

Is short-term debt a substitute for or complementary to good governance? ☆

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Abstract

Short-term debt can reduce potential agency conflicts between managers and shareholders by exposing managers to more frequent monitoring by the credit market. Using an international dataset, we examine whether internal monitoring can substitute for external monitoring through the use of short-term debt. We find that the relationship between debt maturity and governance depends on the institutional environment in a given country. In common-law countries and in countries with stronger investor protection rights, governance and short-term debt act as substitutes. The extent of creditor rights, state-level governance quality, cultural characteristics, and economic development levels of countries also play a role in explaining the relationship between governance and debt maturity.

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1. Introduction

One of the tools employed for managing the potential agency conflicts between managers and shareholders in firms is debt maturity. More frequent use of short-term debt in overall financing exposes managers to more frequent monitoring by the market. As short-term debt comes up for renewal, the firm and the managers are scrutinized by lenders and rating agencies before the debt of the firm is rolled over. In theory, short-term debt can be an effective mechanism for monitoring

the management as it tries to alleviate its underinvestment problem (Myers, 1977), allow creditors to effectively monitor managers with the least effort (Rajan & Winton, 1995) and facilitate efficient liquidation by transferring control rights to creditors if the manager fails to pay (Hart & Moore, 1998). Stulz (2000) and Harvey, Lins, and Roper (2004) examine capital structure in emerging markets, where agency costs are expected to be high and find that short-term debt can indeed mitigate agency problems in these markets.

More recent studies in this line of literature examine the joint role of corporate governance and debt maturity in managing agency costs. Tosun and Senbet (2020) use Sarbanes-Oxley Act of 2002 (SOX) as a natural experiment to show that the increased board independence created by SOX lead US firms to hold more long-term debt. According to the study, because independent directors already provide effective monitoring services, the boards do not have to use costly short-term debt as a monitoring mechanism to manage the agency problem. Hence, they conclude that short-term debt

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and good governance are substitute mechanisms. In contrast, using a sample of US firms, Harford, Li, and Zhao (2008) and Jiraporn and Kitsabunnarat (2007) find that firms with stronger boards and better shareholder rights hold more short-term debt, meaning that good governance and short-term debt act as complements.

Studies using data from other countries also have mixed findings on the interplay between governance quality and short-term debt. Arslan and Karan (2006) and Kim (2015) present empirical results from Turkey and Korea (respectively) that are consistent with the substitution hypothesis, while Ben-Nasr, Boubaker, and Rouatbi (2015) support the complementarity hypothesis with findings on France. The lack of consistent empirical findings from these country-specific studies may seem discouraging at first, but the diversity of country-level factors, such as macroeconomic conditions, development levels of their capital markets, or domestic firms' ease of access to debt markets, are likely to affect the degree of substitution/complementarity between governance quality and debt maturity.

In this paper, we expand the coverage of the sample and undertake related research by studying a large sample of international firms located in twenty-three different countries. Our first objective is to examine whether good governance and short-term debt are substitute/complementary mechanisms for the boards of international firms. The second goal is to document the role of country-specific factors in shaping the relation between internal governance and debt maturity. In particular, we focus on a country's institutional environment, which we proxy by its investor protection rights and legal system (common law or civil law) and examine whether these cross-country features explain the interaction between governance quality and debt maturity.

Past research suggests that leverage and debt maturity structure choices could be effective in mitigating agency conflicts (Grossman & Hart, 1982; Hart & Moore, 1995; Jensen, 1986; Stulz, 1990). Good corporate governance and independent boards are also expected to be effective in mitigating agency problems (Bhagat, Carey, & Elson, 1999; Gompers, Ishii, & Metrick, 2003; Klein, 2002; Yermack, 1996). In addition, the law and finance literature suggest that the extent to which debt contracts can be used to mitigate agency problems depends on the institutional environment, and in particular the laws surrounding creditor and investor rights and the quality of enforcement of these laws (Burkart, Panunzi, & Shleifer, 2003; Diamond, 2004; La Porta et al., 1998, 2000). Given the tradeoff between monitoring benefits and liquidity risk associated with short-term debt, we hypothesize that firms in countries with better legal protection of shareholders have less need for costly external monitoring using short-term debt. If strong investor protection reduces the discretion of insiders and allows more efficient internal monitoring, then we would expect governance and short-term debt to act as substitutes. An independent board trying to maximize shareholder value, for instance, would choose lower levels of short-term debt if the benefit from external monitoring is low.

To empirically test these hypotheses, we gather a large firm-level dataset consisting of about 5763 firms in 23 different countries. Our dataset includes a wide range of governance characteristics of these firms over the period 2003–2007, such as board characteristics, managerial and director compensation, executive stock ownership, auditing practices, and shareholder rights. Our set of variables derived from these characteristics include an overall governance index that provides a holistic view of firm-level governance quality (Aggarwal, Erel, Ferreira, & Matos, 2011; Aggarwal, Erel, Stulz, & Williamson, 2009) as well as more specific variables for measuring board quality and independence.

In the initial step of our analysis, we document a negative association between governance quality and short-term debt as a share of total debt. In particular, controlling for a large set of firm-specific factors and country- and industry-level fixed effects, the marginal effects of governance variables on short-term debt are all negative in our baseline regressions. The use of alternative governance metrics in regressions, such as board quality, board independence, and firms' broader independence, leads to similar findings. Next, we interact each of our governance variables with a variable that is likely to capture the level of investor protection in the sample countries and include them as explanatory variables for short-term debt in our regressions. Our proxies are the minority investor protection index in the World Bank's Doing Business Survey and an indicator for common-law countries. In our estimations, these interaction terms have negative and statistically significant coefficients, suggesting that good governance is negatively related to short-term debt in countries with greater investor protection. Thus, good governance and short-term debt become stronger substitutes when investor rights are stronger.

To address the potential endogeneity concerns in our empirical model, we instrument our firm-level governance variables with their country-year averages, after excluding firms' industry peers. The findings from instrumental variable (IV) models are similar to the baseline results; governance and short-term debt act as substitutes in countries with greater investor protection. We also check whether the main results are robust to alternative variable definitions, sample selection, and alternative empirical specifications.

In the final part of the paper, we investigate country-level factors other than investor protection and the legal setting that may affect the relationship between governance quality and debt maturity. In particular, we find that higher internal governance quality leads to higher levels of short-term debt in countries with better creditor rights, state-level governance quality, debt market development levels, and International Financial Reporting Standards (IFRS) accounting standards. However, better internal governance quality is associated with less short-term debt in countries characterized by a conservative, hierarchical, and individualistic culture.

Our paper contributes to the literature that examines the impact of corporate governance on debt maturity. As mentioned earlier, some of the results from the extant literature are consistent with the hypothesis that good governance

and short-term debt are substitute mechanisms for managing agency costs (Arslan & Karan, 2006; Kim, 2015; Tosun & Senbet, 2020) whereas others find the opposite (Ben-Nasr et al., 2015; Harford et al., 2008; Jiraporn & Kitsabunnarat, 2007). In contrast to these country-specific studies, our study exploits the richness of international data to investigate the role of cross-country variation in institutional characteristics that mediate the role of governance on debt maturity.¹

Our paper also complements the literature that examines the country-level determinants of debt maturity. This literature finds that the size of the banking sector, stock market development, inflation, and legal institutions (Booth, Aivazian, Demirguc-Kunt, & Maksimovic, 2001; Demirguc-Kunt & Maksimovic, 1999; Kirch & Terra, 2012) and country's legal system, corruption, and the preferences of capital suppliers (Awartani, Belkhir, Boubaker, & ; Bae & Goyal, 2009; Diamond, 2004; Fan, Titman, & Twite, 2012; Giannetti, 2003; Qian & Strahan, 2007) are important determinants of debt maturity. The common result in these studies is that firms prefer to use more long-term debt as the quality of the legal environment for investors and creditors improves.

2. Data

2.1. Sample

To construct our sample, we first obtain financial information on all the firms covered by Compustat-Global. To obtain information on governance, we match these firms to the Institutional Shareholder Services (ISS) database using international securities identification number (ISIN) and CUSIP. This dataset contains information about governance characteristics of firms in the US and other countries from 2003 to 2007.² Our final sample consists of 5763 unique firms in 23 countries, for a maximum of 20,434 firm-year observations.

Panel A in Table 1 provides a summary of the country coverage of our sample. The country in our sample that is most represented is the US (70.9% of the observations), with 4097 firms, followed by Japan (9.96%), with 471 firms, and the UK (5.56%), with 391 firms. The least-represented countries are Ireland (0.14%), New Zealand (0.20%), and Portugal (0.21%). Panel B shows the distribution of sample firms across the forty-eight industries used by Fama and French. Business services,

¹ Many papers examine the determinants of short-term debt: on firm-level determinants, see Barclay and Smith (1995), Guedes and Opler (1996), Stohs and Mauer (1996), Ozkan (2000), Scherr and Hulburt (2001), Elyasiani, Guo, and Tang (2002), Dang (2011), and Custodio, Ferreira, and Laureano (2013). Other studies examine the effect on debt maturity of managerial ownership (Datta et al., 2005), managerial compensation (Brockman, Martin, & Unlu, 2010; Tosun, 2016), the availability of Credit Default Swaps (CDS) contracts on firm bonds (Saretto & Tookes, 2013), industry competition (Erhemjamts, Raman, & Shahrur, 2010), and cash holdings (Brick & Liao, 2017).

² The ISS started providing the Corporate Governance Quotient for international companies in 2003. The country coverage of the ISS governance database dropped to only a handful after 2008, which limits its ability to provide cross-country comparisons after this date.

pharmaceutical products, and retail are the largest industries, representing 9.86 percent, 5.59 percent, and 5.47 percent of the sample, respectively (Table S4 in the Supplementary Material available online lists the full industry coverage of our sample.).

2.2. Governance measures

We closely follow Aggarwal et al. (2009, 2011) in constructing our governance and board measures for each firm-year observation. Aggarwal et al. (2009) use forty-four governance characteristics compiled by the ISS. These characteristics, shown in Table S1 (in the Supplementary Material available online), are grouped by firms' board, compensation, ownership, auditing, and antitakeover characteristics. For each governance characteristic, ISS has the minimum acceptable level for good governance. For instance, "Board is controlled by more than 50 percent independent outside directors" is one of the board characteristics on the list. If a firm meets this criterion, it receives a score of one, and zero otherwise. Each of the forty-four characteristics is assigned a value of one if the stated condition is met by the firm, and zero if the condition is not met.

We create several governance variables based on these characteristics. First, we follow Aggarwal et al. (2009) in constructing *gov44_score*, which aggregates the scores across the forty-four governance characteristics and divides it by the number of characteristics. If a firm satisfies all the minimum acceptable governance characteristics, *gov44_score* takes a value of 1. Second, we create an index that specifically targets board quality. *Board_score* consists of the twenty-five characteristics related to the board, such as board independence, size, board member election policies, the role of shareholders in selecting board members, and CEO chairman duality. Third, we capture the quality of board independence by focusing on the four characteristics for board independence (characteristics 3, 7, 9, 36 in Appendix S3). *indp_score* is the average of the scores of these four characteristics. To capture independence in greater detail, we use ISS's individual comprehensive scores for each of the forty-four characteristics. As shown in Appendix S3 (in the Supplementary Material available online), boards receive a score from one to six, in which one corresponds to control of the board by insiders and six corresponds to the control of the board primarily by outsiders. The variable *cgq_board* adopts this measurement scale. Overall, the four variables are designed to cover a wide range of firm governance quality, from the broadest (*gov44_score*) to the narrowest (*cgq_board*).

2.3. Institutional environment

Our first country-level governance measure is investor protection (*investor*). This variable measures the extent of minority shareholder protection against expropriation by the controlling shareholders. It ranges from zero to 100, in which higher values imply better protection of minority shareholders. We use the variable *strength of minority investor protection* from the World Bank Doing Business Surveys to

Table 1

Country and Industry Coverage. This table presents the distribution of observations and unique firms across countries and industries. Panel A presents the country coverage, and Panel B shows the 20 largest industries ordered by the percentage of observations. Industry definitions use Fama-French's 48 industry classifications.

Panel A: Country Coverage

Countries	# of Observations	% of Observations	# of Unique Firms	% of Unique Firms
Australia	302	1.48	89	1.54
Austria	67	0.33	16	0.28
Belgium	67	0.33	19	0.33
Canada	406	1.99	124	2.15
Denmark	74	0.36	21	0.36
Finland	105	0.51	28	0.49
France	301	1.47	77	1.34
Germany	266	1.30	74	1.28
Greece	70	0.34	27	0.47
Hong Kong	111	0.54	34	0.59
Ireland	29	0.14	7	0.12
Italy	92	0.45	42	0.73
Japan	2035	9.96	471	8.17
Netherlands	157	0.77	43	0.75
New Zealand	41	0.20	14	0.24
Norway	73	0.36	19	0.33
Portugal	43	0.21	12	0.21
Singapore	152	0.74	36	0.63
Spain	86	0.42	37	0.64
Sweden	140	0.69	36	0.63
Switzerland	187	0.92	49	0.86
United Kingdom	1136	5.56	391	6.79
United States	14,494	70.93	4097	71.09
Total	20,434	100.00	5763	100.00

Panel B: Industry Coverage (Largest 20)

Business services	2015	9.86	674	11.13
Pharmaceutical products	1142	5.59	363	5.99
Retail	1118	5.47	318	5.25
Electronic equipment	1042	5.1	319	5.27
Machinery	847	4.15	235	3.88
Communication	773	3.78	234	3.86
Transportation	770	3.77	220	3.63
Wholesale	769	3.76	234	3.86
Petroleum & nat. Gas	755	3.69	225	3.71
Utilities	748	3.66	178	2.94
Computers	646	3.16	218	3.6
Chemicals	644	3.15	165	2.72
Medical equipment	550	2.69	187	3.08
Insurance	496	2.43	140	2.31
Finance-trading	489	2.39	159	2.62
Construction	470	2.3	131	2.16
Construction mat.	466	2.28	131	2.16
Restaurants & hotels	460	2.25	135	2.23
Food products	457	2.24	122	2.01
Steel works, etc.	410	2.01	115	1.9

construct this measure.³ The survey for this measure begins in 2006 and provides data for the final two years of our sample period. The investor protection values are highly persistent over time at the country level, thus, we use the value in 2006/2007 to backfill the missing values before 2006

³ The data for constructing this variable come from surveys administered to corporate and securities lawyers about the extent of investor protection in a country. Further details on constructing the *investor* variable are available at: <https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB19-Chapters/DB2019-Data-Notes.pdf>.

for each country. Filling in the missing values with the most available data does not create a significant bias in our analysis, as our identification comes from the cross-country variation in investor protection.

Our second variable is for the legal environment. We use a dummy variable (*common law*), which takes a value of one for common-law countries (US, UK, Australia, New Zealand, Canada, Hong Kong, Ireland, and Singapore) and zero for civil-law countries. This variable comes from Djankov, McLiesh, and Shleifer (2007) and is similar to the one described in La Porta et al. (1998).

2.4. Short-term debt, leverage, and control variables

We use Compustat-Global to measure short-term debt and to construct the control variables. *std* is defined as the ratio of debt due in less than one year divided by total debt. Total debt is the sum of debt due in less than one year (Compustat item “dlc”) and long-term debt (Compustat item “dltt”). We delete observations for which the ratio is not between zero and one. We define leverage as the ratio of total debt to total assets (Compustat item “at”).

When examining the relationship between short-term debt and governance, we use a set of firm-specific control variables that have previously been found to affect leverage and debt maturity (Barclay, Marx, & Smith, 2003; Barclay & Smith, 1995; Datta, Iskandar-Datta, & Raman, 2005; Denis & Sibilkov, 2009; Fan et al., 2012; Guedes & Opler, 1996; Harford et al., 2008; Opler, Pinkowitz, Stulz, & Williamson, 1999; Stohs & Mauer, 1996). Our first control variable is *size*, which is the natural logarithm of total assets. Larger firms are able to access long-term debt because they tend to have lower issuance costs, lower information asymmetry, and better credit quality. Second, asset tangibility (*asset_tangibility*) is

measured as the ratio of net property, plant, and equipment (Compustat item “ppent”) to total assets. When asset tangibility is higher, creditors are more willing to bear the risk because these assets act as collateral and are more valuable in case of liquidation. Third, profitability, measured by the return on assets (*roa*), is calculated as the ratio of net income (Compustat item “ni”) to total assets. We expect profitable firms to have easier access to long-term debt, leading to a negative marginal effect of profitability on short-term debt. Fourth, the market-to-book ratio (*mb*) is calculated as the ratio of the market value of assets to the book value of assets. Myers (1977) argues that high-growth firms may reduce agency costs by holding more short-term debt, hence, the predicted marginal effect of *mb* is positive. Fifth, cash holdings (*cash*) means the ratio of cash and short-term investment (Compustat item “che”) to total assets. Cash-rich firms are likely to receive attractive credit terms from lenders and thus can obtain more long-term debt compared with short-term debt (Brick & Liao, 2017). Finally, the cost of debt (*costofdebt*) is defined as the ratio of total interest expense (Compustat item “xint”) to total debt. Firms that can borrow at low rates from the debt market might prefer to use long-term financing. Definitions of the

Table 2

Descriptive Statistics. This table provides a summary of the variables used in the analysis, including the number of observations, mean values, standard deviations, minimums, maximums, 25th percentiles, medians, and 75th percentile values. The definitions of the variables are in Table S2 in the Supplementary Material, available online. We winsorize all variables except for the governance and dummy variables at the 1% level.

Panel A. Dependent variables								
	Obs.	Mean	Std. Dev.	Min.	25th perc.	Median	75th perc.	Max.
<i>std</i>	20,434	0.30	0.32	0.00	0.03	0.18	0.48	1.00
<i>std_alt</i>	18,294	0.14	0.27	0.00	0.00	0.00	0.13	1.00
Panel B. Governance variables								
<i>gov44_score</i>	20,434	0.61	0.10	0.30	0.54	0.61	0.68	0.95
<i>board_score</i>	20,434	0.56	0.13	0.20	0.45	0.56	0.67	0.92
<i>indp_score</i>	20,434	3.88	1.19	1.00	3.25	4.25	4.75	5.25
<i>cgq_board</i>	19,899	3.60	1.42	2.00	2.00	3.00	5.00	6.00
Panel C. Firm-level controls								
<i>leverage</i>	20,434	0.28	0.26	0.00	0.10	0.23	0.38	1.60
<i>size</i>	20,434	6.49	2.32	0.69	4.92	6.69	8.11	11.52
<i>asset_tangibility</i>	20,434	0.28	0.23	0.00	0.09	0.22	0.42	0.89
<i>roa</i>	20,434	−0.04	0.30	−1.97	−0.02	0.03	0.06	0.27
<i>mb</i>	20,434	1.92	1.57	0.67	1.12	1.43	2.06	11.53
<i>cash</i>	20,434	0.14	0.17	0.00	0.03	0.08	0.19	0.84
<i>costofdebt</i>	20,434	0.12	0.28	0.00	0.04	0.06	0.09	2.31
Panel D. Other variables								
<i>investor</i>	23	63.77	19.16	30.00	53.33	60.00	83.33	96.67
<i>common law</i>	23	0.35	0.49	0.00	0.00	0.00	1.00	1.00
<i>creditor</i>	23	2.17	1.19	0.00	1.00	2.00	3.00	4.00
<i>embeddedness</i>	23	3.37	0.22	3.10	3.19	3.34	3.46	4.00
<i>hierarchy</i>	23	2.06	0.38	1.49	1.82	1.91	2.29	2.91
<i>mastery</i>	23	3.94	0.14	3.66	3.84	3.93	4.06	4.25
<i>db_dev</i>	115	114.3	29.1	55.7	92.1	117.1	136.9	158.2
<i>eq_dev</i>	115	97.0	57.7	41.7	51.2	83.0	117.8	249.2
<i>wgi_fpc</i>	115	0.22	3.75	−10.5	−1.32	1.19	2.65	5.78
<i>ifrs</i>	115	0.40	0.49	0.00	0.00	0.00	1.00	1.00
<i>gov38_score</i>	20,434	0.61	0.12	0.24	0.52	0.61	0.70	0.95
<i>cgq_comm_n</i>	20,434	3.45	1.76	1.00	1.00	4.00	5.00	5.00
<i>cgq_comm_c</i>	20,434	4.07	1.47	1.00	4.00	5.00	5.00	5.00
<i>cgq_comm_a</i>	20,434	4.44	1.02	1.00	4.00	5.00	5.00	5.00

variables discussed in this section are in Appendix Table S2 in the Supplementary Materials available online.⁴

The descriptive statistics of the variables are listed in Table 2. To provide a consistent benchmark for the regressions, we report the summary statistics of the sample, in which *std*, *gov44_score*, and the control variables in the regressions jointly have nonmissing values. We also winsorize all the variables, except for the governance variables, at their first and ninety-ninth percentiles, to mitigate the effects of outliers on our results.

As Panel A in Table 2 shows, the share of short-term debt in overall debt has a mean value of 30 percent for our sample firms. Panel B in Table 2 provides information on the distribution of governance variables. *gov44_score* has a minimum value of 30 percent and a maximum value of 95 percent. Its mean value in our sample is 61 percent, meaning that an average firm satisfies 61 percent of the minimum governance characteristics listed in Table S1 in the Supplementary Materials available online. The variable *board_score* has a mean value of 56 percent, meaning that an average firm satisfies about half the minimum governance criteria related to boards. The range of *indp_score* shows that some sample firms receive the minimum score of one for each of the four independence-related characteristics whereas some firms receive full scores on these characteristics. Thus, our sample consists of a rich set of firms in terms of their approach to implementing independent governance.

3. Empirical results

3.1. Baseline relationship between governance and debt maturity

We begin by examining the relation between short-term debt and governance by running the following empirical model:

$$std_{it} = \beta_0 \times gov_{it} + \Omega \times controls_{i,t-1} + \lambda + \theta + \varepsilon_{it} \quad (1)$$

where *std_{it}* is firm *i*'s short-term debt in year *t*. The firm-level control variables are *leverage*, *size*, *asset_tangibility*, *roa*, *mb*, *cash*, and *costofdebt*. These control variables are lagged one year to reduce potential endogeneity concerns. *gov* represents the various governance and board measures that we use in the analyses. We use four alternative firm-level governance and board measures, which are explained in the previous section. We include country x year and industry x year fixed effects to control for time-varying global macro factors and industry shocks that may affect firms in different countries. λ and θ represent country x year and industry x year fixed effects, respectively.⁵ To address the possibility that firms located in

the same country may have correlated standard errors in Eq. (1), we cluster standard errors at the country-year level (Beck, De Jonghe, & Schepens, 2013).

Debt maturity and leverage can be jointly determined and thus are both endogenous variables in Eq. (1). For instance, Barclay et al. (2003) discuss the joint determination of leverage and maturity. To address this issue, we use a two-stage least squares (2SLS) approach and instrument leverage with lagged short-term debt, as in Tosun and Senbet (2020). Then, we use the predicted leverage in our regressions for short-term debt. Table S5 in the Supplementary Material available online shows the first-stage regressions in which lagged short-term debt is used to predict leverage.⁶

Table 3 presents the results of the second-stage regressions, as specified in Eq. (1). Each column corresponds to the empirical model using one of the four governance variables, as specified in the top section of the table. The coefficients of the governance variables are negative and statistically significant at the 1 percent level in all regressions, meaning that short-term debt and firm-level governance are substitutes in our international dataset. Controlling for the firm-level factors that may drive short-term debt, the results indicate that better-governed firms tend to favor long-term financing over short-term debt. The magnitudes of these coefficients indicate that the marginal effect of governance on debt maturity is economically significant as well. For instance, in column (1), a one-standard-deviation increase in *gov44_score*, a change of ten percentage points, leads to a 11.4-percentage-point decrease in the share of short-term debt in overall debt. The marginal effect of *board_score*, which uses board characteristics only, is also economically large, at 7.88 percentage points (p.p.) for the same ten-percentage-point increase.

The coefficient of *indp_score* in column (3) is -0.135 , suggesting that a one-standard-deviation increase in the independence score (i.e., a change of 1.19) leads to a $-0.135 \times 1.19 = 16$ p.p. drop in short-term debt. This finding is similar to that in Tosun and Senbet (2020), in which large increases in board independence following the Sarbanes-Oxley Act of 2002 leads to a 21 percent decline in the use of short-term debt. In column (4), a one-standard-deviation increase in *cgq_board* leads to a $1.42 \times 0.048 = 6.8$ p.p. decrease in short-term debt. Among the firm-level control variables, we find that *asset_tangibility* and *mb* have positive and statistically significant coefficients whereas *roa*, *cash*, and *costofdebt* have negative coefficients.

We perform endogeneity tests to understand whether the results of 2SLS regressions differ from those of the ordinary

⁴ For a detailed discussion of these control variables, see Rajan and Zingales (1995), Datta et al. (2005), and Fan et al. (2012).

⁵ Extant literature identifies several country-level determinants of short-term debt, such as GDP growth, inflation, size of the banking industry, and stock and bond market development levels (Demirguc-Kunt & Maksimovic, 1999; Fan et al., 2012). Country x year fixed effects in our regressions control for the effects of these factors on short-term debt.

⁶ In line with extant research, the regression results in Table S5 (available online) show that lagged short-term debt, the return on assets, cash holdings, and the cost of debt have significant and negative effects on firm leverage, while firm size, asset tangibility, and Market-to-Book have positive effects. The Sanderson-Windmeijer (SW) *F*-statistic is a test for weak identification of the endogenous regressor. The *F*-statistics from the four regressions have low *p*-values that lead to rejection of the null hypothesis (i.e., lagged short-term debt is weakly identified) at the 1% statistical significance level.

Table 3

Effect of Governance on Short-Term Debt. This table presents the second-stage regressions of the 2SLS procedure designed to examine the marginal effect of governance on short-term debt. The dependent variable in all regressions is short-term debt (*std*). Leverage is instrumented by lagged short-term debt. The predicted value of leverage is used in the regressions. The first step of this 2SLS model is reported in Table S5 of the Supplementary Material available online. Each column reports the results for a different governance measure. The definitions of the variables are in Table S2 of the Supplementary Material available online. We winsorize all variables except the governance and dummy variables at the 1% level. We use one-year lagged values of firm control variables. All specifications include country-year and industry-year fixed effects. The z-values from 2SLS approach are reported in parentheses. Robust standard errors are estimated by clustering standard errors at the country-year level.***, **, and* indicate significance at 1%, 5%, and 10% levels, respectively.

	<i>gov44_score</i>	<i>board_score</i>	<i>indp_score</i>	<i>cgq_board</i>
<i>gov</i>	-1.145*** (-12.875)	-0.788*** (-12.747)	-0.135*** (-10.015)	-0.048*** (-9.156)
<i>leverage</i>	-4.534*** (-30.810)	-4.512*** (-30.150)	-4.475*** (-30.413)	-4.518*** (-30.613)
<i>size</i>	0.004 (0.630)	0.006 (0.945)	0.009* (1.885)	-0.006 (-0.968)
<i>asset_tangibility</i>	0.235*** (3.964)	0.231*** (3.921)	0.231*** (3.970)	0.226*** (3.888)
<i>roa</i>	-1.299*** (-9.262)	-1.292*** (-9.300)	-1.279*** (-9.408)	-1.299*** (-9.261)
<i>mb</i>	0.093*** (5.438)	0.091*** (5.293)	0.088*** (5.219)	0.090*** (5.177)
<i>cash</i>	-1.314*** (-18.668)	-1.289*** (-18.015)	-1.242*** (-17.227)	-1.282*** (-17.581)
<i>costofdebt</i>	-0.620*** (-23.734)	-0.616*** (-23.895)	-0.609*** (-23.284)	-0.629*** (-24.627)
Constant	2.095*** (33.182)	1.810*** (31.648)	1.903*** (26.218)	1.594*** (33.455)
Observations	20,434	20,434	20,434	19,899
Country x Year FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Endogeneity tests for <i>leverage</i>				
Chi-square statistic	8.896	8.905	8.916	8.547
p-value	0.003	0.003	0.003	0.004

least squares (OLS) regressions. The null hypothesis states that the OLS estimates of Eq. (1) are consistent, and the endogeneity of leverage does not have a statistically meaningful effect on estimations. We estimate the heteroskedasticity-robust version of the Durbin-Wu-Hausman test, which is distributed chi-square under the null. As the bottom rows in Table 3 show, the null hypothesis is rejected at the 1 percent level for all four regressions. Thus, the endogeneity of leverage has detrimental effects on our results, thus, the 2SLS model should be employed in investigating the marginal effect of internal governance on short-term debt.

3.2. Effect of institutional environment on short-term debt and governance relation

In this section, we examine whether differences in the institutional environment can affect the effect of governance on debt maturity. We expect that firms with better governance need not choose short-term debt over long-term debt in countries with high investor protection. A better-governed

firm's board does not need to impose external costly monitoring by creditors because the shareholders are already protected by the institutional environment, and better internal governance can directly substitute for costlier external monitoring by creditors. In addition, because common-law countries tend to have better creditor rights and investor protection than civil-law countries (Djankov, La Porta, Lopez de Silanes, & Shleifer, 2008; La Porta et al., 1998), we do not expect the firms in common-law countries to rely on short-term debt to increase the level of external monitoring unlike firms in civil-law countries.

To test these hypotheses, we interact the governance variables in Eq. (1) with the institutional environment variables (*investor* and *common law*) separately. If the substitution hypothesis is correct, we expect the interaction term to have a negative and statistically significant coefficient. In other words, when minority investors already have extensive rights and protection in a country, an incremental increase in the governance quality of the firms in that country leads to a larger decrease in their short-term debt than is the case at firms in countries with low investment protection that experience similar improvements in governance quality.

Panel A of Table 4 shows the regressions with *investor* and Panel B with *common law*. Consistent with the substitution hypothesis, we find that the interaction of governance and investor protection variables is negative and statistically significant. A one-standard-deviation increase in investor protection (i.e., a change of nineteen p.p.) diminishes the marginal effect of *gov44_score* on short-term debt by $19 \times 0.027 = 51$ p.p. The decrease in the marginal effects of *board_size*, *indp_score*, and *cgq_board* on short-term debt due to a one-standard-deviation increase in the investor protection score are 47, 7.6, and 1.9 p.p., respectively.⁷

The regression results in Panel B show similar findings. The coefficients of the interaction terms between the four governance variables and *common law* are negative and statistically significant at the 1 percent level, except for the coefficient of *cgq_board*. The marginal effect of *gov44_score* on short-term debt is seventy-two percentage points lower for firms in common-law countries than for firms in civil-law countries. The marginal effects of *board_score*, *indp_score*, and *cgq_board* on short-term debt are respectively 73, 12, and 1.9 p.p. lower for firms in common-law countries.

The tests of weak identification indicate that lagged short-term debt is not a weak instrument for leverage (results not reported). The results of the endogeneity tests shown in the bottom two rows in Panels A and B reject the null hypothesis that the coefficient of leverage is identical in the OLS and

⁷ The positive coefficients of the governance variables in Panel A of Table 4 may seem to contradict the results shown in Table 3, but these coefficients should be interpreted along with the coefficients of the interaction terms, as well as the domain of investor protection. For example, for a firm located in a country with an average investor protection score (i.e., 63.77), the marginal effect of *gov44_score* on short-term debt is $1.071 - 0.027 \times 63.77 = -0.65$, which is a negative number. In fact, the marginal effect takes on positive values for less than 2% of the observations.

Table 4
Investor Protection, Legal Origins, and the Effect of Governance on Short-Term Debt. This table presents the second-stage regressions of the 2SLS procedure designed to examine the impact of institutional environment on the marginal effect of governance on short-term debt. The dependent variable in all regressions is short-term debt (*std*). Leverage is instrumented by lagged short-term debt. Each column reports the results for a different governance measure. The definition of the variables is in Table S2 of the Supplementary Material available online. We winsorize all variables except the governance and dummy variables at the 1% level. We use one-year lagged values of firm control variables. All specifications include country-year and industry-year fixed effects. Due to space constraints, the coefficients of the control variables, *size*, *asset_tangibility*, *roa*, *mb*, *cash* and *costofdebt* are not reported. The z-values from 2SLS approach are reported in parentheses. Robust standard errors are estimated by clustering standard errors at the country-year level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

Panel A. Investor Protection				
	<i>gov44_score</i>	<i>board_score</i>	<i>indp_score</i>	<i>cgq_board</i>
gov	1.071** (2.253)	1.244*** (3.267)	0.174*** (4.657)	0.031 (1.119)
gov x <i>investor</i>	-0.027*** (-4.402)	-0.025*** (-5.048)	-0.004*** (-7.528)	-0.001*** (-2.735)
<i>leverage</i>	-4.536*** (-30.825)	-4.509*** (-30.358)	-4.467*** (-30.735)	-4.520*** (-30.538)
Constant	2.142*** (32.492)	1.848*** (32.537)	1.993*** (29.934)	1.604*** (34.249)
Observations	20,434	20,434	20,434	19,899
Country x Year FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Other controls in Table 3	Yes	Yes	Yes	Yes
Endogeneity tests for <i>leverage</i>				
Chi-square statistic	8.896	8.903	8.910	8.547
p-value	0.003	0.003	0.003	0.004
Panel B. Common Law				
	<i>gov44_score</i>	<i>board_score</i>	<i>indp_score</i>	<i>cgq_board</i>
gov	-0.476** (-2.570)	-0.110 (-0.841)	-0.029** (-1.961)	-0.029** (-2.330)
gov x <i>common law</i>	-0.723*** (-3.553)	-0.735*** (-4.718)	-0.126*** (-6.661)	-0.019 (-1.390)
<i>leverage</i>	-4.534*** (-31.005)	-4.506*** (-30.658)	-4.468*** (-30.777)	-4.520*** (-30.523)
Constant	2.132*** (32.410)	1.843*** (32.168)	1.982*** (29.208)	1.599*** (33.750)
Observations	20,434	20,434	20,434	19,899
Country x Year FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Other controls in Table 3	Yes	Yes	Yes	Yes
Endogeneity tests for <i>leverage</i>				
Chi-square statistic	8.896	8.901	8.912	8.543
p-value	0.003	0.003	0.003	0.004

2SLS regressions. Thus, the 2SLS regressions provide more meaningful coefficient estimates that address the endogeneity of leverage.

3.3. Endogeneity of governance

One particular concern in our regression analysis is the possibility that the governance characteristics of firms are endogenous in Eq. (1). For instance, if the governance variables are correlated with the error term in these models, perhaps because of omitted variables, the coefficient

estimators for governance variables, as well as their interaction terms with investor protection and common law, would be biased. Reverse causality may also be at play, if changes in debt maturity lead to changes in firms' governance characteristics. For instance, lenders might require firms to meet certain corporate governance standards before offering them any long-term debt financing. To address these concerns, we implement an instrumental variables (IV) model that uses instruments for the potentially endogenous variables.

Our instruments for firm-level governance variables are their country-year averages, after excluding firms in the same industry. For instance, the instrument for *gov44_score* populates all out-of-industry firms in the same country and year and estimates the average *gov44_score* of the resulting sample firms. We exclude industry peers from the estimations because firms might change their governance mechanisms in response to the trends in their industries, hence, industry-averages may reflect firm-level governance dynamics, which in turn violates the exclusion restriction in IV models. The resulting instruments that we create are likely to affect a firm's short-term debt only through their effect on the firm's governance quality. Similar instrumentation approaches are used in extant research, such as John, Litov, and Yeung (2008), Aggarwal et al. (2009), Laeven and Levine (2009), and Anginer, Demircuc-Kunt, Huizinga, and Ma (2018).

The regression model in Eq. (1) produces three endogenous variables: leverage, one of the four governance variables, and its interaction with investor protection/common law. Thus, our 2SLS approach produces three first-stage regressions, in which the first regression instruments leverage with lagged short-term debt, the second regression instruments one of the four governance variables with its own instrument (as explained above), and the third regression instruments the interaction between the governance variable with investor protection/common law with the interaction between the governance instrument and investor protection/common law variables.⁸

The second stage in the 2SLS procedure estimates the model with the instrumented endogenous variables obtained from the first-stage regressions. Table 5 presents the results of the second-stage regressions. Our results are similar to those in Table 4. The coefficients of the interaction terms between governance variables and investor protection/common law are all negative, meaning that good governance reduces short-term debt more when the legal system is sound and provides protection for minority shareholders. In Panel A, the interaction term for *gov44_score* has a coefficient of -0.057, which is smaller than -0.027, the estimate without the endogeneity correction (Panel A in Table 4). For the other governance variables in Panel A, the estimates with the IV model are all smaller than those with the OLS model.

⁸ Because there are four governance variables and three first-stage regressions for each, the 2SLS model produces a total of 12 regressions for each investor protection/common law variable. Due to space constraints, we focus on the broadest governance variable, *gov44_score*, and report its first-stage regression results in Table S7 of the Supplementary Material (available online).

When the proxy for the institutional environment is common law (Panel B in Table 5), the gap between the estimates from IV models and OLS models become even larger. The interaction term between *gov44_score* and *common law* has a coefficient of -2.91 under the IV model, whereas its coefficient is -0.72 under the OLS model without the endogeneity correction. The interaction terms for the remaining three governance variables are also lower under the IV model with endogeneity correction. The gap between IV and OLS model estimates are mostly statistically significant, as indicated by the endogeneity tests reported in the bottom rows of each panel. This finding emphasizes the importance of endogeneity correction in our analyses. Overall, our IV approach strengthens our conclusion that short-term debt and governance are substitutes when investor protection is greater or when firms are located in common-law countries.

4. Other factors that affect the relationship between governance and debt maturity

In this section, we investigate the role of other country-level factors in influencing the marginal effect of internal governance quality on firms' use of short-term debt.⁹ We populate five sets of country-level variables. First, we consider the extent of creditor rights in a country. In countries where creditors are legally protected in case of disputes, firms can obtain longer-term loans from lenders (Bae & Goyal, 2009; Diamond, 2004; Giannetti, 2003; Qian & Strahan, 2007). We rely on the creditor rights measure proposed by Djankov et al. (2007), which takes a value from zero to four (*creditor*). Second, as Demirguc-Kunt and Maksimovic (1999) and Fan et al. (2012) argue, firms' debt maturity decisions are driven by the economic development level in their home country. To capture these effects, we estimate bank deposits as a share of the gross domestic product (GDP) (*db_dev*) and stock market capitalization as a share of GDP (*eq_dev*) over our sample period.

Third, cross-cultural studies have explored the role of culture in firms' financing decisions. In this stream of literature, Zheng, El Ghouli, Guedhami, and Kwok (2012) show that firms located in conservative and hierarchical countries tend to use more short-term debt, whereas Chui, Lloyd, and Kwok (2002) and Li, Griffin, Yue, and Zhao (2011) demonstrate the effect of embeddedness and mastery on capital structure decisions by firms. To explore these effects, we populate three of the seven variables from Schwartz's (1994) cultural study: embeddedness, hierarchy, and mastery.

Fourth, countries' state-level governance characteristics might play a critical role in firms' financial decisions. We capture these effects with the Worldwide Governance Indicators (WGI) prepared by the World Bank (see Kraay, Kaufman, & Mastruzzi, 2010). In this dataset, countries are rated each year according to their governance characteristics in six dimensions: voice and accountability, political stability

Table 5
Instrumental Variable Estimation for the Effect of Governance on Short-Term Debt. We use the 2SLS approach to instrument governance variables by their country-year averages (excluding same industry firms). Leverage is instrumented by lagged short-term debt. First-stage regressions in the IV model are shown in Table S7 of the Supplementary Material, available online. The dependent variable in all regressions is short-term debt (*std*). Each column in the table shows the results for a different governance measure, which are indicated at the column headings. The definitions of the variables are in Table S2 of the Supplementary Material, available online. We winsorize all variables except the governance and dummy variables at the 1% level. We use one-year lagged values of firm-level control variables. All specifications include country-year and industry-year fixed effects. Due to space constraints, the coefficients of the control variables, *size*, *asset_tangibility*, *roa*, *mb*, *cash* and *costofdebt* are not reported. z-values from 2SLS approach are reported in parentheses. Robust standard errors are estimated by clustering standard errors at the country-year level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

Panel A. Investor Protection				
	<i>gov44_score</i>	<i>board_score</i>	<i>indp_score</i>	<i>cgq_board</i>
gov	1.492 (1.083)	1.008 (1.078)	0.139 (1.577)	0.176* (1.816)
gov x <i>investor</i>	-0.057** (-2.244)	-0.046*** (-2.737)	-0.004*** (-2.735)	-0.004** (-2.112)
<i>leverage</i>	-4.519*** (-29.906)	-4.427*** (-27.742)	-4.441*** (-30.659)	-4.495*** (-30.171)
Constant	3.305*** (6.695)	2.750*** (9.601)	2.164*** (11.535)	1.828*** (10.197)
Observations	20,434	20,434	20,434	19,896
Country x Year FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Other controls in	Yes	Yes	Yes	Yes
Table 3				
Endogeneity tests for gov x <i>investor</i>				
Chi-square statistic	5.863	8.676	1.173	1.585
p-value	0.016	0.003	0.279	0.208

Panel B. Common Law				
	<i>gov44_score</i>	<i>board_score</i>	<i>indp_score</i>	<i>cgq_board</i>
gov	-1.132*** (-2.856)	-1.312*** (-3.581)	-0.074** (-2.354)	0.019 (0.523)
gov x <i>common law</i>	-2.911*** (-3.020)	-1.651** (-2.273)	-0.156** (-2.446)	-0.186*** (-2.916)
<i>leverage</i>	-4.507*** (-30.217)	-4.413*** (-28.209)	-4.430*** (-30.721)	-4.487*** (-29.869)
Constant	3.758*** (6.919)	2.823*** (8.490)	2.233*** (10.464)	1.966*** (11.423)
Observations	20,434	20,434	20,434	19,896
Country x Year FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Other controls in	Yes	Yes	Yes	Yes
Table 3				
Endogeneity tests for gov x <i>common law</i>				
Chi-square statistic	8.581	7.745	1.656	4.326
p-value	0.003	0.005	0.1982	0.038

and absence of terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.¹⁰

¹⁰ Because of high intergroup correlations, and their conceptual relationships, we reduce the number of WGI variables from six to one by taking their first principal component (*wgi_fpc*).

⁹ We thank the referee for suggesting the analyses in this section.

Finally, we also explore whether the accounting standards in a country are a significant factor that might affect the marginal effect of internal governance quality on the use of short-term debt. For instance, having an IFRS accounting system might make it easier for firms to access the international capital markets and cross-list, which in turn can lower their cost of capital (Chen, Ng, & Tsang, 2015; Florou & Pope, 2012; Li, 2010). Thus, we create an indicator variable (*ifrs*) that takes a value of one after a country adopts IFRS as its accounting method and zero otherwise. The construction of the country-level variables in this section are explained in the Supplementary Material (Table S2, available online), and their summary statistics are listed in Table 2.

Because our objective is to investigate whether these factors are substitutes for or complementary to good governance in the use of short-term debt, we employ the same empirical model in Table 5, except that we replace investor protection with one of the country-level variables. To save space, Table 6 reports only the coefficients and the z-scores of the interaction variables. The results in Table 6 show that the coefficients of the creditor rights interaction variables are positive for the four governance variables and, except for *board_score*, they have statistically significant coefficients at the 5 percent level. This

Table 6
Country-Level Factors and Short-Term Debt. This table reports the coefficients of the interaction terms between governance variables (in columns) and the major country-level variables from an empirical model used in Table 5. To conserve space, only the coefficients of the interaction terms between the governance variables and the country-level variables are reported. Each interaction coefficient is in a distinct regression model, however, to keep the reporting brief, we group them based on the chosen governance variable. The dependent variable in all regressions is short-term debt (*std*). The definition of the variables is in Table S2 of the Supplementary Material, available online. We winsorize all variables except the governance and dummy variables at the 1% level. We use one-year lagged values of firm-level control variables. All specifications include country-year and industry-year fixed effects. z-values from 2SLS approach are reported in parentheses. Robust standard errors are estimated by clustering standard errors at the country-year level. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

“gov” variable is:				
	<i>gov44_score</i>	<i>board_score</i>	<i>indp_score</i>	<i>cgq_board</i>
gov x <i>creditor</i>	0.750** (2.185)	0.349 (1.179)	0.178** (2.211)	0.074*** (2.632)
gov x <i>wgi_fpc</i>	0.187* (1.74)	0.176 (1.593)	0.102** (2.359)	0.025* (1.782)
gov x <i>embeddedness</i>	-6.312*** (-3.954)	-5.445*** (-5.354)	-0.970*** (-2.865)	-0.470*** (-5.124)
gov x <i>hierarchy</i>	-2.628** (-2.305)	-1.735** (-2.090)	-0.289 (-1.106)	-0.275*** (-3.274)
gov x <i>mastery</i>	-4.602* (-1.680)	-4.734** (-2.077)	-0.168 (-0.224)	-0.136 (-0.548)
gov x <i>eq_dev</i>	-0.014 (-1.557)	-0.007 (-1.019)	-0.003 (-1.241)	-0.002*** (-2.591)
gov x <i>db_dev</i>	0.026** (2.054)	0.014 (1.356)	0.005* (1.646)	0.003*** (2.983)
gov x <i>ifrs</i>	1.648** (2.132)	1.052* (1.670)	0.410** (2.101)	0.189*** (3.012)
Country x Year FE	Yes	Yes	Yes	Yes
Industry x Year FE	Yes	Yes	Yes	Yes
Other controls in Table 3	Yes	Yes	Yes	Yes

result shows that the marginal effect of internal governance on debt maturity increases as the creditor rights in a country improve. When creditors can impose substantial costs on the managers and the firm during times of distress, boards and shareholders can employ larger amounts of short-term debt, such that the managers are exposed to external monitoring by the market when it is more effective. In countries with fewer creditor rights, the costs associated with the use of short-term debt outweigh its benefits. The coefficients for the WGI variable are positive (and statistically significant at the 10 percent level, except for *board_score*), suggesting that, as the institutional governance quality in a country rises, the boards of firms in that country use more short-term debt as a way to discipline managers. In countries with low country governance scores, the institutions are less reliable for enforcing contracts, therefore the tools used to control for agency costs do not serve well enough to justify their use.

The three cultural variables (embeddedness, hierarchy, and mastery) have negative interaction terms for all governance variables, suggesting that in more conservative, hierarchical, and individualistic societies, internal governance and short-term debt are stronger substitutes for managing the potential agency problems. As for the development levels of the countries, the coefficient of *gov x db_dev* is positive and statistically significant (except for *board_score*), suggesting that boards use more short-term debt when their firms are located in countries with more developed debt markets. This effect could be the result of the ease of access to abundant and cheap short-term financing in developed markets; higher-quality boards might tend to use short-term debt to monitor managers when the cost of employing this strategy is cheaper. Finally, the interaction between governance variables and *ifrs* is positive and statistically significant. That is, the marginal effect of internal governance quality on the use of short-term debt increases if a firm is located in a country that imposes IFRS reporting standards. Firms located in IFRS countries can access cheaper financing and cross-list in international markets, which might lead to information production and external monitoring by investors. Hence, boards may find it effective to use more short-term debt for the purpose of managing their agency costs.

5. Conclusion

We use international corporate governance data and show that the relationship between short-term debt and governance varies across countries. Firms with good governance do not have to rely on the external monitoring of the creditors, and therefore they do not incur the costs of short-term debt, such as liquidity and refinancing risk. We show that the institutional environment plays a key role in determining the relationship between short-term debt and governance. In particular, we find that short-term debt and governance act as substitutes in countries with high investor protection and common law because the benefits for costly external monitoring using short-term debt are lower.

We conduct a number of additional analyses to show that the baseline results are robust to alternative specifications of

governance and debt maturity as well as to econometric modeling that takes potential endogeneity issues into account. Finally, we include a number of country-level factors, such as the level of creditor rights, state-level governance quality, cultural characteristics, debt market development levels, and accounting standards, which might affect the governance quality–debt maturity relationship. We find that these variables also play a role in mediating this relationship.

Declaration of competing interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.bir.2021.05.004>.

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