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Property rights protection, corporate transparency, and growth

Art Durnev[1],
Vihang Errunza[1] and
Alexander Molchanov[2]

[1]Desautels Faculty of Management, McGill University, Montreal, Canada; [2]Department of Economics and Finance, Massey University, Auckland, New Zealand

Correspondence:
V Errunza, Desautels Faculty of Management, McGill University, 1001 Sherbrooke Street West, Montreal, Quebec H3A 1G5, Canada.
Tel: +1 514 398 4056;
Fax: +1 514 398 3876;
E-mail: vihang.errunza@mcgill.ca

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Abstract
In countries with secure property rights, corporate transparency improves investment efficiency and increases growth by alleviating information asymmetry. However, in countries with insecure property rights, greater transparency can increase the risk of government expropriation. Therefore some firms that would benefit most from transparency cannot take full advantage of it, as they set sub-optimal transparency levels. Using data from 59 industries in 69 countries, we find that in countries with weak property rights protection, industries that would benefit the most from transparency exhibit worse investment efficiency and grow more slowly than industries that can efficiently operate at minimal levels of transparency.
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INTRODUCTION

Transparency is thought to play a key role in well-functioning financial markets and in the efficiency of investment decisions.[1] In transparent markets, capital is directed to profitable projects and withdrawn from unprofitable ones (Verdi, 2006; Wurgler, 2000). When insiders possess better information than outside investors, information asymmetry may result in a sub-optimal resource allocation. If the degree of asymmetry is sufficiently high, markets could even fail owing to the "lemons" problem (Akerlof, 1970).

The importance of transparency has been widely recognized by both academics and market regulators, resulting in numerous rules and regulations being introduced over time to ensure timely and reliable disclosure of financial information, creating standards to which firms must adhere.[2] At the same time, firms may choose to maintain a level of transparency higher than that required by regulatory authorities. The benefits of such actions are intuitive, and are related to reducing uncertainty surrounding the firm, which in turn could lower the cost of capital, increase liquidity, improve value estimates in corporate control contests (Healy & Palepu, 2001), reduce contracting costs associated with managerial compensation (Core, 2001), signal managerial talent (Trueman, 1986), and decrease litigation costs.

Another stream of literature argues that the benefits of greater transparency are limited to companies that operate in countries with developed capital markets, strong investor protection,

and secure property rights. The benefits come from, for example, a lower cost of external financing, more transparent contracts with suppliers, and a lower cost of information for customers. With a low risk of government interference, firms can benefit better from transparency and choose its appropriate level in order to maximize investment efficiency and growth. On the other hand, the benefits of corporate transparency are lower in markets with greater risks of government intervention: that is, when property rights are less secure (Stulz, 2005; Watts & Zimmerman, 1978, 1986). In countries with predatory governments, firms that are more transparency-dependent (for example, those that need to raise external capital in the near future) face a greater risk of government expropriation, since it is easier for governments to take profits away from more transparent firms. Therefore, in countries with insecure property rights, companies that would benefit the most from high levels of corporate transparency may choose to act opaquely, in order to mitigate the risk of governmental expropriation or lower the costs that they may face if their predatory governments choose to force them to pay economic rents. This may complicate, among other things, firms' access to external financing, and make it harder to write enforceable contracts with suppliers owing to moral hazard and adverse selection problems. Thus, when the risk of expropriation is higher, firms in greater need of transparency would allocate capital less efficiently and grow more slowly than those that can function well at minimum levels of transparency.[3]

Hence this paper examines how corporate transparency affects the efficiency of industrial investment and growth, conditional on the degree of property rights protection. We use a difference-in-difference methodology and examine within-country variation of investment efficiency and growth across industries conditional on the industry need for transparency and country degree of property rights protection. By controlling for unobserved industry and country characteristics the difference-in-difference approach reduces the problems of omitted variables. Moreover, we control for other variables that can affect transparency, capital allocation, and growth, including quality of legal environment, country economic performance, degree of financial development, and country trade openness.

The focal variable in our analysis is industry measure of transparency. We build upon a line of reasoning established in Rajan and Zingales (1998), who investigate the link between dependence on external financing and economic growth. The authors argue that the US markets can be used as a benchmark, assuming that firms' true need for external financing is observed in the US. However, using only the US data to construct the benchmark for transparency in every country is problematic, as the need for transparency for the same industry can differ across countries.[4] Moreover, depending on a country, an industry's propensity to expropriation varies. Therefore we extend the Rajan and Zingales (1998) methodology into what we call a transparency "gap" methodology. The gap measures the distance between industries' desired transparency (transparency norm) and industries' practiced transparency. The transparency norm is measured using transparency levels in developed markets, such as the US, Canada, Germany, and the UK. The practiced transparency is the observed industry transparency calculated using local market data. Intuitively, the transparency gap would be large for an opaque industry if the same industry is transparent in the US.

We construct the transparency index using four attributes: informational transparency, insider transparency, accounting transparency, and disclosure. Informational transparency measures the degree to which stock prices reflect available information. Morck, Yeung, and Yu (2000) argue that if stock returns move asynchronously with market returns, more firm-specific information is impounded in stock prices. Insider transparency is captured by a measure developed in Llorente, Michaely, Saar, and Wang (2002), which assesses the intensity of trading on private information. Accounting transparency analyzes how informed stock returns are with respect to future changes in earnings. If accounting numbers reflect appropriate information in a timely manner, current stock returns should reflect more information about future earnings (Lundholm & Myers, 2002). Finally, we use the number of disclosed items in firms' financial statements to measure the amount of disclosed information.

Our results suggest that, in countries with less secure property rights, industries with a wider transparency gap (the difference between the transparency norm and observed transparency) experience sub-optimal capital allocation and slower industry growth. This is because, under risk of government intervention, transparency-dependent industries reduce transparency disproportionately, leading to a wider gap. It is important to note that our study does not imply that corporate

transparency by itself is detrimental to a firm. In fact, high levels of transparency are beneficial to the firm for several reasons, discussed in the paper. However, a transparency-dependent firm will not be able to take advantage of transparency when property rights are weak.

Next, we consider whether a firm can mitigate the lack of transparency by adjusting other governance mechanisms. We show empirically that this is not the case. Indeed, when property rights are weak, more transparency-dependent industries do not seem to practice better governance. This indicates that industries do not find it valuable to increase other governance provisions to compensate for reduced transparency.

We consider several alternative explanations that can drive our results. First, it is possible that corporate insiders collude with the government to expropriate company resources at the expense of minority shareholders. Such expropriation requires opacity, and may result in inefficient investment decisions. Under this scenario one would expect that the impact of the need for transparency for investment efficiency (contingent on property rights protection) would be stronger when collusion was easier to achieve, for example in firms with high state ownership. We show empirically that this is generally not the case.

Second, one can argue that our results are driven by a high correlation between investor protection and property rights protection. However, we show that the results are robust when we use the part of property rights protection that is not explained by investor protection. Admittedly, the investor protection measure used may be imperfect. Nonetheless, our results remain robust to the use of other proxies. While the difference-in-difference methodology aims at reducing the omitted-variables problem, our results can still be biased because of reverse causality or errors in variables. We address these problems by instrumenting the risk of expropriation with ethnolinguistic fractionalization, proportion of Catholics, distance from equator, and settlers' mortality rates. Finally, while companies may reduce transparency to reduce their taxation burden, we show that our results are not driven by tax considerations.

Our study contributes to the existing empirical literature on property rights protection and growth in several ways. First, it adds to the literature on institutional development, property rights protection, and unofficial economy (Friedman, Johnson, Kaufmann, & Zoido-Lobaton, 2000; Johnson, Kaufmann, & Zoido-Lobaton, 1998) by showing that institutional development affects investment efficiency and growth through corporate transparency. Second, we document that the risk of government interference affects industries asymmetrically; only industries that require high levels of transparency exhibit worse investment efficiency and slower growth when property rights are weak. In other words, firms cannot fully capture the benefits of transparency when property rights are not protected. Third, it has been assumed that corporate transparency is determined largely by firms' need for external finance, as argued by Rajan and Zingales (1998), who document slower growth in industries with high dependence on external financing when the financial system is underdeveloped. By explicitly controlling for external financing needs, we show that our results surpass the previously documented external financing channel. Indeed, the effect of external financing is not greater than the effects of the other determinants of transparency. Moreover, our results remain robust when we calculate the gap between transparency norm and transparency practice by removing the need for the external financing component from the transparency gap.

Our results also go beyond those documented in Durnev and Guriev (2008), who examine how oil industries change their accounting reporting in response to the risk of government expropriation. While Durnev and Guriev (2008) focus on specific accounting choices (for example, negative accruals and assets write-off), we examine general transparency levels for all industries, and look at how the lack of property rights protection makes companies deviate from value-enhancing levels of transparency.

The results of this study show that industries that require transparency are unlikely to thrive in the environment of weak property rights. Managers must therefore monitor the political environment carefully to determine which industries are more likely to suffer from the adverse effects of political and expropriation risks. Regulators, on the other hand, must ensure sufficient levels of property rights protection when setting high corporate transparency standards within a country.

The rest of the paper is organized as follows. The next section contains background and hypotheses development. Following this, we describe the empirical methodology, the data, and the variables. The subsequent section provides empirical analysis. After this we discuss caveats and robustness issues. The final section concludes.

BACKGROUND AND HYPOTHESES

In this section, we survey the relevant literature and develop our main hypotheses.

The Role of Transparency and Transparency Dependence

Corporate transparency is critical to the functioning of financial and product markets. It is important for capital markets because it reduces the cost of capital through the reduction of information asymmetry, and it is also important for suppliers and customers, as parties become more aware of the nature of contracts they are entering into.

Financial markets' players face information asymmetry. Firms attempt to alleviate this asymmetry by providing information through regulated financial statements, footnotes, management discussion and analysis, voluntary communication, management forecasts, analysts' presentations, and intermediaries such as financial analysts and the press. All countries have some regulation in place to ensure that a certain standard of corporate transparency is upheld, yet many firms choose a level of transparency well above the minimum required level. Motives for exceeding minimum disclosure standards have been widely studied. The main motivation behind setting a higher level of transparency than the required minimum is the need for external financing. However, there are a number of other important motives. Bruno and Claessens (2007) and Durnev and Kim (2005) discuss how firm governance can serve as a substitute for governance regulations. Another research stream (e.g., DeAngelo, 1988; Warner, Watts, & Wruck, 1988) examines how managers use corporate disclosure to reduce the likelihood of undervaluation, and to justify poor earnings performance.

Transparency matters for suppliers and customers as well, because they render contracts between the parties less subject to adverse selection and moral hazard problems. A large body of literature on the subject has been developed, following the seminal works of Akerlof (1970) and Hart and Tirole (1988). Consumers and suppliers can reduce search costs and improve product price efficiency if companies are more transparent. Trueman (1986) argues that voluntary disclosure could be used by talented managers to signal their ability. Healy and Palepu (2001) point out that managers who are compensated via stock options have incentives to engage in voluntary disclosure in order to increase stock liquidity and to reduce the contracting costs associated with stock compensation for new employees.

Given a wide variety of factors that influence the desired level of corporate transparency and disclosure quality, one would expect some firms and industries to be more dependent on transparency than others. These could be firms that anticipate future market transactions, have a large share of executive compensation through stock options, or have poor earnings to explain away.

Transparency and Investment Efficiency

Recent literature indicates that transparency improves capital allocation. Wurgler (2000) measures investment efficiency as the elasticity of investment with respect to value-added, and links it to capital market development and market informativeness. Verdi (2006) explores the link between financial reporting quality and investment efficiency. The author argues that the higher quality of financial reporting can improve investment efficiency through a reduction in information asymmetry between the firm and investors (thus lowering the cost of capital), and through a similar reduction between investors and managers (thus lowering the monitoring costs for shareholders). The author claims that there are at least two determinants of investment efficiency. First, capital must be raised to finance future investments. Second, there is no guarantee that the correct investment projects will be undertaken. Therefore information asymmetry can distort investment efficiency both through the cost of capital and through project selection.

The Role of Property Rights Protection

The effect of government intervention on the quality of information, financing decisions, and governance structures has recently received considerable attention. The general notion is that companies worried about government intervention manipulate accounting numbers and disclose less information. Watts and Zimmerman (1978, 1986) put forward a positive accounting theory that studies management's motives for reducing disclosures when they are concerned with attracting implicit or explicit taxes or regulatory actions.

Durnev and Guriev (2008) explicitly analyze accounting reporting choices of oil companies around the world. The authors stipulate that in the period when oil prices are high, the risk of government intervention is greater, so firms in the oil industry reduce reported income by relying on negative accruals and writing off assets. While some of our arguments are similar to those in Durnev and

Guriev (2008), our paper is different in a number ways. First, we document that multiple industries respond asymmetrically to the risk of government interference by deviating from value-enhancing transparency levels. Second, we introduce a novel transparency-gap approach and show that when industries deviate from the optimal transparency levels, they grow more slowly and allocate capital less efficiently.

Durnev and Fauver (2008) build a theoretical model (which is confirmed by empirical observations), in which owners have reduced incentives to encourage value-maximizing behavior by managers if the probability of government expropriation is high. Whereas the authors document the governance and disclosure response, our paper documents how sub-optimal transparency (caused by risk of expropriation) affects investment efficiency and corporate growth.

A similar strand of literature, although not directly related to our research question, studies the effects of expropriation on bribery and underground economy. Rose-Ackerman (1975) analyzes situations in which politicians extract bribes from firms that seek government contracts. A number of papers examine the reasons why private businesses move "underground", and consider the effects of the presence of organized crime (Alexeev, Janeba, & Osborne, 2004), corruption (Johnson et al., 1998), and discretionary taxation policies (Friedman et al., 2000).

Investment Efficiency and Growth Implications

Our main assertion is that companies decrease transparency when the risk of government expropriation is high. Since some industries require greater transparency than others, these industries are more likely to be affected by government interference. When the risk of government intervention is present, transparency-dependent industries reduce transparency disproportionately, resulting in sub-optimal capital allocation (lower investment efficiency) and slower growth. Therefore we hypothesize that firms in countries with less secure property rights and in industries with high target levels of transparency exhibit worse investment efficiency and slower growth than firms in industries that operate well with less transparency.

Our hypothesis rests on the assumption that firms will not be able to compensate transparency reduction through other channels, such as alternative corporate governance mechanisms. While it is plausible that companies can make other governance provisions stronger, we show empirically that transparency-dependent industries do not compensate for the reduced transparency through alternative governance mechanisms.

METHODOLOGY AND DATA

Empirical Specifications and Sample

Our main analysis is based on international industry data, as some variables cannot be defined at the firm level. Our regressions are similar to those used in Rajan and Zingales (1998), with some modifications. The base regressions include the interaction terms between industry transparency measures, property rights protection, control variables, and country and industry fixed effects. Essentially, we run difference-in-difference regressions and examine whether more transparency-dependent industries have lower investment efficiency and grow more slowly in countries with less secure property rights. The advantage of this setting is that we compare industries within the same countries, thus alleviating the problems of omitted variables or reverse causality. For example, it is not very plausible that within-country industry differences in growth affect the country's level of property rights protection. With regard to omitted industry and country factors, country and industry fixed effects account for them, albeit imperfectly. Nevertheless, later in the paper we provide a battery of robustness checks to further address endogeneity concerns.

We start with a Rajan and Zingales' (1998) benchmark regression,

$$\begin{aligned}\left(INVESTMENT\_EFF_j^c \text{ or } GROWTH_j^c\right) &= \alpha_j + \delta_c \\ &+ \beta TRANS\_NORM_j \times RISK^c \\ &+ CONTROLS_j^c + \varepsilon_j^c\end{aligned} \tag{1}$$

where j indexes industries, and c indexes countries. In Eq. (1) α_j and δc are industry and country fixed effects, which control for country and industry unobserved factors, respectively. The standard errors in the above regression are clustered by country to account for the errors' correlation within countries.[5] Clustered standard errors are also robust to heteroskedasticity (Petersen, 2009).

In Eq. (1), the dependent variable is either industry investment efficiency (*INVESTMENT_EFF*) or industry growth (*GROWTH*) calculated over the time period from 2001 through to 2005. The independent variables include interaction terms of the need for transparency measures

(*TRANS_NORM*) with the risk of expropriation (*RISK*). In order to reduce endogeneity, transparency and control variables (*CONTROLS*) are measured over a preceding period, 1995–2000. After controlling for fixed effects, the coefficient of interest (β) measures the incremental increase in investment efficiency or growth, given a unit increase in the need for transparency, conditional on the risk of expropriation.[6]

Following Rajan and Zingales (1998), the need for transparency is calculated using US industry data. Relying on US data to rank industries in terms of their transparency needs suffers from multiple problems. First, this method assumes that similar industries in different countries have the same or at least a similar need for transparency. Second, the same industries in different countries may face different degrees of expropriation risk. The following example illustrates this point. Using actual numbers from our dataset, consider two industries in Russia and Zimbabwe, agriculture and petroleum. While the need for transparency (measured using US data) is higher for the agriculture industry (transparency norm=3.653) than for the petroleum industry (transparency norm=1.570), the risk of expropriation is presumably higher for the petroleum industry in Russia than in Zimbabwe. Alternatively, agriculture firms are more likely to face state extortion in Zimbabwe than in Russia. Therefore using the transparency norm based on US data would not reflect how industries react to the risk of expropriation.

We deal with the first concern (industries may have different target levels of transparency across countries) by redefining the transparency norm measure using data from other developed countries, namely Germany, Canada and the UK. To address the second concern (the same industries may have different degrees of expropriation risk across countries) we introduce a new transparency "gap" methodology. We define *transparency gap* as the difference between *transparency norm* (desired level of transparency measured using US data) and *transparency practice* (observed level of transparency calculated using local market data). Intuitively, an opaque industry in a particular country would have larger values of transparency gap if the same industry was transparent in the US. Returning to our example, if firms in the petroleum industry in Russia are more sensitive to expropriation, they are more likely to score low on practiced transparency. Therefore, while the transparency norm for the petroleum industry (based on US data) is low, for Russia the transparency gap (difference between transparency norm and practiced transparency) would be a larger number, because its observed transparency calculated using Russian data is low.[7] The transparency gap may take negative values for international industries that are more transparent than the corresponding US industries. For example, the electronics industry in India (transparency practice=2.408) is more transparent than the same industry in the US (transparency norm=2.196): therefore its transparency gap is 2.196−2.408=−0.212.

We make two predictions with respect to the transparency gap. First, we expect that industries with larger transparency gap will invest capital less efficiently and grow slower. Second, the negative impact of the transparency gap on investment efficiency is likely to be stronger in countries with greater expropriation risk. This is because, under greater risk of government intervention, transparency-dependent industries reduce transparency disproportionately, leading to a wider transparency gap. For these tests, we estimate

$$\begin{aligned}\left(INVESTMENT\_EFF_j^c \text{ or } GROWTH_j^c\right) &= \alpha_j + \delta_c \\ &+ \beta TRANS\_GAP_j^c \times RISK^c \\ &+ \gamma \times TRANS\_GAP_j^c + CONTROLS_j^c + \varepsilon_j^c\end{aligned} \tag{2}$$

where *TRANS_GAP* is the difference between transparency norm and transparency practice. We predict that coefficients on *TRANS_GAP* and interaction term *TRANS_GAP* × *RISK* will be negative: that is, $\beta < 0$ and $\gamma < 0$.

Based on the sample data on transparency, risk of expropriation, and industry growth, Figure 1 provides an illustration of our empirical set-up. We expect high-transparency gap industries to grow more slowly than low-gap industries, and the difference between the growth rates should become larger as we move from countries with low expropriation risk to countries with high expropriation risk. As shown in Figure 1, as countries' risk of expropriation increases, the difference in growth rates of industries that are less transparent than the same US industries (high-transparency-gap industries) becomes larger.

Next, we discuss the choice of control variables.

- *Interaction of industry external financing need with country financial development*: This is our main variable, which controls for the effect of external

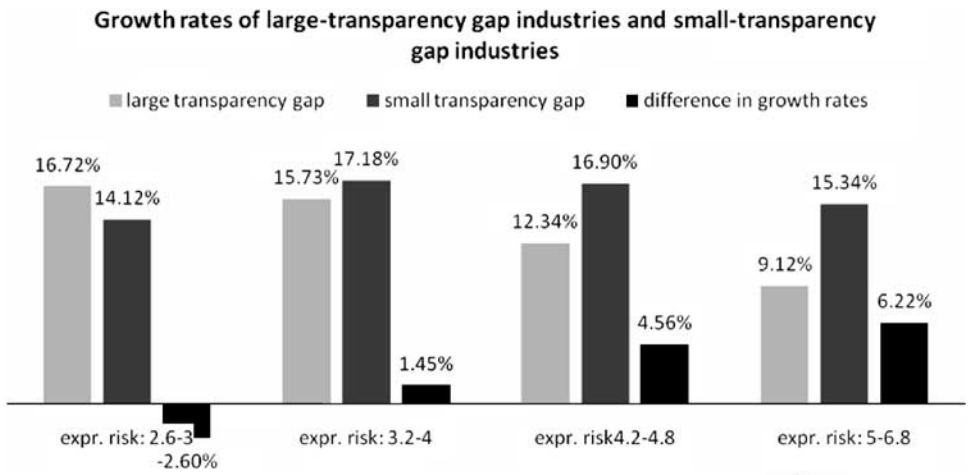

Figure 1 Differential growth rates of large-transparency-gap industries and small-transparency-gap industries. This graph plots growth rates of large-transparency-gap industries, small-transparency-gap industries, and the difference in growth rates between the two groups for different batches of countries sorted by the risk of expropriation. Countries are organized in four batches: (a) risk of expropriation is from 2.6 to 3; (b) risk of expropriation is from 3.2 to 4; (c) risk of expropriation is from 4.2 to 4.8; and (d) risk of expropriation is from 5 to 6.8. We drop countries with the number of industries fewer than 10. The remaining number of countries is 40. Large- (small-) transparency-gap industries are defined as the four top (bottom) industries according to the aggregate transparency gap measure. As the risk of expropriation increases, the difference of growth rates between the two groups of industries becomes larger.

financing (documented in Rajan and Zingales, 1998) on investment efficiency and growth.

- *Interaction of intangibles intensity with country expropriation risk*: This control is included because Claessens and Laeven (2003) show that in countries with more secure property rights, intangibles-intensive industries grow faster.
- *Interaction of industry transparency norm with GDP per capita*: We are concerned that country expropriation risk is highly (negatively) correlated with the level of economic development. Our results remain robust if we use GDP growth instead of the level of GDP.
- *Interaction of industry transparency norm with country financial development*: More transparency-dependent industries presumably have easier access to external financing in countries with more developed financial markets.
- *Interaction of industry transparency norm with trade openness*: Even under the risk of expropriation, more transparency dependent industries can tap international capital markets to raise external financing.
- *Industry fraction:* We use this control when the dependent variable is industry growth, in order to account for initial growth condition. Larger industries are expected to have lower growth rates.

Our sample comes from multiple firm and country level datasets. For the US, we use COMPUSTAT and CRSP. International firm data come from Worldscope, OSIRIS, and local stock exchanges. Our objective is to cover as many countries as possible. Worldscope contains accounting and market data for about 30,000 firms from 50 countries with active stock markets. We supplement it with newly released firm data from OSIRIS. OSIRIS covers a larger set of publicly traded companies (around 55,000) from 70 countries (see Caprio, Faccio, & McConnell, 2008, for details).[8] For some countries (e.g., Saudi Arabia, Jordan, Oman), we hand-collect firm data using information from local stock exchanges. After data cleaning, our final sample consists of 42,438 firms from 69 countries. Firm-level data are aggregated to two-digit Standard Industrial Classification (SIC) industries. The final sample consists of 59 industries from 69 countries.

Transparency Measures

The transparency norm measures are calculated using a sample of US firms in COMPUSTAT and CRSP tapes. The transparency practice measures are

based on the sample of international firms. All firm data are aggregated to two-digit SIC industries. The current transparency measures are calculated during the period 1995–2000 (note that it is lagged with respect to investment efficiency measures and growth, which relate to 2001–2005).[9] One concern is that the rankings of industries change from one period to another. Our results are robust to alternative time periods for transparency measures, namely 1990–1995 or 1990–2000. We also show that transparency is not a peculiarity of US markets by replicating transparency measures using data from other developed countries, such as the UK, Germany, and Canada. The rank order correlation between US and UK, German, or Canadian data ranges from 0.414 to 0.717 (p-value of 0.00): that is, transparent industries in the US are likely to be transparent in other developed markets.

We consider four types of transparency: informational transparency, accounting transparency, insider transparency, and direct disclosure. For informational transparency we use a measure of firm-specific information in stock prices calculated as the degree of stock price asynchronicity (Morck et al., 2000). Intuitively, if a firm's stock return is highly correlated with the market and industry factors, then the stock return is less likely to contain firm-specific information. On the other hand, if the stock return moves asynchronously with the market and industry return, it is indicative of more firm-specific information being imputed into stock prices. We construct it for every firm i in CRSP by running the following regression.

$$r_{i,t} = \alpha_i + \beta_{1,i} r_{ind,t} + \beta_{2,i} r_{m,t} + \varepsilon^c_{i,t} \qquad (3)$$

where $r_{i,t}$ is firm i's weekly return, $r_{\mathrm{ind},t}$ is a two-digit SIC industry value-weighted return, and $r_{\mathrm{m},t}$ is a market-value-weighted return.[10] The above regression is run using 1995–2000 data. *Informational transparency* is then defined as the logarithmic transformation of one minus the coefficient of determination of the above regression, $\ln[(1-R_i^2)/R_i^2]$. Low values of informational transparency mean that individual stock returns move more synchronously with industry and market indexes, reflecting less firm-specific information affecting stock prices. We take industries' medians to form industry observations.

The second measure, *accounting transparency*, is based on the idea that a firm's stock return incorporates information about future earnings (Collins, Kothari, Shanken, & Sloan, 1994; Lundholm & Myers, 2002). It is defined as the magnitude of coefficients on future changes in earnings in the regression

$$r_{i,t} = \alpha_i + b_0 \Delta E_{i,t} + \sum_{\tau=1}^{3} b_\tau \Delta E_{i,t+\tau} + \sum_{\tau=1}^{3} c_\tau r_{i,t+\tau} + u_{i,t} \qquad (4)$$

In Eq. (4) $r_{i,t}$ is firm i's annual return, and $\Delta E_{t+\tau}$ is the earnings per share change τ years ahead ($\tau = 1, 2, 3$), scaled by the price at the beginning of the current year. Future returns ($r_{i,t+\tau}$) are used to mitigate errors-in-variables problem in measuring expected returns. The above regression is run during the 1995–2000 time period. *Accounting transparency* is then the sum of the coefficients on future changes in earnings, $b_1 + b_2 + b_3$. All our results are robust if we instead use the increase in the coefficient of determination of regression (4) relative to a benchmark regression that includes only contemporaneous change in earnings. All else equal, the greater the association between current stock returns and future earnings, the more informative the current stock prices are, the result of higher accounting transparency.

The third measure, *insider transparency*, is based on stock return autocorrelation conditional on trading volume, and it reflects the degree of informational asymmetry associated with a company. Llorente et al. (2002) show that higher information asymmetry between different groups of traders is likely to result in returns being positively autocorrelated (conditional on trading volume). Insider transparency is the coefficient C_2 (multiplied by negative one) in the time-series regression

$$R_{i,t+1} = A_i + C_{1,i} R_{i,t} + C_{2,i} R_{i,t} V_{i,t} + \lambda_{i,t} \qquad (5)$$

run for each firm i with weekly returns $R_{i,t}$ and trading volume data $V_{i,t}$ from 1995 through 2000. Trading volume is calculated as de-trended volume:

$$V_{i,t} = \log\left(\frac{VOL_{i,t}}{N_{i,t}}\right) - \frac{1}{20}\sum_{j=1}^{20} \log\left(\frac{VOL_{i,t-j}}{N_{i,t-j}}\right) \qquad (6)$$

where VOL is the number of shares traded, and N is the number of shares outstanding. Similarly, industries' medians are taken to form industry observations.

Finally, we use Standard & Poor's disclosure scores as a measure of transparency. S&P conducted a survey of 1600 companies around the globe concerning firms' transparency and disclosure. These

companies constitute one of S&P's global indexes. Transparency and disclosure are evaluated by searching for the inclusion of 91 possible information items. These 91 items were selected after examining the annual reports and other accounts of leading companies around the world and identifying the most common disclosure items. The inclusion of each item is scored on a binary basis ("yes" denotes included and "no" denotes not included) to ensure objectivity. Each "yes" answer is equal to one point. These items are then grouped into three sub-categories:

- ownership structure and investor relations (22 items);
- financial transparency and information disclosure (34 items); and
- board and management structure and process (35 items).

We define an aggregate *disclosure* index as the sum of these three categories. The index ranges from 0 to 91, with a higher score representing more transparency and disclosure. The sample includes 1494 firms from 40 countries. This measure is calculated as the industry average over available years, 1997–2000.

The four financial transparency measures (informational transparency, accounting transparency, insider transparency, and disclosure) are aggregated into a single index using principal component analysis (PCA). We call this index *aggregate financial transparency*.[11] The first principal component captures 63% of the corresponding cross-sectional variance of the four variables above. Moreover, only the first eigenvalue is significantly larger than 1: thus one factor is sufficient to capture much of the common variation among the variables. The loadings for the aggregate financial transparency index (based on the PCA) are 0.68 for accounting transparency, 0.62 for informational transparency, 0.08 for insider transparency, and 0.39 for disclosure. All loadings are positive, meaning that the four proxies of transparency capture transparency, albeit that each loading captures different components.

When the above measures are calculated using US data, we call them *transparency norms*. We assume that transparency norm proxies for the desired level of transparency in an industry. When they are calculated using local data, we call them *transparency practices*. In most of the analysis we employ transparency gap measures. Transparency gaps are computed by subtracting transparency practices from transparency norms. Thus higher positive values of gaps mean that industries exhibit transparency levels lower than desired.

Our arguments rest on the assumptions that governments cannot uncover firms' accounting numbers. While it is plausible that the government can expose a part of firms' profits, it is unlikely that they can do it perfectly. Indeed, a large part of the corporate governance and earnings management literature assumes that neither investors nor regulators can perfectly reveal firms' true performance. On the other hand, if states can always find out which companies hide their profits, an equilibrium response for firms would be to always reveal performance truthfully (see Watts & Zimmerman, 1986, for a more detailed discussion).

Investment Efficiency and Industrial Growth

According to Wurgler (2000), efficient capital allocation involves an increase in investment in growing industries and a decrease in investment in declining industries. He measures investment efficiency as the elasticity of investment with respect to value-added. We define investment efficiency as the country-specific, industry-specific elasticity (Ω_j^c) of investment (measured by capital expenditures, I) with respect to firm value (Q), for which we estimate a panel regression (with firm and year fixed effects),

$$\ln\left(\frac{I_{i,t}^c}{I_{i,t-1}^c}\right) = \text{firm effects} + \text{time effects} + \Omega_j^c \ln\left(\frac{Q_{i,t}^c}{Q_{i,t-1}^c}\right) + \varphi_{i,i}^c \tag{7}$$

for every industry j and country c using all firm annual data from 2001 through 2005. Firm value is defined as market capitalization plus total assets minus book equity divided by total assets. Our results are robust if we use sales instead of firm value in Eq. (7). Holding everything else equal, larger values of Ω_j^c mean better investment efficiency. Industrial growth (*GROWTH*) is measured as the growth in real sales calculated from 2001 through 2005.

Property Rights Protection

We use two alternate variables to measure the degree to which private property is protected. The first is based on a country's assessment of

expropriation risk (*expropriation risk)*. The second measure, *political risk*, quantifies constraints imposed on major political players that would limit government interference into firms' affairs.

Expropriation risk is extracted from the International Country Risk Guide (ICRG). The variable we use is "ICRG Investment Profile", which is described as the assessment of risk of investment due to contract viability/expropriation and profits repatriation. We use this index because it is available for every country in the sample. The index ranges from 0 (high expropriation risk) to 12 (low expropriation risk). We subtract the index values from 12 so that larger numbers correspond to larger risk of expropriation. We take quarterly averages from 1995 through 2000.

None of our results change if we use other indexes. For example, we also try expropriation risk and risk of contract repudiation from earlier data in the ICRG (ICRG changed its methodology in 1995) and described in Knack and Keefer (1995).

The second measure of the risk of government interference is based on Henisz's (2002) index of political constrains (which he calls POLCON_V). POLCON_V is a comprehensive measure of political constraints within a country that aims to measure the credibility of policy commitment. First, it identifies the number of independent branches of government (executive, lower and upper legislative chambers, judiciary and sub-federal political entities) with veto power over policy change. The preferences of each of these branches and the *status quo* policy are then assumed to be independently and identically drawn from a uniform, one-dimensional policy space. This initial measure is then modified to take into account the extent of alignment across branches of government using data on the party composition of the government branches, as the alignment increases policy change probability. The measure is then modified to account for preference heterogeneity within each legislative branch, which increases decision costs of overturning policy for aligned executive branches. The original index ranges from 0 (high political risk) to 1 (low political risk). We again modify the original series by subtracting it from 1 so that larger values of the index correspond to fewer constraints, and therefore higher risk. Thus higher values of political risk correspond to governments that can easily change the "rules of the game" and deviate from property rights protection.

Other Measures

Regressions (1) and (2) use the following controls: interactions of external financing needs with financial development, intangibles intensity with expropriation risk, transparency with investor protection, transparency with GDP per capita, transparency with financial development, and transparency with trade openness. We describe their construction in this section.

- *External financing needs:* Industry median value of capital expenditures minus cash flows from operations divided by capital expenditures. This variable is constructed using COMPUSTAT.
- *Financial development:* The sum of stock market capitalization and private credit relative to GDP. This variable is constructed using the World Bank's World Development Indicators.
- *Intangibles intensity:* The ratio of R&D and advertising spending to net property, plant, and equipment. This variable is constructed using COMPUSTAT.
- *Investor protection:* First, we use the *anti-self dealing index* from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2008). This index is an aggregate measure of legal rules and private enforcement mechanisms, such as disclosure, approval, and litigation, governing a specific self-dealing transaction based on *ex ante* and ex post control of self-dealing. As a robustness check, we also include an updated *investor protection* index from Djankov et al. (2008) and a de facto measure of law enforcement, ICRG's *rule of law*. The rule of law variable is a quantitative assessment of the strength of a country's tradition of law and order.
- *GDP per capita:* Real dollar GDP per capita. This variable is constructed using the World Bank's World Development Indicators.
- *Trade openness:* Sum of exports and imports over GDP. This variable is constructed using the World Bank's World Development Indicators.
- *Industry fraction:* Ratio of industry's total assets to GDP.

For some of the tests we use the measure of earnings management (earnings quality). The measure is based on the quality of earnings reported in firms' financial statements. Following Chaney, Faccio, and Parsley (2007), we measure firm earnings management as a deviation of reported accruals from a benchmark of accounting accruals. We use a country benchmark as in Chaney et al. (2007) and

estimate a panel time-series, cross-country regression using 2000–2005 data,

$$\frac{TCA_{i,t}^{c}}{A_{i,t}^{c}} = \alpha^{c}\frac{\Delta Sales_{i,t}^{c}}{A_{i,t}^{c}} + \beta^{c}\frac{PP\&E_{i,t}^{c}}{A_{i,t}^{c}} + \sum_{j\in J} D_j + \sum_{\tau\in[2001,2005]} D_\tau + \eta_{i,t}^{c} \quad (8)$$

where Δ is the difference operator, c indexes countries, i indexes firms, and t indexes years. Total current accruals, *TCA*, are defined as *Δ(Current Assets)−Δ(Current Liabilities)−Δ(Cash)+Δ (Short-term and Current Long-term Debt);* A is total assets; *Sales* is total sales; *PP&E* is the sum of net property, plant, and equipment, and accumulated reserves for depreciation, depletion, and amortization. D_j are two-digit SIC industry fixed effects and D_τ are year fixed effects. All variables are expressed in US dollars.[12]

The *earnings management* for firm *i* in country *j* is defined as the standard deviation of the error term of the above regression calculated over 2000–2005. We assign a two-digit SIC industry code to every company, and take industry medians for industry equivalents of the firm-level measures.

RESULTS

Summary Statistics

This section describes our estimation results. Table 1 presents the descriptive statistics grouped by industry. It is important to note that two types of measures are presented in the table. "Norm" measures (accounting transparency norm, information transparency norm, insider transparency norm, disclosure norm, and aggregate transparency norm) are computed based on the sample of US firms, and represent industries' target transparency measures. Earnings quality, investment efficiency, and industry growth are computed using a sample of international firms, and represent observed numbers across all countries.

With regard to accounting transparency norm, electric, gas, and sanitary services (SIC 4900) has the lowest score (0.233), whereas printing, publishing, and allied industries (SIC 2700) have the highest score of 0.574. It also has the highest score of 4.024 in informational transparency norm (petroleum refining, SIC 2900 scores lowest in that category). The highest insider transparency norm is displayed by apparel and accessory stores (SIC 5600); the lowest is displayed by railroad transportation (SIC 4000). Apparel and other finished products (SIC 2300) have the highest disclosure norm; water transportation (SIC 4400) has the lowest. Personal services (SIC 7200) have the lowest aggregate transparency norm; printing, publishing, and allied industries (SIC 2700) have the highest one. Water transportation (SIC 4400) has the lowest earnings quality; metal mining (SIC 1000) has the highest. Railroad transportation (SIC 4000) has the worst investment efficiency, and textile mill products (SIC 2200) have the lowest growth. Building construction (SIC 1500) scores the highest in both investment efficiency and growth.

Table 2 presents descriptive statistics grouped by country. Pakistan exhibits the worst investment efficiency, and Zambia has the lowest average industry growth. Sweden has the best investment efficiency, while Ireland exhibits the highest average industry growth. Russia exhibits the worst aggregate transparency, whereas the US, the UK, and Belgium have the best. As for the overall political risk, Belgium's political risk is the lowest, while countries like Oman, Saudi Arabia, and China have high political risk.[13]

Table 3 presents correlations among various components of the transparency norm measures (based on US data). Even though not all transparency measures are significantly correlated (e.g., disclosure norm is not correlated with informational or insider transparency norms, and insider transparency norm is not correlated with the accounting one), all significant correlation coefficients are positive, which is expected.

Regression Analysis

We now turn to a description of the regression results. Table 4 presents our results for the transparency norm regressions. Industry investment efficiency (Panel A) and growth (Panel B) are regressed on aggregate transparency norm – that is, against industries' target transparency level. Specifications 1–3 use expropriation risk as a country risk measure, whereas specifications 4–6 use the overall political risk within a country. Every regression includes industry and country fixed effects. Panel A explores the impact of corporate transparency norm on industries' investment efficiency. The first specification interacts aggregate transparency norm with expropriation risk. The regression coefficient is significantly negative (at the 1% level), which is consistent with our expectations: those industries with a higher need for transparency exhibit worse capital allocation in countries with greater risk of government expropriation. The second specification uses the interaction of external financing need

Table 1 Descriptive statistics by industry

SIC code	Industry name	N_countries	Based on sample of US firms					Based on sample of international firms		
			Accounting transparency norm	Informational transparency norm	Insider transparency norm	Disclosure norm	Aggregate transparency norm	Earnings management	Investment efficiency	Industry growth (%)
100	Agricultural production: crops	34	0.389	3.353	0.260	54.000	3.653	0.203	0.242	6.30
1000	Metal mining	18	0.289	2.962	0.310	71.286	2.947	0.506	0.767	34.10
1300	Oil and gas extraction	20	0.324	2.774	0.400	71.957	2.975	0.331	0.348	3.80
1400	Mining of non-metallic minerals	54	0.421	3.245	0.600	72.500	5.072	0.201	0.201	16.40
1500	Building construction	20	0.356	2.893	0.350	62.800	2.951	0.260	0.907	65.70
1600	Heavy construction	40	0.389	2.793	0.310	63.200	3.01	0.274	0.371	1.40
2000	Food and kindred products	2	0.382	2.912	0.310	67.257	3.434	0.217	0.330	11.20
2100	Tobacco products	36	0.268	2.951	0.320	69.500	2.647	0.304	0.468	10.10
2200	Textile mill products	30	0.405	3.077	0.350	80.000	4.749	0.241	0.162	−6.70
2300	Apparel and other finished products	57	0.451	3.222	0.390	84.000	5.731	0.185	0.224	13.60
2400	Lumber and wood	45	0.510	3.130	0.360	76.500	5.603	0.322	0.487	23.20
2500	Furniture and fixtures	32	0.300	3.051	0.310	74.000	3.389	0.243	0.206	5.10
2600	Paper and allied products	46	0.240	2.383	0.230	67.955	5.664	0.292	0.381	11.60
2700	Printing, publishing, and allied industries	49	0.574	4.024	0.240	71.000	7.671	0.281	0.640	31.40
2800	Chemicals and allied products	21	0.362	2.743	0.370	68.179	3.002	0.358	0.434	7.60
2900	Petroleum refining	35	0.286	2.362	0.280	70.813	1.57	0.262	0.272	14.60
3000	Rubber and miscellaneous plastics products	20	0.340	2.849	0.270	70.625	3.078	0.219	0.271	18.20
3100	Leather and leather products	29	0.309	2.812	0.210	65.000	2.349	0.192	0.279	10.20
3200	Stone, clay, glass, and concrete	23	0.259	2.614	0.320	64.750	1.573	0.180	0.662	41.50
3300	Primary metal industries	27	0.333	2.678	0.340	63.375	2.306	0.235	0.379	24.80
3400	Fabricated metal products	30	0.342	3.075	0.400	71.100	3.735	0.262	0.230	10.50
3500	Machinery	26	0.303	2.932	0.280	67.319	2.754	0.237	0.270	20.90
3600	Electronic equipment	42	0.275	2.786	0.260	67.743	2.196	0.281	0.363	9.90
3700	Transportation equipment	31	0.281	2.883	0.370	65.372	2.431	0.255	0.171	6.30
3800	Measuring instruments	30	0.366	2.913	0.370	73.400	3.698	0.227	0.393	14.00
3900	Miscellaneous manufacturing industries	9	0.306	3.028	0.460	67.400	3.166	0.310	0.571	20.20
4000	Railroad transportation	2	0.484	3.161	0.170	70.857	4.939	0.186	0.101	6.90
4100	Local and suburban transit	17	0.410	3.308	0.380	65.000	4.476	0.327	0.284	6.10
4200	Motor freight transportation	10	0.277	2.976	0.350	58.400	2.185	0.255	0.360	3.40
4400	Water transportation	2	0.269	2.895	0.380	41.667	1.721	0.168	0.165	4.90
4700	Transportation services	3	0.358	2.975	0.350	59.857	2.980	0.233	0.487	17.50
4800	Communications	24	0.313	2.447	0.300	65.288	1.700	0.333	0.468	21.10

4900	Electric, gas, and sanitary services	2	0.233	2.719	0.320	67.819	1.743	0.223	0.110	1.80
5000	Wholesale trade: durable goods	26	0.480	2.951	0.430	66.786	4.473	0.330	0.417	3.30
5100	Wholesale trade: non-durable goods	27	0.412	2.853	0.290	70.667	3.744	0.297	0.345	19.10
5200	Building materials, hardware, garden supply	25	0.382	3.101	0.310	64.000	3.658	0.213	0.109	5.30
5300	General merchandise stores	3	0.326	2.688	0.180	67.125	2.322	0.385	0.367	15.90
5400	Food stores	23	0.447	2.762	0.300	66.546	3.634	0.293	0.496	13.20
5500	Automotive dealers and gasoline stations	32	0.402	3.291	0.460	79.000	5.234	0.325	0.356	15.40
5600	Apparel and accessory stores	2	0.330	3.240	0.650	54.000	2.571	0.273	0.342	0.90
5700	Home furniture, furnishings, and equipment	20	0.427	3.113	0.260	72.000	4.483	0.344	0.272	9.90
5800	Eating and drinking places	4	0.442	2.927	0.410	76.500	4.613	0.235	0.356	20.90
5900	Miscellaneous retail	4	0.409	3.036	0.420	77.000	4.594	0.375	0.812	38.90
6000	Depository institutions	20	0.429	2.922	0.340	71.294	4.126	0.208	0.244	1.70
6100	Non-depository credit institutions	36	0.267	2.826	0.440	73.500	2.710	0.351	0.416	2.60
6200	Security and commodity brokers	2	0.286	2.648	0.380	64.529	1.930	0.401	0.468	8.20
6400	Insurance agents, brokers, and service	18	0.507	3.323	0.390	69.667	5.637	0.290	0.158	9.10
6500	Real estate	56	0.353	2.964	0.390	62.182	3.081	0.415	0.723	24.60
6700	Holding and other investment offices	46	0.307	2.747	0.290	73.444	2.744	0.430	0.649	8.40
7000	Hotels, rooming houses	2	0.453	2.856	0.350	78.750	4.625	0.197	0.299	15.20
7200	Personal services	30	0.406	3.65	0.300	75.000	1.000	0.209	0.175	7.90
7300	Business services	16	0.285	2.843	0.400	69.170	2.623	0.330	0.586	11.50
7500	Automotive repair, services, and parking	10	0.449	3.112	0.210	80.000	5.077	0.173	0.422	19.70
7800	Motion pictures	8	0.325	3.210	0.400	64.000	3.477	0.199	0.118	3.80
7900	Amusement and recreation	6	0.402	3.420	0.400	71.400	5.027	0.244	0.566	39.00
8000	Health services	11	0.465	3.321	0.370	74.667	5.524	0.295	0.440	12.00
8200	Educational services	10	0.325	3.290	0.420	63.000	3.613	0.204	0.414	19.10
8300	Social services	9	0.331	3.091	0.460	71.000	3.725	0.195	0.308	9.70
8700	Engineering and related services	17	0.439	2.931	0.310	63.350	3.758	0.273	0.493	17.60
	Average	26.661	0.364	2.298	0.341	68.619	2.544	0.279	0.378	14.24

This table presents average industry values for transparency norm measures (accounting transparency norm, informational transparency norm, insider transparency norm, disclosure norm, and aggregate transparency norm), earnings management, investment efficiency, and industry growth. The transparency norm measures are calculated using the sample of US firms in Compustat, and the S&P transparency and disclosure study. Earnings management, industry investment efficiency, and industry growth are calculated using financial data from OSIRIS, Worldscope, and local stock exchanges for all available countries. *N*_countries stands for the number of countries for which information for a particular industry is available. The variables are defined in the text. Industries are sorted by Standard Industrial Classification (SIC) codes.

Table 2 Descriptive statistics by country

Country	*N_ind*	*Investment efficiency*	*Industry growth (%)*	*Accounting transparency practice*	*Informational transparency practice*	*Insider transparency practice*	*Disclosure practice*	*Aggregate transparency practice*	*Earnings management*	*Expropriation risk*	Political risk	Anti-self-dealing
Argentina	12	0.023	11.81	0.209	1.275	0.108	23.94	1.696	0.108	5.6	0.251	0.34
Australia	33	0.546	13.73	0.292	1.947	0.322	56.69	2.126	0.442	3.8	0.131	0.76
Austria	21	0.322	12.30	0.36	1.678	0.182	42.83	2.480	0.121	3.6	0.262	0.21
Belgium	10	0.535	9.31	0.365	1.966	0.058	50.50	3.012	0.092	3.6	0.107	0.54
Brazil	20	0.130	13.47	0.172	1.485	−0.088	24.04	1.618	0.998	6.4	0.222	0.27
Bulgaria	6	0.161	12.46	0.285	1.19	−0.052	—	1.865	0.617	3.8	0.251	0.65
Canada	60	0.614	11.90	0.379	1.973	0.252	—	2.720	0.158	4.0	0.14	0.64
Chile	18	0.959	15.25	0.213	1.963	−0.038	29.42	1.123	0.080	3.2	0.224	0.63
China	46	0.122	27.21	0.32	0.905	−0.138	41.78	2.086	0.162	4.4	1.000	0.76
Colombia	6	0.162	12.93	0.253	0.699	−0.058	15.00	0.918	0.052	7.2	0.575	0.57
Croatia	3	0.064	13.70	0.328	1.523	−0.132	—	1.923	0.617	5.5	0.489	0.25
Czech Republic	8	0.138	22.68	0.316	2.088	−0.108	—	2.888	0.134	4.0	0.249	0.33
Denmark	18	0.715	11.13	0.202	2.299	−0.058	41.53	1.819	0.119	3.8	0.228	0.46
Ecuador	4	0.211	26.31	0.18	0.777	−0.082	—	0.938	0.344	6.6	0.368	0.08
Egypt	12	0.297	18.67	0.24	1.294	−0.128	—	1.904	0.085	3.4	0.271	0.20
Finland	22	0.685	12.02	0.221	1.077	0.232	54.40	1.204	0.080	3.8	0.226	0.46
France	48	0.753	11.69	0.228	1.867	0.058	54.48	2.171	0.152	3.6	0.272	0.38
Germany	52	1.108	12.83	0.261	1.154	0.006	43.72	1.084	0.157	3.6	0.153	0.28
Greece	9	0.251	11.59	0.264	1.213	−0.058	34.75	0.372	0.173	3.6	0.402	0.22
Hong Kong	52	0.556	24.50	0.276	1.894	−0.128	39.71	2.835	0.124	4.6	0.333	0.96
Hungary	5	0.308	11.79	0.155	0.959	−0.022	—	1.007	0.085	3.4	0.243	0.18
Iceland	2	0.221	23.81	0.19	2.268	0.058	—	2.247	0.103	4.6	0.233	0.26
India	51	−0.114	16.52	0.23	1.454	−0.118	29.36	1.956	0.113	6.0	0.255	0.58
Indonesia	38	0.014	16.89	0.171	0.711	−0.058	30.02	1.013	0.198	6.0	0.881	0.65
Ireland	23	0.442	32.72	0.244	1.961	0.148	58.70	2.436	0.094	3.2	0.242	0.79
Israel	12	0.834	11.56	0.169	1.492	−0.072	—	1.409	0.105	4.8	0.223	0.73
Italy	43	0.437	10.63	0.197	1.678	0.148	45.98	1.967	0.099	4.2	0.254	0.42
Jamaica	4	−0.014	7.42	0.227	1.355	−0.132	—	1.565	0.221	4.0	0.700	0.35
Japan	60	0.773	15.79	0.354	2.101	0.218	45.36	2.030	0.069	4.6	0.239	0.50
Jordan	6	0.344	17.59	0.317	1.772	0.008	—	0.772	0.314	3.4	0.262	0.16
Korea (Rep.)	21	0.182	10.63	0.132	0.154	−0.262	34.17	0.382	0.378	5.0	0.245	0.47
Kuwait	3	0.741	22.76	0.251	0.811	−0.312	—	1.083	0.500	6.2	0.221	-
Latvia	4	0.023	9.76	0.313	0.879	−0.058	—	1.931	0.391	5.0	0.221	0.32
Lithuania	2	0.193	26.20	0.351	1.384	0.008	—	1.221	0.414	5.0	0.242	0.36
Luxembourg	4	0.608	23.33	0.270	1.602	−0.132	—	1.981	0.070	2.8	0.232	0.28
Malaysia	23	0.756	18.48	0.356	1.586	−0.058	37.6	1.388	0.152	4.8	0.325	0.95
Mexico	31	0.612	6.79	0.149	0.962	−0.322	21.9	0.612	0.974	4.4	0.621	0.17
Morocco	4	0.342	17.91	0.181	0.926	−0.002	—	1.150	0.092	4.6	0.24	0.56

The Netherlands	24	0.611	8.23	0.258	2.322	0.058	47.39	2.669	0.150	2.8	0.266	0.20
New Zealand	18	0.975	11.61	0.226	2.171	0.338	51	2.317	0.990	3.8	0.245	0.95
Nigeria	5	−0.104	1.53	0.164	0.895	−0.058	—	1.108	0.816	6.4	0.885	0.43
Norway	18	0.529	9.29	0.222	1.647	0.162	43.13	1.711	0.140	3.8	0.231	0.42
Oman	2	0.034	11.25	0.172	1.365	−0.092		1.313	0.814	5.4	1.000	—
Pakistan	14	−0.401	17.19	0.280	0.905	−0.052	29.04	1.628	0.109	6.8	0.528	0.41
Peru	6	0.145	5.67	0.325	0.881	−0.138	21.09	1.122	0.069	4.2	0.556	0.45
Philippines	20	0.130	8.24	0.350	1.120	0.008	24.7	1.192	0.299	4.8	0.306	0.22
Poland	6	0.206	12.53	0.174	1.208	−0.182	—	1.098	0.138	3.0	0.276	0.29
Portugal	17	0.319	11.05	0.284	2.144	0.098	44.71	2.734	0.099	2.8	0.253	0.44
Romania	4	0.103	11.52	0.192	0.743	0.058	—	1.152	0.392	5.0	0.25	0.44
Russian Federation	18	0.212	14.57	0.322	1.935	−0.252	33.24	0.108	0.069	6.6	0.643	0.44
Saudi Arabia	4	0.111	16.54	0.330	1.614	−0.148	—	0.237	0.429	5.0	1.000	—
Singapore	52	0.615	17.77	0.292	1.946	0.038	48.22	2.561	0.184	3.0	0.323	1.00
Slovakia	12	0.202	28.70	0.365	1.458	−0.072	—	2.486	0.309	4.4	0.229	0.29
South Africa	13	0.471	11.19	0.211	1.262	−0.032	—	1.525	0.322	4.2	0.212	0.81
Spain	31	1.188	11.39	0.312	2.314	0.058	43.99	2.967	0.083	2.8	0.252	0.37
Sri Lanka	8	0.784	7.17	0.266	0.944	−0.056	—	1.712	0.102	5.0	0.389	0.39
Sweden	26	1.434	10.70	0.337	1.562	0.348	51.74	2.910	0.172	4.4	0.235	0.33
Switzerland	20	0.918	17.92	0.352	1.718	0.108	40.15	2.815	0.087	5.4	0.118	0.27
Taiwan	21	0.736	14.89	0.299	1.767	−0.262	20.17	0.883	0.091	3.2	0.258	0.56
Thailand	16	0.232	21.94	0.210	1.945	−0.228	37.09	1.323	0.187	5.0	0.227	0.81
Tunisia	5	0.034	10.15	0.26	0.490	0.058	—	1.346	0.309	3.4	0.583	0.15
Turkey	23	0.441	21.80	0.218	0.708	−0.063	—	1.270	0.131	4.4	0.282	0.43
Ukraine	8	0.109	0.00	0.337	0.944	−0.058	—	0.823	0.675	8.0	0.231	0.08
The United Kingdom	60	0.461	11.05	0.225	1.994	0.038	58.59	3.232	0.115	2.6	0.26	0.95
The USA	60	0.617	16.32	0.364	2.298	0.340	68.66	3.554	0.122	2.6	0.148	0.65
Venezuela	6	0.091	7.33	0.280	0.895	−0.058	24.17	1.757	0.088	7.4	0.303	0.09
Vietnam	9	−0.128	23.72	0.122	0.323	−0.139	—	0.120	0.688	5.8	0.933	—
Zambia	2	−0.114	−1.80	0.233	0.800	−0.212	—	1.097	0.703	3.6	0.297	—
Zimbabwe	5	0.100	6.90	0.164	0.368	−0.156	—	0.724	0.704	7.4	0.458	0.39
Average	19.261	0.378	14.24	0.257	1.406	−0.016	39.563	1.658	0.272	4.538	0.351	0.453

This table presents descriptive statistics of variables by country. *N*_ind stands for the number of industries for which information for a particular country is available. The variables are: industry investment efficiency, industry growth, accounting transparency practice, informational transparency practice, insider transparency practice, disclosure practice, aggregate transparency practice, earnings management, expropriation risk, political risk, and anti-self-dealing index. All variables are calculated using financial data from OSIRIS, Worldscope, and local stock exchanges for all available countries. All variables are defined in the text.

Table 3 Correlation coefficients between transparency measures

	Accounting transparency norm	*Informational transparency norm*	*Insider transparency norm*	*Disclosure norm*
Informational transparency norm	**0.600** (0.00)			
Insider transparency norm	−0.0149 (0.91)	**0.214** (0.10)		
Disclosure norm	**0.348** (0.01)	0.110 (0.40)	−0.149 (0.26)	
Aggregate transparency norm	**0.895** (0.00)	**0.819** (0.00)	**0.111** (0.40)	**0.522** (0.00)

This table presents the correlation coefficients between transparency measures based on the sample of US firms. p-values are given in parentheses. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

with countries' financial development, and is significantly positive. This implies that industries with a greater need for financial development also allocate capital more efficiently in countries with better financial development. More importantly for our study, the main coefficient (that of aggregate transparency norm interacted with expropriation risk) remains significantly negative.

The third specification adds a range of control variables to the regression. The coefficient of interest, transparency norm–risk of expropriation interaction, maintains its significance. The interaction terms between aggregate transparency norm and anti-self-dealing index and with index of financial development are positive and significant, implying that more transparency-dependent industries exhibit better investment efficiency in countries with better investor protection and a more developed financial system. The interaction term between intangibles intensity and expropriation risk is insignificant, implying no substantial impact of intangibles intensity on investment efficiency. The interaction terms between aggregate transparency norm with per capita GDP and openness of the economy are also insignificant, implying that these factors do not play a substantial role in determining investment efficiency of industries with varying transparency dependence. The results for specifications 4–6 are generally consistent with the first three ones. The notable exception is that in specification 4 (without addition of control variables) the main regression coefficient becomes marginally insignificant. This could imply that direct expropriation risk is more relevant for transparency-dependent industries than the gene ral political risk.

To evaluate the economic significance of the above results we compare the investment efficiency of two industries, petroleum refining (low transparency need=1.57) and engineering (high transparency need=3.758), in two countries, Russia (high risk of expropriation=6.6) and the UK (low risk of expropriation=2.6). Based on the regression coefficient of −0.0116 (from specification 3 in Table 4), the engineering industry in the UK has lower investment efficiency than the petroleum industry, and the difference is equal to $-0.0116 \times (3.758-1.57)-2.6=-0.066$. In Russia, however, the difference is much larger and equal to $-0.0116 \times (3.758-1.57) \times 6.6=-0.168$. Thus a high-transparency-dependent industry in Russia allocates capital much worse (relative to a low-transparency industry) in Russia than in the UK.

Panel B of Table 4 presents the results for industry growth as a dependent variable. The results are largely consistent with Panel A. Industries in higher need of transparency exhibit slower growth in countries with high expropriation risk and general political risk. The notable exception is that the interaction of aggregate transparency norm with financial development is insignificant. The additional control variable – industry fraction – is negative and significant in all specifications, implying that relatively larger industries exhibit slower growth. Based on specification 3 in Table 4, the differential growth (the difference between growth rates in the petroleum industry and the engineering industry) in Russia is much larger (in absolute terms) than that in the UK. Specifically, the difference is $-0.669 \times (3.758-1.57) \times (6.6-2.6) = -5.86\%$.

Table 5 presents the results for the transparency "gap", the distance between transparency norm, and observed transparency. Specifications 1 and 2 analyze industry investment efficiency, whereas specifications 3 and 4 investigate growth.

Table 4 Industry investment efficiency, growth, and transparency norm

	Expropriation risk			*Political risk*		
	Specification 1	*Specification 2*	*Specification 3*	*Specification 4*	*Specification 5*	*Specification 6*
Panel A Industry investment efficiency						
Aggregate transparency norm × Expropriation risk or Political risk	**−0.0128**	**−0.0124**	**−0.0116**	−0.184	**−0.181**	**−0.152**
	(0.00)	(0.05)	(0.00)	(0.12)	(0.00)	(0.00)
External financing need × Financial development	—	0.0424	**0.0417**	—	**0.573**	**0.515**
		(0.00)	(0.16)		(0.10)	(0.10)
Intangibles intensity × Expropriation risk	—	—	−0.0127	—	—	−0.0115
			(0.18)			(0.24)
Aggregate transparency norm × Anti-self-dealing index	—	—	**0.0116**	—	—	**0.1080**
			(0.00)			(0.00)
Aggregate transparency norm × GDP per capita	—	—	0.00189	—	—	0.0129
			(0.36)			(0.14)
Aggregate transparency norm × Financial development	—	—	**0.0109**	—	—	**0.114**
			(0.10)			(0.05)
Aggregate transparency norm × Openness	—	—	0.0412	—	—	0.382
			(0.16)			(0.24)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.252	0.258	0.280	0.254	0.256	0.291
Number of observations	1316	1303	1298	1316	1303	1298
Panel B Industry growth						
Aggregate transparency norm × Expropriation risk or Political risk	**−0.745**	**−1.097**	**−0.669**	−2.405	**−2.402**	**−1.869**
	(0.00)	(0.00)	(0.00)	(0.14)	(0.05)	(0.01)
External financing need × Financial development	—	**0.2773**	**0.209**	—	0.623	**0.644**
		(0.10)	(0.00)		(0.14)	(0.03)
Intangibles intensity × Expropriation risk	—	—	−0.889	—	—	**−1.641**
			(0.14)			(0.10)
Aggregate transparency norm × Anti-self-dealing index	—	—	**0.864**	—	—	**1.798**
			(0.00)			(0.00)
Aggregate transparency norm × GDP per capita	—	—	**0.0440**	—	—	0.412
			(0.10)			(0.21)
Aggregate transparency norm × Financial development	—	—	0.489	—	—	0.620
			(0.24)			(0.22)
Aggregate transparency norm × Openness	—	—	−0.0488	—	—	0.0347
			(0.16)			(0.38)
Industry fraction	**−0.108**	**−0.119**	**−0.129**	**−0.418**	**−0.579**	**−0.560**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.055	0.055	0.056	0.056	0.064	0.065
Number of observations	1286	1275	1260	1286	1275	1260

This table presents the results of regressions of industry investment efficiency (Panel A) and industry growth (Panel B) on interactions of expropriation risk or political risk with aggregate transparency norm, external financing need with financial development, intangibles intensity with expropriation risk or political risk, aggregate transparency norm with anti-self-dealing index, aggregate transparency norm with GDP per capita, aggregate transparency norm with financial development, aggregate transparency norm with openness, and country and industry fixed effects. p-values are given in parentheses. Standard errors are robust to heteroskedasticity, and they are clustered by country to account for within-country error correlation. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

Table 5 Industry investment efficiency, growth, and transparency gap

	Industry investment efficiency		*Industry growth*	
	Expropriation risk	*Political risk*	*Expropriation risk*	*Political risk*
	Specification 1	*Specification 2*	*Specification 3*	*Specification 4*
Aggregate transparency gap × Expropriation risk or Political risk	**−0.0228**	**−0.104**	**−0.819**	**−1.903**
	(0.00)	(0.00)	(0.01)	(0.00)
Aggregate transparency gap	**−0.108**	**−0.114**	**−0.602**	**−0.804**
	(0.00)	(0.00)	(0.00)	(0.00)
External financing need × Financial development	**0.0366**	**0.308**	**0.313**	**0.608**
	(0.05)	(0.10)	(0.10)	(0.05)
Intangibles intensity × Expropriation risk	**−0.0098**	**−0.0153**	−0.423	**−1.139**
	(0.03)	(0.03)	(0.12)	(0.10)
Aggregate transparency norm × Anti-self-dealing index	**0.0104**	**0.0623**	**0.714**	**1.148**
	(0.00)	(0.00)	(0.00)	(0.00)
Aggregate transparency norm × GDP per capita	0.0120	0.0238	0.0392	0.105
	(0.22)	(0.16)	(0.38)	(0.41)
Aggregate transparency norm × Financial development	0.00923	0.00723	**0.209**	**0.621**
	(0.23)	(0.20)	(0.00)	(0.00)
Aggregate transparency norm × Openness	−0.00405	0.00238	−0.00483	−0.00239
	(0.16)	(0.20)	(0.18)	(0.33)
Industry fraction	—	—	**−0.114**	**−0.322**
			(0.00)	(0.00)
Industry fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
R^2	0.259	0.213	0.190	0.169
Number of observations	1298	1298	1260	1260

This table presents the results of regressions of industry investment efficiency and industry growth on interactions of expropriation risk or political risk with aggregate transparency gap, aggregate transparency gap, external financing need with financial development, intangibles intensity with expropriation risk or political risk, aggregate transparency norm with anti-self-dealing index, aggregate transparency norm with GDP per capita, aggregate transparency norm with financial development, aggregate transparency norm with openness, industry fraction, and country and industry fixed effects. Transparency gap is the difference between transparency norm and transparency practice. *p*-values are given in parentheses. Standard errors are robust to heteroskedasticity, and they are clustered by country to account for within-country error correlation. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

Specifications 1 and 2 are similar in terms of statistical significance. The regression coefficient for the interaction term between the aggregate transparency gap and expropriation or political risk is negative and significant, implying that those industries that act less transparently than their transparency norm exhibit worse investment efficiency in high-risk countries. The same is true for industry growth, as evidenced by specifications 3 and 4. The results are again economically significant. Specifically, an industry with large transparency gap in Russia, petroleum, displays worse investment efficiency than a low-transparency gap industry, engineering, by the amount of −0.185. This is a significantly larger drop (tenfold) in investment efficiency than in the UK, which is equal to −0.0173. Similarly, the differential growth rate for the Russian industries (growth rate in the petroleum industry minus the growth rate in the engineering industry) is much larger (in absolute terms). It is equal to −4%.

Aggregate transparency gap by itself is significantly negative in all specifications, implying that less transparency than the transparency norm is harmful, regardless of countries' political and expropriation risk. A number of important control variables also demonstrate statistical significance. Similar to transparency norm regressions, the interaction term between the external financing need and financial development is positive and significant in all specifications, which is consistent with more financially dependent industries growing faster in countries with more developed financial systems. The interaction term between intangibles intensity and expropriation or political risk is negative and significant (with the exception of specification 3), meaning that more intangible-intensive industries exhibit worse investment

efficiency and slower growth when expropriation or political risk is present. The significance levels of the remaining control variables are similar to those of the transparency norm regressions, with the exception that the interaction term between the transparency norm and financial development loses significance in investment efficiency regressions and becomes significant in industry growth regressions.

Table 6 presents the investment efficiency regressions for separate components of the transparency gap – accounting, informational, insider, and disclosure. When either expropriation or political risk is employed, results are largely consistent across all gap measures, with the exception for insider transparency, which has a "correct" sign but the main interaction term is insignificant. The different control variables exhibit varying levels of statistical significance, with the exception of anti-self-dealing index interaction (positive and significant across all specifications) and openness interaction (insignificant across the board). We run regressions with all four transparency components together (interacted with expropriation risk and political risk measures) in specifications 5 and 10. The results are generally similar to those when the components are used separately. When the gap is interacted with expropriation risk (specification 5), accounting transparency and informational transparency are significant, insider transparency remains insignificant, and disclosure loses its significance. However, disclosure interacted with political risk becomes significant when interacted with political risk (specification 10).

External Financing Channel

Thus far we have not considered that firms with greater need for external financing are more likely to need greater levels of transparency. Rajan and Zingales (1998) investigate the impact of financial dependence and industry growth. They document slower growth for industries that are more dependent on external financing in countries with underdeveloped financial systems. Although we already control for financial dependence, we could simply be replicating their results using an alternate method. To account for this possibility, we explicitly decompose the aggregate transparency gap into two parts: a part of transparency driven by external financing needs, and a part explained by all other factors.

First, we regress the aggregate transparency gap on the need for external financing, country by country. We collect the explained variation (related to external financing) and residuals (not related to external financing need) and use their interactions with expropriation risk and political risk as independent variables. We are primarily interested in the aggregate transparency gap not related to external financing.

In Table 7 we observe that expropriation and political risks both have a significant negative effect on investment efficiency and growth for industries with the larger transparency gap for the unexplained part. The coefficient on the explained part is also significant; however, the difference between the two coefficients is not significantly different from zero. This shows that our results go beyond those in Rajan and Zingales (1998). Large deviation from the target transparency norm could be harmful to firms, even if their transparency gap is not related to financial dependence. When we condition transparency variables on political risk, the results are similar.

Do Companies Compensate for Reduced Transparency?

Our main analysis rests on the assumption that firms cannot compensate for a reduction in transparency by improving other governance mechanisms. Previous work (e.g., Durnev & Kim, 2005) indicates that firms often balance weak investor protection with stronger internal governance. However, if industries could improve governance sufficiently to compensate for the reduced transparency, one would not observe a significant reduction in industry investment efficiency and growth as we do in this study. Nevertheless, we investigate this issue further.

We believe corporate transparency is one dimension of a multidimensional governance space. In our main tests we show that the benefits of high transparency are not fully realized in an environment of weak property rights. Therefore a similar argument regarding corporate transparency may apply to other governance provisions.[14] A number of academic studies, some anecdotal evidence, and our own direct tests provide support for these claims.

First, Stulz (2005) describes a so-called "twin-agency problem": when the threat of government intervention is high, managers have stronger incentives to take advantage of minority shareholders. In other words, it is costlier for firms to practice better governance under the threat of expropriation.[15]

Table 6 Industry investment efficiency, growth, and transparency gap components

	Expropriation risk					*Political risk*				
	Accounting transparency gap	*Informational transparency gap*	*Insider transparency gap*	*Disclosure gap*	*All components together*	*Accounting transparency gap*	*Informational transparency gap*	*Insider transparency gap*	*Disclosure gap*	*All components together*
	Specification 1	*Specification 2*	*Specification 3*	*Specification 4*	*Specification 5*	*Specification 6*	*Specification 7*	*Specification 8*	*Specification 9*	*Specification 10*
Transparency gap × Expropriation risk or Political risk	**−0.0172** (0.00)	**−0.0268** (0.05)	−0.0203 (0.22)	**−0.01033** (0.10)	—	**−0.0974** (0.10)	**−0.1062** (0.00)	−0.1033 (0.16)	**−0.100** (0.05)	—
Accounting transparency gap × Expropriation risk or Political risk	—	—	—	—	**−0.0903** (0.01)	—	—	—	—	**−0.140** (0.00)
Informational transparency gap × Expropriation risk or Political risk	—	—	—	—	**−0.028** (0.10)	—	—	—	—	**−0.0214** (0.05)
Insider transparency gap × Expropriation risk or Political risk	—	—	—	—	0.0117 (0.26)	—	—	—	—	−0.0072 (0.40)
Disclosure transparency gap × Expropriation risk or Political risk	—	—	—	—	0.0038 (0.63)	—	—	—	—	**−0.1480** (0.05)
Transparency gap	**−0.0412** (0.00)	**−0.0267** (0.00)	−0.0016 (0.20)	**−0.0093** (0.01)	**−0.0190** (0.03)	−0.023 (0.13)	**−0.111** (0.00)	**−0.093** (0.05)	−0.116 (0.17)	−0.102 (0.20)
External financing need × Financial development	**0.0426** (0.10)	**0.0295** (0.05)	0.0390 (0.16)	**0.1104** (0.09)	**0.0238** (0.10)	**0.1152** (0.10)	0.1030 (0.21)	**0.1081** (0.10)	0.1139 (0.13)	**0.1027** (0.10)
Intangibles intensity × Expropriation risk	−0.00702 (0.16)	−0.00793 (0.21)	−0.00836 (0.16)	−0.00808 (0.34)	−0.00736 (0.42)	−0.0102 (0.42)	−0.0188 (0.68)	−0.00778 (0.51)	−0.00587 (0.50)	−0.000112 (0.48)
Aggregate transparency norm × Anti-self-dealing index	**0.0514** (0.00)	**0.0603** (0.00)	**0.0645** (0.00)	**0.06282** (0.00)	**0.05327** (0.00)	**0.0630** (0.00)	**0.0609** (0.00)	**0.0655** (0.00)	**0.0690** (0.00)	**0.0492** (0.00)
Aggregate transparency norm × GDP per capita	0.0165 (0.23)	0.0116 (0.18)	**0.0218** (0.10)	0.0256 (0.14)	**0.0123** (0.10)	0.0337 (0.21)	0.0220 (0.38)	0.0246 (0.14)	**0.0251** (0.10)	0.02402 (0.17)
Aggregate transparency norm × Financial development	0.0175 (0.18)	**0.0276** (0.05)	**0.0123** (0.10)	0.0763 (0.34)	0.0353 (0.30)	0.2762 (0.12)	0.2715 (0.35)	0.2726 (0.19)	0.2778 (0.21)	0.2839 (0.20)
Aggregate transparency norm × Openness	−0.00294 (0.68)	−0.00926 (0.75)	0.00323 (0.32)	0.00102 (0.24)	0.0013 (0.28)	0.00702 (0.21)	−0.00341 (0.20)	0.00395 (0.30)	0.00747 (0.38)	0.00525 (0.40)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.254	0.256	0.251	0.304	0.337	0.252	0.257	0.250	0.299	0.314
Number of observations	1298	1313	1325	892	892	1298	1313	1325	892	892

This table presents the results of regressions of industry investment efficiency on interactions of expropriation risk or political risk with different components of transparency gap, transparency gap, external financing need with financial development, intangibles intensity with expropriation risk or political risk, aggregate transparency norm with anti-self-dealing index, aggregate transparency norm with GDP per capita, aggregate transparency norm with financial development, and country and industry fixed effects. Transparency gap is the difference between transparency norm (calculated for US industries) and transparency practice (calculated using data on non-US industries). Transparency gap components are: accounting transparency, informational transparency, insider transparency, and disclosure. Specifications 5 and 10 include all transparency gap components in one regression. p-values are given in parentheses. Standard errors are robust to heteroskedasticity, and they are clustered by country to account for within-country error correlation. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

Table 7 Industry investment efficiency, growth, and transparency gap decomposition

	Industry investment efficiency		*Industry growth*	
	Expropriation risk	*Political risk*	*Expropriation risk*	*Political risk*
	Specification 1	*Specification 2*	*Specification 3*	*Specification 4*
Aggregate transparency gap not related to external financing × Expropriation risk or Political risk	**−0.0176**	**−0.938**	**−0.387**	**−0.823**
	(0.00)	(0.00)	(0.10)	(0.00)
Aggregate transparency gap related to external financing × Expropriation risk or Political risk	**−0.0109**	**−0.0833**	−0.109	**−0.615**
	(0.03)	(0.07)	(0.15)	(0.05)
Aggregate transparency gap	**−0.0961**	**−0.111**	**−0.493**	**−0.613**
	(0.00)	(0.00)	(0.00)	(0.00)
External financing need × Financial development	**0.0310**	0.296	**0.216**	**0.701**
	(0.05)	(0.16)	(0.10)	(0.03)
Intangibles intensity × Expropriation risk	**−0.0063**	**−0.0151**	**−0.262**	**−1.292**
	(0.10)	(0.03)	(0.10)	(0.05)
Aggregate transparency norm × Anti-self-dealing index	**0.0102**	**0.0614**	**0.837**	**1.001**
	(0.00)	(0.00)	(0.00)	(0.00)
Aggregate transparency norm × GDP per capita	0.0233	**0.0217**	0.0102	0.114
	(0.19)	(0.10)	(0.66)	(0.46)
Aggregate transparency norm × Financial development	0.00938	0.00793	**0.217**	**0.614**
	(0.26)	(0.21)	(0.00)	(0.00)
Aggregate transparency norm × Openness	−0.00101	0.00129	−0.00239	−0.00123
	(0.36)	(0.25)	(0.21)	(0.54)
Industry fraction	—	—	**−0.132**	**−0.408**
			(0.00)	(0.00)
Industry fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
R^2	0.261	0.220	0.194	0.173
Number of observations	1298	1298	1260	1260

This table presents the results of regressions of industry investment efficiency and industry growth on interactions of expropriation risk or political risk with decomposed aggregate transparency gap (related to external financing need and unrelated to external financing need), aggregate transparency gap, external financing need with financial development, intangibles intensity with expropriation risk or political risk, aggregate transparency norm with anti-self-dealing index, aggregate transparency norm with GDP per capita, aggregate transparency norm with financial development, aggregate transparency norm with openness, industry fraction, and country and industry fixed effects. Aggregate transparency gap related (unrelated) to external financing needs is defined as fitted values (residuals) of the regression of aggregate transparency gap on external financing need. Transparency gap is the difference between transparency norm and transparency practice. *p*-values are given in parentheses. Standard errors are robust to heteroskedasticity, and they are clustered by country to account for within-country error correlation. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

Second, anecdotal evidence from Russia indicates that companies worsen corporate governance practices after incidences of competitors' nationalization. For example, when Yukos, a Russian oil firm, was expropriated by the Russian government, William Browder, the head of the Hermitage Capital Mutual Fund in Russia, acknowledged: "the threat of nationalization is forcing companies to go backward with their corporate governance" (*Russia Profile Magazine*, 2007: 37, quoting William Browder).

Finally, using popular data on firm governance practices, we directly test and confirm that industries that deviate most from target transparency levels do not improve governance in countries with insecure property rights. Specifically, we run regressions similar to Eq. (2) using three proxies for corporate governance: Credit Lyonnais Securities Asia (CLSA) governance scores, Institutional Shareholder Services (ISS) governance scores, and a measure of earnings management (this measure was described in Methodology and Data section). Our intention is not to show that firms necessarily scale down on their general corporate governance, but rather that governance does not improve in response to reduced transparency: that is, the

benefits of good governance are not realized in the environment of weak property rights.

The first proxy for firm governance comes from the reports issued by CLSA in 2000 and 2001. These reports assign governance scores to firms in East Asia, South Asia, Latin America, and Eastern Europe. The data represent 606 firms in 25 countries. The governance indicators are based on answers from financial analysts to 57 questions used to construct scores on a 1–100 scale, where a higher number indicates better governance. All questions have binary answers (yes/no) to reduce analysts' subjectivity. Scores on the 57 questions are grouped into five categories:

- managerial incentives and discipline towards value-maximizing actions (nine attributes);
- board independence (seven attributes);
- board accountability (eight attributes);
- enforcement and management accountability (six attributes); and
- minority shareholder protection (10 attributes).[16]

We use the composite governance index, defined as 0.15 times the sum of the six individual attributes.

The second firm governance dataset we use, *Corporate Governance Quotients*, is compiled by the ISS. This dataset is used in Aggarwal et al. (2009) and represents 2603 firms from 22 countries. The firms belong to one of the major international stock indexes: the MSCI EAFE index, the FTSE All Share index, the FTSE All World Developed index, and the S&P/TSX index. The data are available from 2003 to 2006. As in Aggarwal and Williamson (2006), we identify 44 governance attributes that are aggregated into the ISS governance index. The index assigns a value of 1 to a governance attribute if the company meets or exceeds minimum satisfactory standards in a specific category. The attributes are split into four sub-categories:

- board of directors (25 attributes related to board independence, board size, transparency, and effectiveness);
- audit (three attributes related to the independence of the audit committee);
- anti-takeover measures (six attributes related to charters and bylaws); and
- compensation and ownership (10 attributes related to options, stock ownership, and monitoring of director compensation).

Table 8 reports the results with industry averages of CLSA governance scores (specification 1), ISS governance scores (specification 2), and earnings management (specification 3) as dependent variables. The coefficient on the interaction terms of aggregate transparency gap with expropriation risk variable is negative and marginally significant for CLSA governance (at 10% level), ISS governance (at 10% level), and earnings management (at 1% level). Based on the above results, we conclude that those firms that disproportionably reduce transparency in fear of government expropriation do not compensate for this reduction by practicing better governance.

Alternative Explanations

We claim that industries that are more dependent on transparency allocate capital inefficiently because of the risk of government expropriation. However, our results would also be consistent with the managers–government collusion hypotheses. Shleifer and Vishny (1994) introduce a model where collusion occurs between managers and politicians that diverts resources away from value-maximizing strategies. In firms where there are close ties between managers and state officials, and where investors are poorly protected, top management can collude with these officials and divert company resources at the expense of minority investors. This type of diversion requires opacity, as otherwise minority shareholders would not invest in these firms.

We can formally test for this alternative explanation using firm ownership data from Worldscope and OSIRIS, which is available for two-thirds of our sample. Under the managers–government collusion hypothesis, we are more likely to observe the negative effects of reduced transparency in a sample of firms with higher state ownership. To test for this possibility, we run regression (2) for a sample of firms with high state ownership (greater than the sample median of 5%) and low state ownership (lower than the sample median). We observe similar results in terms of coefficient magnitudes and significance. Specifically, the coefficient of the interaction term of the transparency gap with risk of expropriation is negative and significant for either sample. We cannot reject the hypothesis that they are of similar magnitude.[17] However, there is some support for managers–government collusion for firms with very high state ownership (greater than 30%). That is, the coefficient on the transparency–expropriation risk interaction term is significantly larger for the subsample of industries with state ownership greater than

Table 8 Alternative governance mechanisms, earnings management, and transparency gap

	CLSA governance	*ISS governance*	*Earnings management*
	Specification 1	*Specification 2*	*Specification 3*
Aggregate transparency gap × Expropriation risk	**−0.0818**	**−0.139**	**0.117**
	(0.10)	(0.10)	(0.01)
Aggregate transparency gap	**−0.073**	**−0.011**	0.0062
	(0.00)	(0.05)	(0.40)
External financing need × Financial development	**0.160**	**0.112**	**0.159**
	(0.00)	(0.00)	(0.00)
Aggregate transparency norm × Anti-self-dealing index	**0.0921**	**0.0110**	−0.046
	(0.00)	(0.00)	(0.23)
Aggregate transparency norm × GDP per capita	0.344	0.785	0.738
	(0.33)	(0.21)	(0.18)
Aggregate transparency norm × Financial development	**0.432**	**0.331**	**0.301**
	(0.01)	(0.00)	(0.00)
Aggregate transparency norm × Openness	0.928	1.353	0.343
	(0.36)	(0.26)	(0.87)
Industry fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
R^2	0.224	0.195	0.217
Number of observations	268	633	1217

This table presents the results of regressions of industry CLSA and ISS governance scores and earnings management on interactions of expropriation risk with aggregate transparency gap, aggregate transparency gap, external financing need with financial development, aggregate transparency norm with anti-self-dealing index, aggregate transparency norm with GDP per capita, aggregate transparency norm with financial development, aggregate transparency norm with openness, and country and industry fixed effects. Transparency gap is the difference between transparency norm (calculated for US industries) and transparency practice (calculated using data on non-US industries). *p*-values are given in parentheses. Standard errors are robust to heteroskedasticity, and they are clustered by country to account for within-country error correlation. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

30%. We can conclude that, while the managers–government collusion hypothesis is plausible, it receives weak support from our data.

As mentioned in the Introduction, one may argue that if expropriation is anticipated, such expectations would depress IPO price, and shareholders would receive a fair return. However, our argument builds around expected expropriation. As an example, consider two firms operating in a country with weak property rights. Firm A has high target transparency levels, while firm B's target transparency is low. Had firm A maintained high transparency, its probability of getting expropriated would have been considerably higher than that of firm B. Therefore the IPO price of firm A would be lower than that of firm B, offering shareholders higher return to compensate for greater expropriation risk. However, one can argue that instead of maintaining high transparency (and high expropriation risk), firm A would mimic firm B, and set low transparency levels. Therefore the expected probability of expropriation (and, consequently, IPO pricing) is likely to be similar for A and B. We believe that any subsequent sub-optimal capital allocation and slower growth for firm A would be manifested through low transparency rather than through low IPO pricing.

Alternative Financing Choices

We are also interested in the implications that reduced transparency has for firms' financing choices. On one hand, we expect that as industries become less transparent they should find it more difficult to raise external financing (long-term or short-term). On the other hand, even opaque companies can switch to other forms of financing, such as trade credit. We formally test for this by running regression (2) and using three dependent variables for the types of financing used: long-term (long-term debt over total assets), short-term (short-term debt over total assets), and trade credit (accounts payable over total assets). The results of these tests are in Table 9. It turns out that industries with the largest transparency gap reduce long-term debt (specification 1). There is no evidence that

Table 9 Types of financing and transparency gap

	Long-term debt	*Short-term debt*	*Trade credit*
	Specification 1	*Specification 2*	*Specification 3*
Aggregate transparency gap × Expropriation risk	**−0.579**	−0.176	0.125
	(0.00)	(0.17)	(0.22)
Aggregate transparency gap	**−0.340**	−0.002	0.116
	(0.00)	(0.86)	(0.34)
Aggregate transparency norm × Anti-self-dealing index	**0.818**	**0.389**	**0.384**
	(0.00)	(0.00)	(0.00)
Aggregate transparency norm × GDP per capita	**0.751**	**1.185**	0.252
	(0.00)	(0.00)	(0.32)
Aggregate transparency norm × Financial development	**6.251**	**7.364**	−2.050
	(0.00)	(0.00)	(0.22)
Aggregate transparency norm × Openness	3.889	2.398	2.469
	(0.13)	(0.21)	(0.14)
Industry fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
R^2	0.203	0.255	0.222
Number of observations	1265	1107	902

This table presents the results of regressions of industry financing type (long-term debt, short-term debt, and trade credit) on interactions of expropriation risk with aggregate transparency gap, aggregate transparency gap, aggregate transparency norm with anti-self-dealing index, aggregate transparency norm with GDP per capita, aggregate transparency norm with financial development, aggregate transparency with openness, and country and industry fixed effects. Transparency gap is the difference between transparency norm (calculated for US industries) and transparency practice (calculated using data on non-US industries). *p*-values are given in parentheses. Standard errors are robust to heteroskedasticity and they are clustered by country to account for within-country error correlation. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

these industries reduce short-term debt (specification 2) or switch to alternative forms of financing, such as trade credit.

ROBUSTNESS

Addressing Endogeneity Concerns

The difference-in-difference approach in regressions (1) and (2) aims to mitigate endogeneity resulting from reverse causality and omitted country and industry characteristics. It reduces the likelihood of reverse causality since it is unlikely that not levels but differences in industry growth change country property rights protection. This approach also reduces biases due to omitted country and industry characteristics, as country and industry fixed effects control for them. Nonetheless, our results may still be biased, because property rights protection can be endogenously related to the level of economic development, and thus to investment efficiency and growth, since more economically developed countries typically have better property rights protection. Moreover, we can only measure property rights protection using noisy proxies, which creates an error-in-variables problem.

We attempt to address these issues using the instrumental variables (IV) regressions. Specifically, we use ethnolinguistic fractionalization (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1999), proportion of Catholics (La Porta et al., 1999), distance from the equator (Hall & Jones, 1999), Western European language dummy (Hall & Jones, 1999), and settlers' mortality rate (Acemoglu & Johnson, 2005) as instruments for the risk of expropriation and political risk variables. Although they are imperfect instruments, these variables are shown to determine countries' level of institutional development. At the same time, they are not likely to affect within-country differences in investment efficiency and industrial growth. The rationale for using these variables is as follows. Governments are shown to intervene more in countries with greater ethnolinguistic fractionalization or a larger proportion of Catholics or Muslims. Countries in which a substantial part of the population speaks one of the European languages (English, French, German, Portuguese, or Spanish) were more likely to establish a system of checks and balances that limit predatory policies by governments. The European influence is also stronger where people settled sparsely (further from the equator) at the beginning of the 16th century, such

as the United States, Canada, Australia, New Zealand, and Argentina. Finally, in countries with greater risks of tropical diseases, the settlers were more likely to set up weak institutions to extract rents from the native population.

We run a series of tests to show that these instruments are relevant (not weak) and can be treated as exogenous. The relevance is confirmed by regressing the predation index on all of the instruments. The *F*-test of joint significance is high enough (11.73 for the risk of expropriation and 9.14 for the political risk) to claim that the instruments are not weak. The instruments also pass Hansen's (1982) *J*-test of over-identifying restrictions. To perform the test, we first collect IV regressions residuals and then use them as dependent variables in regressions with the instruments and control variables. The independent variables turn out to be jointly insignificant, indicating their exogeneity.

The IV estimation results are presented in Table 10. It is evident that our results remain unchanged, and in some specifications become stronger. Specifically, investment efficiency is lower and growth is slower for industries with a larger transparency gap in countries with less secure property rights.

We are also concerned that our results are driven by investor protection alone, and that property rights protection is just another proxy for investor protection. Ideally, we would like to use an index of expropriation risk that would not include investor protection. While such an index is not available, we show that our results are robust when we use the part of expropriation and political risks indexes not explained by investor protection. We run a two-stage regression. In the first stage, we regress expropriation risk and political risk on anti-self-dealing index. We collect the residuals of this regression and interact them with the aggregate transparency gap. The coefficients on those interaction terms (specifications 4 and 8 of Table 10) remain negative and significant. Of course, for these tests one has to assume that country anti-self-dealing index is an unbiased measure of investor protection. Nevertheless, it is unlikely that investor protection alone drives our results, because they are robust to alternative definitions of investor protection described above in Methodology and Data (Other Measures).

Additional Robustness Checks

As an additional robustness check, we use the need for efficient contracts instead of the transparency index. The need for contracts enforcement measures the complexity of business operations, and it is based on an input–output matrix of US industries. If a production process requires multiple inputs from various suppliers, it has a high need for efficient contracts to govern relationships with suppliers. Blanchard and Kremer (1997) and Levchenko (2007) argue that the more complex the production structure, the easier it is to regulate transactions through contracts vs vertical integration and long-term relationships. We measure the need for efficient contracts by one minus the Herfindahl index of suppliers' shares in the production process. Unfortunately, this variable can be constructed only for US industries. Using it for other countries undoubtedly creates bias. In general, we obtain weaker but still significant results using this variable.

It can be argued that selective taxation and unofficial levies imposed by governments can reduce the benefits of transparency, similar to the risk of expropriation. To investigate this further, we run all regressions with two additional controls: corporate tax rate (as a measure of "fair" taxation) and corporate tax burden (as a measure of "unfair" taxation).[18] It turns out that the interaction of corporate tax with transparency is insignificant across all of the specifications. The corporate tax burden interacted with transparency is negative and significant across some specifications; nevertheless, the coefficients on the transparency property rights protection variable do not change their significance. Therefore we conclude that our results are not driven by tax considerations.[19]

The next set of robustness checks pertain to alternative definitions of main variables, different estimation periods, and financial development. None of our results change with the modifications described below.

- *Transparency norm:* We rely on the sample of other developed countries to calculate the transparency norm variable. Specifically, we use industry data from Canada, the UK, and Germany. Our results are not specific to the time period we use (1995–2000 for independent variables and 2001–2005 for dependent variables). Using 1990–1995 and 1996–2000 or 1990–2000 and 2001–2005 as time periods does not change our results.
- *Risk of expropriation:* We define risk of expropriation in multiple ways. First, we rely on expropriation risk and risk of contract repudiation from the ICRG, described in Knack and Keefer (1995).

Table 10 Addressing endogeneity concerns

	Industry investment efficiency				*Industry growth*			
	Expropriation risk	*Political risk*	*Residual expropriation risk*	*Residual expropriation risk*	*Expropriation risk*	*Political risk*	*Residual expropriation risk*	*Residual political risk*
	Specification 1	*Specification 2*	*Specification 3*	*Specification 4*	*Specification 5*	*Specification 6*	*Specification 7*	*Specification 8*
Aggregate transparency gap × Instrumented expropriation risk or Political risk	**−1.5147** (0.00)	**−1.1895** (0.05)	**−0.0233** (0.10)	**−0.0847** (0.00)	**−2.742** (0.10)	**−2.816** (0.05)	**−0.188** (0.00)	**−0.214** (0.00)
Aggregate transparency gap	**−0.234** (0.00)	**−0.492** (0.00)	**−0.0023** (0.10)	**−0.0424** (0.00)	0.112 (0.56)	**−1.233** (0.00)	**−0.0948** (0.00)	0.332 (0.43)
External financing need × Financial development	**0.0377** (0.05)	**0.121** (0.10)	**0.0502** (0.10)	0.117 (0.12)	**0.1974** (0.00)	**0.3943** (0.00)	**0.185** (0.00)	**0.305** (0.00)
Intangibles intensity × Instrumented expropriation risk	−0.623 (0.16)	−0.5041 (0.21)	**−0.0832** (0.10)	**−0.0453** (0.07)	**−0.0491** (0.00)	**−0.0452** (0.00)	**0.0354** (0.00)	**−0.0616** (0.00)
Aggregate transparency norm Anti-self-dealing index	**0.0224** (0.00)	**0.0697** (0.00)	**0.0235** (0.00)	**0.0808** (0.00)	**0.213** (0.00)	**0.256** (0.00)	**0.161** (0.00)	**0.281** (0.00)
Aggregate transparency norm × GDP per capita	0.0255 (0.18)	0.0330 (0.22)	0.0293 (0.16)	0.0384 (0.14)	0.1718 (0.18)	0.1633 (0.19)	0.111 (0.21)	0.2495 (0.20)
Aggregate transparency norm × Financial development	0.0213 (0.24)	**0.0835** (0.10)	0.0263 (0.26)	0.0769 (0.14)	0.2488 (0.18)	0.640 (0.43)	0.3273 (0.28)	0.686 (0.21)
Aggregate transparency norm × Openness	0.00524 (0.18)	0.01239 (0.21)	0.0151 (0.38)	0.00605 (0.23)	0.0693 (0.43)	0.1354 (0.14)	0.1333 (0.19)	0.0359 (0.18)
Industry fraction	—	—	—	—	**−0.304** (0.00)	**−0.283** (0.00)	**−0.219** (0.00)	**−0.321** (0.00)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.255	0.217	0.208	0.194	0.191	0.174	0.173	0.171
Number of observations	1298	1298	1262	1262	1260	1260	1241	1241

This table presents the estimates of instrumental variables regressions of industry investment efficiency and growth on interactions of instrumented expropriation risk or instrumented political risk with aggregate transparency gap, aggregate transparency gap, external financing need with financial development, intangibles intensity with expropriation risk or political risk, aggregate transparency norm with anti-self-dealing index, aggregate transparency norm with GDP per capita, aggregate transparency norm with financial development, aggregate transparency norm with openness, industry fraction, and country and industry fixed effects. Transparency gap is the difference between transparency norm and transparency practice. Expropriation risk and political risk are instrumented by ethnolinguistical fractionalization, proportion of Catholics, distance from the equator, Western European language dummy, and settlers' mortality rate. Residual expropriation risk (political risk) is represented by the residuals of regression of expropriation risk (political risk) on anti-self-dealing index. p-values are given in parentheses. Standard errors are robust to heteroskedasticity, and they are clustered by country to account for within-country error correlation. The coefficients significant at the 10% level (based on a two-tailed test) or higher are in bold face. The variables are defined in the text.

We do not use it in the main analysis because the most recent year these indexes are available for is 1994. Alternatively, we use information on property rights protection from the Economist Intelligence Unit. Finally, we follow Caprio et al. (2008) and use corruption index from the ICRG as a measure of risk of government interference.

- *Financial development:* We follow Rajan and Zingales (1998) and redefine financial development using the index of accounting information quality (CIFAR index). Alternatively, we use another index of country-wide disclosure standards and accounting quality – the opacity index constructed by PriceWaterhouseCoopers. None of the previously reported results change as a result.

Our final concern relates to country fixed effects not being able to capture country characteristics adequately. Our results are robust to the inclusion of country controls that may explain investment efficiency and industrial growth. Specifically, we substitute country fixed effects with economic development (measured as log of income per capita) and human development (log of the secondary schooling rate) variables. All previously reported results remain unchanged in terms of coefficients significance. They are not reported, to save space.

CONCLUDING REMARKS

Corporate transparency plays an important role in the development of well-functioning financial markets. Market regulators in many countries seek to set minimum standards of corporate disclosure to ensure smooth market operations. Nevertheless, many firms choose to voluntarily exceed minimum transparency standards. The existing literature offers several motives for doing so, including lower cost of capital and higher liquidity.

In this paper we show that companies cannot take full advantage of the benefits of high transparency under weak property rights protection, since transparent cash flows are at a higher risk of government expropriation. Therefore a firm that otherwise would have chosen a high level of transparency conceals some information, which results in a higher degree of information asymmetry, in turn leading to less efficient capital allocation and slower growth.

For our empirical analysis we rank industries according to their transparency gap – the distance between the desired transparency and actual transparency. We interact the transparency gap measures with indexes of property rights protection. Our main result is that the industries with the largest transparency gap exhibit worse investment efficiency and slower growth in countries with weak property rights protection. In other words, industries that disproportionately reduce their transparency in response to potential government extortion suffer the most in terms of capital allocation quality and growth opportunities. Thus, while transparency is intrinsically good, some sectors cannot rely on it. We also show that firms do not compensate for reduced transparency by improving their other governance practices. We confirm that our results are not driven by endogeneity or a specific choice of variables.

Our paper makes an important contribution to the literature by showing that the benefits of transparency are reduced for industries operating in environments with weak property rights protection. Weak property rights, low quality of contract enforcement, and risk of expropriation could result in resource misallocation and slower growth for certain economic sectors. We believe our result is of importance to managers and regulators. It shows the significance of analyzing the political environment in which firms operate before making recommendations regarding the target level of corporate transparency.

Although we do not develop new theory, our work builds on prior work in economics, finance and political science towards a unified theory of economic growth and efficient resource allocation under political corruption and insider expropriation that has eluded scholars. Indeed, the multidisciplinary nature of international business research offers an excellent opportunity for IB scholars to make important contributions where pure disciplines have not been successful. Our work represents an important building block towards such a future development. For example, one can endogenize expropriation risk and further examine the interplay between firm governance structures, politics, and property rights when country institutions are shaped by different interest groups. Moreover, while our findings apply mostly to developing countries, the policy implications are relevant for countries with developed economies as well. The alarming increase in state interference triggered by the current global crisis may reduce the benefits of transparency even in advanced economies.

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NOTES

[1]We consider transparency in a broad sense. In our view, transparency is determined by a set of market mechanisms that facilitate information acquisition and processing by investors; a market structure that enhances informational content for consumers and suppliers and makes the contract between economic parties more efficient.

[2]The Sarbanes-Oxley Act of 2002 is perhaps the most well-known recent legislation aimed at increasing transparency in financial markets. Canada, Japan, and Australia, among others, have enacted similar legislation.

[3]One may argue that if expropriation is anticipated, such an expectation would be reflected in IPO pricing, giving shareholders a fair return. However, our argument builds upon the idea that firms reduce transparency in *anticipation* of expropriation. See a more detailed discussion in the Results section under Alternative Explanations. We would like to thank an anonymous referee for pointing this out.

[4]The costs and benefits of transparency are shown to vary across industries. Admati and Pfleiderer (2000) discuss how incentives to disclose information depend on industry competitiveness. A large degree of variation in transparency has also been documented empirically by Bharath, Pasquariello, and Wu (2009).

[5]As a robustness check we confirm that the results are not changed if clustering is performed by industry or by both country and industry.

[6]We do not include the transparency norm level in regression (1) because, for the same industry, it does not vary across countries.

[7]Using actual numbers, the transparency gap for the petroleum industry in Russia is large and equal to 1.490. It is the difference between its transparency norm of 1.570 (calculated using numbers for the US petroleum industry) and the low transparency practice of 0.080 observed among Russian companies.

[8]When a firm is present in both OSIRIS and Worldscope, and there is a discrepancy in accounting numbers (less than 1% of the sample of firms), we rely on a better known dataset, Worldscope.

[9]We exclude 1998 because of the Asian financial crises, which could contaminate our measures.

[10]Industry and market indexes exclude the firm in question to avoid spurious correlation between individual returns and the indexes.

[11]PCA is a statistical method to reduce multidimensional datasets to lower dimensions. The PCA can be viewed as an orthogonal linear transformation that alters the data to a new coordinate system such that the greatest variance by any projection of the data comes to lie on the first coordinate (called the first principal component), the second greatest variance on the second coordinate, and so on. See Stevens (1986) for details.

[12]The results remain robust if we control for past performance (measured as ROA per total assets) in Eq. (8), as suggested by Ashbaugh et al. (2003).

[13]Is financial development just a proxy for the level of property rights protection? While the correlation between financial development and expropriation risk is negative (−0.43), there are some exceptions. Several countries (e.g., South Africa, Malaysia, Jordan) have well-developed financial markets but weak property rights. On the other hand, countries like Finland, Denmark, and New Zealand respect property rights but have less developed financial markets.

[14]Presumably, the cost of making governance weaker varies across different categories of governance. For example, it is easier for companies to reduce transparency than to weaken governance by firing independent directors.

[15]More specifically, on page 1614 Stulz (2005) writes: "Greater transparency and boards dominated by outside directors are often viewed as hallmarks of good governance. When there are significant risks of expropriation by the state, neither of these two good-governance attributes are likely to enhance the wealth of shareholders. While transparency increases firm value, in that it makes it harder for insiders to expropriate from investors, it also decreases firm value because it makes expropriation by the state easier".

[16]We exclude the disclosure component to concentrate on governance provisions other than transparency.

[17]These results are available from the authors upon request.

[18]The corporate tax rate is taken from Djankov et al. (2009). The corporate tax burden index is from the Economist Intelligence Unit. It is measured as the assessment of how corporate taxation impedes the development of private businesses.

[19]More specifically, the interaction of corporate tax burden has a significantly negative effect on investment efficiency in the presence of expropriation risk, and on industry growth in the presence of political risk. The main interaction effect of aggregate transparency gap remains negative and highly significant across all specifications. We do not tabulate the results, to save space; they are available from the authors upon request.

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ABOUT THE AUTHORS

Art Durnev, PhD, is Assistant Professor of Finance at the Faculty of Management at McGill University, Montreal. His research interests are focused primarily on corporate finance, governance, and financial markets development. He received a PhD in Finance from the University of Michigan Business School. He is a Russian citizen, the country of his birth. art.durnev@mcgill.ca.

Vihang Errunza holds the Bank of Montreal Chair in Finance and Banking at McGill University, Montreal. He earned his PhD from the University of California at Berkeley. His research interests include market integration, portfolio diversification, corporate finance, and risk management. He is an Indian citizen, the country of his birth. vihang.errunza@mcgill.ca.

Alexander Molchanov is a senior lecturer at the Department of Economics and Finance, Massey University, North Shore City, Auckland, New Zealand. He earned his PhD at the University of Miami (Florida). His research interests include market microstructure, international finance, and financial econometrics. He is a Russian citizen, the country of his birth. a.e.molchanov@massey.ac.nz.

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