure entails the use of instruments for both the difference equation and the level equation. As is commonly done in the literature, we use higher-order lags of the dependent and independent variables as instruments.

The most straightforward way of ruling out a feedback effect from investment to CNI is by showing that past investment rates do not explain future corruption news. This test is tantamount to showing that investment does not Granger-cause corruption news.

Table 6 shows the regression results from the estimated GMM procedure. The table indicates that almost none of the explanatory variables is a statistically important determinant of CNI. Aside from the lagged dependent variable, the second lag of Tobin's q and of the cash flow to assets variables are significant at the 5 percent level. Since neither the contemporaneous nor the first lag of these variables is statistically important, the results are not very robust. Perhaps more importantly, neither the contemporaneous nor the lagged rates of investment significantly explain corruption news. This result indicates that there does not appear to be feedback from investment to CNI.

V.E. Effect of Corruption Scrutiny on Bond Issuance

The regression results discussed above indicate that a rise in corruption scrutiny is associated with a temporary decline in investment spending. A natural extension of this finding is to investigate whether the same variable also affects financing choices. An additional reason for investigating the effect on financing choices is the report by Gulen and Ion (2013) that policy uncertainty does appear to adversely affect financing decisions.

Thus, we investigate the impact that corruption scrutiny may have on bond issuance. To do so, we estimate a specification that is close to the one used for investment spending:

$$\left(\frac{Bond\_Issue_{i,t}}{K_{i,t-1}}\right) = a' + \sum_{j=0}^{n} \alpha'_j \left(CNI\right)_{i,t-j} + \sum_{j=0}^{n} \beta'_j \left(Exposure\right)_{i,t-j} + \boldsymbol{\gamma}' \mathbf{X}_{i,t} + \varepsilon'_{i,t} \quad (3)$$

In equation (3), "*Bond_Issue*" represents proceeds to company *i* from bond issues at time *t.* The remaining variables are defined exactly as for equation (2). To remain consistent with the investment regressions, the controls included in equation (3)—besides "CNI" and "Exposure"—are Tobin's q, log of assets, and the

ratios of sales to assets, cash and short-term equivalents to assets, cash flow to assets, the existing level of debt to assets, and interest expense to assets. Just as in equation (2), the variable we use to normalize the ratio (assets) is measured at the beginning of the period.[18]

Table 7 presents the regression results for the bond issue regressions. The columns differ by the number of lags included for the "CNI" and "Exposure" variables. Overall, the results indicate that proceeds from bond issues are adversely affected by corruption scrutiny. However, the effects are sensitive to the lags included: the contemporaneous effect is significantly negative only when it is examined alone. When one or more lags are included, it is the lagged values that pick up statistical significance. This result suggests that the impact of corruption scrutiny on bond financing likely takes place a year or two into the future. This delayed effect may explain why investment spending deteriorates by 9 percent (in addition to the decline observed contemporaneously) a year following the increase in corporate scrutiny.[19]

V.F. Examining State-Owned Enterprises (SOEs)

One final issue worth investigating is whether the relationship between corruption scrutiny and investment is different for China's state-owned enterprises (SOEs) from what it is for the country's private enterprises. On the one hand, there is research suggesting at least indirectly that SOEs ought to be different. For example, Jin, Xu, and Zhang (2014) report that the likelihood of promotion for government officials affiliated with a particular SOE increases if the enterprise under their control receives less negative media attention toward the end of the officials' terms. If such political concerns do matter, it is possible that the relationship between corruption scrutiny and investment differs for SOEs.

On the other hand, SOEs in China have undergone a series of reforms that have made them more responsive to market discipline and more susceptible to the

[18] For reasons already delineated above (for equation (2)) and for consistency with the estimated investment regressions, equation (3) is also estimated with Feasible Generalized Least Squares.
[19] Gilchrist, Sim, and Zakrajsek (2014) also find that debt issuance is adversely affected by an increase in economic uncertainty, especially when financial frictions are present.

forces of competition. For instance, some studies indicate that over the past decade, China's SOEs have become much more like private enterprises in terms of innovation and managerial compensation. Specifically, Hu et al. (2013) find that executive compensation at SOEs became much more sensitive to firm performance during the 2000 to 2007 period. And Girma, Gong, and Görg (2009) report that SOEs operating in more competitive sectors (measured by exposure to FDI) invested more than SOEs in other sectors in terms of human capital and R&D. These findings suggest that at least some of the investment undertaken by SOEs is a response to market forces and competition. To the extent that this is the case, the investment decision process for SOEs is similar to that for private enterprises.

To evaluate the hypothesis that the relationship between investment and corruption is different for SOEs, we estimated the investment regression with the corruption scrutiny variable (CNI) and added a term that interacts CNI with an SOE indicator variable.[20] If the relationship between investment spending and CNI is different for SOEs, the interaction term should pick up that effect.

Table 8 presents the results of this test. To ensure robustness, we examine the effects using both Feasible GLS (column (1)) and standard OLS (column (2)).[21] To ensure comparability with other regressions, we include all controls in the regressions. The results suggest that the SOE effect is not very robust. The interaction term is statistically insignificant in the Feasible GLS regression and is barely significant (only at the 10 percent level) in the OLS regression. For that reason, we conclude that the effect of corruption scrutiny on investment spending is not meaningfully different for SOEs.

VI. Concluding Remarks

[20] For simplicity, we considered only the contemporaneous effect.

[21] When the model is estimated with the Feasible GLS technique allowing for panel heteroscedasticity and autocorrelation, the estimated variance-covariance matrix, $\boldsymbol{\Sigma}$, is panel specific, thereby absorbing individual (firm) effects. Although the technique permits the identification of a firm-specific characteristic (in our case, the SOE indicator), the variation contained in this dummy variable is absorbed in $\boldsymbol{\Sigma}$ and may therefore not provide additional information.

As indicated in the introduction, since 2012 China has escalated anticorruption efforts, aiming at containing corruption not just among government officials but also at the corporate level. The scandals that have received considerable media visibility over the last two years attest to the aggressiveness with which the government has been scrutinizing corporate corruption. Although controlling corporate corruption has desirable long-term benefits, it may have short-term costs in terms of heightened policy uncertainty (a concern already expressed by several business persons) and reduced investment spending.

The main objective of the research reported here is to empirically evaluate this concern. To do so, we hand-collected corruption news data for all firms trading on the Shenzhen and Shanghai stock exchanges for the 2000 to 2011 period and constructed a firm-specific index of corruption scrutiny. We then embedded this measure of corruption into a standard investment equation to ascertain the extent to which corruption affects investment.

We find that a surge in news about corruption slows down corporate investment spending. Specifically, a one standard deviation increase in corruption scrutiny is associated with a 6 percent decline in investment concurrently, and an additional 9 percent decline the following year. After year 2 and onward, the effect is statistically nil.

Our results have important policy-making implications. Despite the fact that heightened corruption scrutiny reduces investment spending, the effects seem to be moderate and relatively short-lived. Therefore, the well-established long-term benefits of a low-corruption environment likely outweigh the short-term costs stemming from the implementation of a comprehensive anticorruption policy.

Figure 1
Corporate Corruption Index

Notes: This figure presents the corporate corruption index in China from 1990 to 2013 (it is zero from 1990 to 1994). It is constructed as follows: all articles in Chinese-language newspapers (domestic or foreign) with the keywords "公司" and any one of the following terms: "腐败"、"贪污"、"受贿"、"行贿"、"贿赂"、"双规"、"假账"、and "撤职", divided by all articles with the keyword "公司" multiplied by 100. Source: Factiva database.

Table 1
Corruption News Index: English- and Chinese-Language Versions

	(1)	(2)	(3)	(4)
CNI-Chinese, (t)	0.4720***		0.6730***	0.6380***
	(0.000)		(0.000)	(0.000)
CNI-Chinese, (t-1)		0.1160***	0.0498**	0.2340***
		(0.0001)	(0.0315)	(0.000)
Log (Assets), (t)				-0.0001
				(0.7780)
Constant	0.0008***	0.00103***	0.000750***	0.00191
	(0.000)	(0.000)	(0.000)	(0.789)
CNI-Chinese, (t) + (t-1)	0.4720***	0.1160***	0.7228***	0.8719***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)
Year Effects?	NO	NO	NO	YES
Observations	16,378	14,943	14,919	13,722
R-sqd overall	0.033	0.006	0.049	0.056

Notes: Regression results of Corruption News Index (CNI). Dependent Variable: CNI, English-language version. Independent variables: CNI, Chinese-language version (CNI-Chinese); natural logarithm of total assets (Log (Assets)). "CNI-Chinese, (t) + (t-1)" is the sum of the contemporaneous and lagged CNI-Chinese coefficients. P-values in parentheses: *** p<0.01, ** p<0.05, * p<0.10. For details on how the corruption news indices are constructed, see Data section.

Table 2
Summary Statistics

Variable	Num. Obs	Mean	SD	Min	Max
I/K	10370	0.058	0.059	0	0.494
CNI	9841	0.455	6.400	0	23.30
Exposure	9901	0.594	0.728	0	10.30
Tobin's q	10370	0.036	0.531	0	5.692
Total Assets (bill RMB)	10370	5.210	26.00	0.004	588.00
Debt/Asset	5711	0.292	0.181	0	6.527
Interest Expense/Asset	4452	0.0002	0.0022	-0.0006	0.035
Sales/Asset	10361	0.725	0.614	-0.011	10.373
Cash Flow/Asset	10321	0.080	0.096	-1.548	0.921
Cash & Equiv/Asset	10360	0.172	0.143	0	1.138
Bond Issue/Asset	4870	0.005	0.024	0	0.261

Notes: I/K is defined as gross investment divided by lagged total assets. "CNI" is the corruption news index and is defined as the total number of newspaper articles published in Chinese that mention the name of the company and one of the following keywords: "腐败"(fubai)、"贪污"(tanwu)、"受贿"(shouhui)、"行贿"(xinghui)、"贿赂"(huilu)、"双规"(shuanggui)、"假账"(jiazhang)、"撤职"(chezhi) (excluding articles that contained the following keywords: "禁止腐败"(jinzhifubai), "反腐败"(fanfubai)), divided by the total number of articles printed in Chinese-language newspapers that mentioned the name of the company multiplied by 1000. "Exposure" is the total number of articles that mentioned the name of the company per 100 articles. Tobin's q is defined as the firm's capitalization divided by total assets. Total assets is in million RMB. "Debt/Asset" is total debt divided by lagged total assets. "Interest Expense/Asset" is interest expenditures divided by lagged total assets. "Sales/Asset" is total revenue to lagged total assets. "Cash Flow/Asset" is net cash flow from operations plus depreciation divided by lagged total assets. "Cash & Equiv/Asset" is cash and other short-term liquid assets divided by lagged total assets. "Bond Issue/Asset" is total receipts from bond issuance divided by lagged total assets.

Table 3
Feasible GLS Regressions

	(1)	(2)	(3)	(4)
CNI-Chinese, (t)	-0.0771***	-0.0833***	-0.137***	-0.125***
	(0.00251)	(0.000543)	(0.000302)	(0.000851)
CNI-Chinese, (t-1)		-0.114***	-0.191***	-0.118***
		(0.00245)	(0)	(0)
Exposure, (t)	-0.00002***	-0.00002***	-0.00001***	-0.00002***
	(0.000)	(0.000)	(0.000)	(0.000)
Exposure, (t-1)		-0.00001***	0.00001***	0.00002***
		(0.000)	(0.000)	(0.000)
Tobin's q	0.0340***	0.0373***	0.313***	0.127***
	(0.000)	(0.000)	(0.000)	(0.000)
Log (Assets)	0.00879***	0.00889***	0.00516***	0.00407***
	(0.000)	(0.000)	(0.000)	(0.000)
Sales/Assets	0.00289***	0.00274***	-0.000724***	-0.000226*
	(0.000)	(0.000)	(0.000)	(0.0901)
Cash/Assets	-0.0175***	-0.0180***	-0.0227***	-0.0235***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow/Assets	0.115***	0.114***	0.199***	0.198***
	(0.000)	(0.000)	(0.000)	(0.000)
Debt/Assets			0.0836***	0.0827***
			(0.000)	(0.000)
Interest Expense/Assets			3.654***	4.604***
			(0.001)	(0.002)
WGI				0.0186***
				(0.000)
Constant	-0.142***	-0.144***	-0.0918***	-0.0564***
	(0.000)	(0.000)	(0.000)	(0.000)
Year Effects?	YES	YES	YES	NO
Observations	9,726	9,720	1,867	1,867

Notes: Feasible GLS Regressions. Dependent variable: "Investment/Assets", gross investment spending relative to beginning-of-period total assets. Independent variables are as follows: "CNI-Chinese" is the corruption news index (t = contemporaneous; t-1 = lagged). "Exposure" is the total number of articles that mention the name of the company, per 100 articles. "Tobin's q" is the ratio of the firm's market capitalization to total assets. "Log (Assets)" is the log of total assets. "Sales/Assets" is total revenue to beginning-of-period total assets. "Cash/Assets" is total cash and short-term equivalent assets to beginning-of-period total assets. "Cash Flow/Assets" is cash flow from operations plus depreciation allowance relative to beginning-of-period total assets. "Debt/Assets" is total debt relative to beginning-of-period total assets. "Interest expense/Assets" is total interest expense relative to beginning-of-period total assets. See text for more precise definitions. Regressions are estimated allowing for heteroskedasticity and panel-specific AR(1) correlation. Robust p-values are reported in parentheses under the estimated coefficients. ***p<0.01; **p<0.05; *p<0.10.

Table 4
Feasible GLS Regressions with Standardized Coefficients

	(1)	(2)	(3)	(4)
CNI-Chinese, (t)	-0.000359***	-0.000387***	-0.000638***	-0.000584***
	(0.00251)	(0.000543)	(0.000302)	(0.000851)
CNI-Chinese, (t-1)		-0.000528***	-0.000886***	-0.000550***
		(0.00245)	(0.000)	(0.000)
Exposure, (t)	-0.00241***	-0.00210***	-0.00107***	-0.00205***
	(0.000)	(0.000)	(0.000)	(2.12e-10)
Exposure, (t-1)		-0.000761**	0.000623***	0.00227***
		(0.0118)	(0.000)	(0.000)
Tobin's q	0.109***	0.119***	0.998***	0.405***
	(0.000)	(0.000)	(0.000)	(0.000)
Log (Assets)	0.00759***	0.00768***	0.00446***	0.00352***
	(0.000)	(0.000)	(0.000)	(0.000)
Sales/Assets	0.0627***	0.0593***	-0.0157***	-0.00490*
	(0.000)	(0.000)	(0.000)	(0.0901)
Cash/Assets	-0.127***	-0.130***	-0.165***	-0.170***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow/Assets	0.649***	0.645***	1.126***	1.124***
	(0.000)	(0.000)	(0.000)	(0.000)
Debt/Assets			0.124***	0.122***
			(0.000)	(0.000)
Interest expense/Assets			0.00610***	0.00769***
			(0.000612)	(0.00186)
WGI				0.00143***
				(0.000)
Year Effects?	YES	YES	YES	NO
Observations	9,726	9,720	1,867	1,867

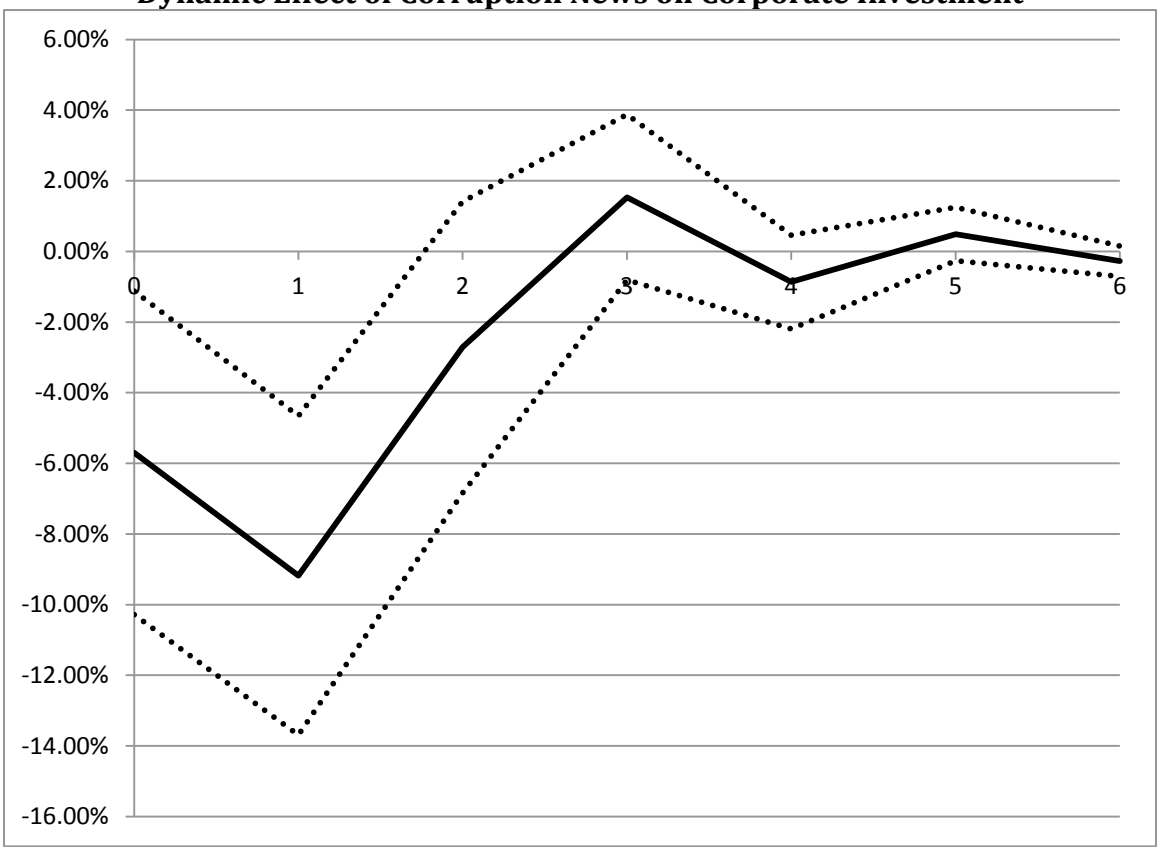
Notes: Feasible GLS Regressions with standardized variables. Dependent variable: "Investment/Assets", which is gross investment spending relative to beginning-of-period total assets. Independent variables are as follows: "CNI-Chinese" is the corruption news index (t = contemporaneous; t-1 = lagged). "Exposure" is the total number of articles that mention the name of the company, per 100 articles. "Tobin's q" is the ratio of the firm's market capitalization to total assets. "Log (Assets)" is the log of total assets. "Sales/Assets" is total revenue to beginning-of-period total assets. "Cash/Assets" is total cash and short-term equivalent assets to beginning-of-period total assets. "Cash Flow/Assets" is cash flow from operations plus depreciation allowance relative to beginning-of-period total assets. "Debt/Assets" is total debt relative to beginning-of-period total assets. "Interest expense/Assets" is total interest expense relative to beginning-of-period total assets. See text for more precise definitions. Regressions are estimated allowing for heteroskedasticity and panel-specific AR(1) correlation. Robust p-values are reported in parentheses under the estimated coefficients. ***p<0.01; **p<0.05; *p<0.10.

Table 5
Linear Dynamic Panel-Data Model

	(1)
Investment/Assets, (t-1)	-0.565***
	(0.000)
CNI-Chinese, (t)	-0.512**
	(0.0400)
CNI-Chinese, (t-1)	-1.112***
	(3.52e-06)
CNI-Chinese, (t-2)	-0.709***
	(0.000272)
Exposure, (t)	0.000164***
	(0.000)
Exposure, (t-1)	1.18e-05
	(0.842)
Exposure, (t-2)	-0.000204***
	(0.000746)
Tobin's q, (t)	-0.373***
	(0.0001)
Tobin's q, (t-1)	0.309***
	(0.00406)
Tobin's q, (t-2)	0.753***
	(0.000)
Cash Flow/Assets, (t)	0.524***
	(0.000)
Cash Flow/Assets, (t-1)	0.502***
	(0.000)
Cash Flow/Assets, (t-2)	-0.0337***
	(0.000581)
Sales/Assets, (t)	0.0956***
	(0.000)
Sales/Assets, (t-1)	-0.00391
	(0.541)
Sales/Assets, (t-2)	0.00779***
	(0.00835)
Cash/Assets, (t)	-0.00422
	(0.360)
Cash/Assets, (t-1)	0.0159***
	(0.000698)
Cash/Assets, (t-2)	0.0301***
	(1.66e-09)
Constant	-0.0559***
	(0.000)
Year Effects?	YES
Observations	7,268

Notes: Blundell-Bond (1998) linear dynamic GMM regressions. Dependent variable: "Investment/Assets," is gross investment spending relative to total assets. Independent variables are as follows: "CNI" is the corruption news index. "Exposure" is the total number of articles that mention the name of the company, per 100 articles. "Tobin's q" is the ratio of the firm's market capitalization to total assets. "Sales to Assets" is total revenue to total assets. "Log (Assets)" is the log of total assets. See text for more precise definitions. (t-1) means that the variable is lagged by one period; (t-2) means that the variable is lagged 2 periods. All regressions include year fixed effects. Robust p-values are reported in parentheses under the estimated coefficients.

Figure 2
Dynamic Effect of Corruption News on Corporate Investment



Notes: This figure traces the effect on investment (in percentage) of a 1 standard deviation shock in the corruption news index. Dashed lines represent 90 percent confidence intervals.

Table 6:
GMM Regression Results

	(1)
CNI-Chinese, (t-1)	0.157***
	(0.000)
Investment/Assets, (t)	0.000721
	(0.526)
Investment/Assets, (t-1)	0.000125
	(0.898)
Investment/Assets, (t-2)	0.00142
	(0.143)
Exposure, (t)	-4.56e-07
	(0.832)
Exposure, (t-1)	4.81e-06
	(0.203)
Exposure, (t-2)	-5.70e-06
	(0.137)
Tobin's q, (t)	0.00744
	(0.169)
Tobin's q, (t-1)	-0.0142**
	(0.0426)
Tobin's q, (t-2)	0.000594
	(0.767)
Cash Flow/Asset, (t)	0.000189
	(0.871)
Cash Flow/Asset, (t-1)	0.000337
	(0.821)
Cash Flow/Asset, (t-2)	-0.00132**
	(0.0417)
Sales/Assets, (t)	-0.000236
	(0.492)
Sales/Assets, (t-1)	-0.000251
	(0.578)
Sales/Assets, (t-2)	-5.52e-05
	(0.864)
Cash/Assets, (t)	0.000876
	(0.310)
Cash/Assets, (t-1)	0.000861
	(0.298)
Cash/Assets, (t-2)	0.000530
	(0.122)
Constant	0.000451
	(0.365)
Year Effects?	YES
Observations	7,271

Notes: Arellano-Bond GMM regressions. Dependent variable: CNI, corruption news index. Independent variables are as follows: "I/K" is gross investment spending relative to total assets. "Exposure" is the total number of articles that mention the name of the company, per 100 articles. "Tobin's q" is the ratio of the firm's market capitalization to total assets. "Sales to Assets" is total revenue to total assets. "Log (Assets)" is the log of total assets. See text for more precise definitions. (t-1) means that the variable is lagged by one period; (t-2) means that the variable is lagged 2 periods. All regressions include year fixed effects. Robust p-values are reported in parentheses under the estimated coefficients.

Table 7
Effect of Corruption Scrutiny on Corporate Bond Issuance

	(1)	(2)	(3)
CNI-Chinese, (t)	-0.0251***	-0.00194	0.00219
	(0.0000)	(0.4690)	(0.5010)
CNI-Chinese, (t-1)		-0.0899***	-0.0696***
		(0.0000)	(0.0000)
CNI-Chinese, (t-2)			-0.0785***
			(0.0000)
Exposure, (t)	0.00004***	0.00008***	0.00008***
	(0.0000)	(0.0000)	(0.0000)
Exposure, (t-1)		-0.00007***	-0.00006***
		(0.0000)	(0.0000)
Exposure, (t-2)			-0.00001***
			(0.0000)
Tobin's q, (t)	0.0605***	0.0694***	0.0775***
	(0.0000)	(0.0000)	(0.0000)
Log (Assets), (t)	0.00271***	0.00315***	0.00354***
	(0.0000)	(0.0000)	(0.0000)
Sales/Assets, (t)	-0.00113***	-0.00113***	-0.00111***
	(0.0000)	(0.0000)	(0.0000)
Cash/Assets, (t)	-0.00710***	-0.00818***	-0.00915***
	(0.0000)	(0.0000)	(0.0000)
Cash Flow/Assets, (t)	0.00573***	0.00281***	0.00262***
	(0.0000)	(0.0000)	(0.0000)
Debt/Assets, (t)	-0.00869***	-0.00941***	-0.0104***
	(0.0000)	(0.0000)	(0.0000)
Interest expense/Assets, (t)	7.435***	7.272**	8.076**
	(0.0021)	(0.0251)	(0.0141)
Constant	-0.0497***	-0.0580***	-0.0653***
	(0.0000)	(0.0000)	(0.0000)
Year Effects?	YES	YES	YES
Observations	1,736	1,736	1,699

Notes: Feasible GLS Regressions. Dependent variable: Proceeds from bond issues relative to total assets at the beginning of the period. Independent variables are as follows: "CNI-Chinese" is the corruption news index; "Exposure" is the total number of articles that mention the name of the company, per 100 articles. "Tobin's q" is the ratio of the firm's market capitalization to total assets. "Log (Assets)" is the log of total assets. "Sales/Assets" is total revenue to beginning-of-period total assets. "Cash/Assets" is total cash and short-term equivalent assets to beginning-of-period total assets. "Cash Flow/Assets" is cash flow from operations plus depreciation allowance relative to beginning-of-period total assets. "Debt/Assets" is total debt relative to beginning-of-period total assets. "Interest expense/Assets" is total interest expense relative to beginning-of-period total assets. (t) = contemporaneous; (t-1) = first lag; (t-2) = second lag. See text for more precise definitions. Regressions are estimated allowing for heteroskedasticity and panel-specific AR(1) correlation. Robust p-values are reported in parentheses under the estimated coefficients. ***p<0.01; **p<0.05; *p<0.10.

Table 8
Corruption Scrutiny and Corporate Investment: Are SOEs Different?

	(1)	(2)
CNI-Chinese, (t)	-2.346**	-1.629***
	(0.0378)	(0.000)
CNI-Chinese x SOE	1.643	1.018*
	(0.146)	(0.092)
Exposure, (t)	0.00001***	0.00003
	(0.000)	(0.304)
Tobin's q, (t)	0.283***	0.4196
	(0.000)	(0.125)
Log (Assets), (t)	0.00145***	0.003
	(0.000)	(0.194)
Sales/Assets, (t)	0.00259***	0.003
	(0.000)	(0.490)
Cash/Assets, (t)	-0.0668***	-0.053***
	(0.000)	(0.004)
Cash Flow/Assets, (t)	0.210***	0.233***
	(0.000)	(0.000)
Debt/Assets, (t)	0.0805***	0.075***
	(0.000)	(0.000)
Interest expense/Assets, (t)	6.102***	-5.898
	(0.000)	(0.391)
Constant	-0.00369	-0.038
	(0.385)	(0.385)
Year Effects	YES	YES
Observations	804	926

Notes: Column (1): Feasible GLS regression; Column (2): OLS regression. Dependent variable: "Investment/Assets", which is gross investment spending relative to beginning-of-period total assets. Independent variables are as follows: "CNI-Chinese" is the corruption news index; "SOE" is an indicator variable equal to 1 if the firm is a state-owned enterprise, 0 otherwise. "Exposure" is the total number of articles that mention the name of the company, per 100 articles. "Tobin's q" is the ratio of the firm's market capitalization to total assets. "Log (Assets)" is the log of total assets. "Sales/Assets" is total revenue to beginning-of-period total assets. "Cash/Assets" is total cash and short-term equivalent assets to beginning-of-period total assets. "Cash Flow/Assets" is cash flow from operations plus depreciation allowance relative to beginning-of-period total assets. "Debt/Assets" is total debt relative to beginning-of-period total assets. "Interest expense/Assets" is total interest expense relative to beginning-of-period total assets. (t) = contemporaneous effect. See text for more precise definitions. Regressions are estimated allowing for heteroskedasticity and panel-specific AR(1) correlation. Robust p-values are reported in parentheses under the estimated coefficients. ***p<0.01; **p<0.05; *p<0.10.

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