Online Appendix to:
Corporate Taxes and Internal Borrowing within Multinational Firms

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Sensitivity analysis

The aim of this online appendix is to provide more detailed information on some of the sensitivity checks mentioned but largely suppressed in the paper for reasons of space constraints. In particular, those sensitivity checks relate to (i) the treatment of location choice of affiliates as endogenous, (ii) an alternative treatment of standard errors by using country-year clustering instead of a panel bootstrap procedure, (iii) the relative importance of conditioning on other fundamentals than corporate profit tax rates, (iv) the consideration of interaction terms of the fundamental variables so that their nonlinear effects on internal borrowing do not only accrue to the nonlinear functional form of the estimator for fractional dependent variables, (v) the consistency of internal borrowing within a country with firm-level productivity differences across all units of a firm in that country and year, and (vi) the use of affiliate-level total assets and affiliate-level sales as we ights instead of affiliate-level lending in the third and fourth columns of Table 4 in the main text. We discuss any one of those considerations in more detail below. Moreover, in Section (vii) we illustrate the trade-off between different levels of fundamentals (tax rates, financial underdevelopment, institutional weakness, and affiliate-level productivity) in determining nonlinearly the internal debt ratio as estimated in the last couple of columns of Table 4 in the main text.

(i) A control function approach to endogenous affiliate location choice

We address the potential endogeneity of location choice by adopting a semi-parametric control function approach, akin to the one utilized with binary choice problems. For this, we estimate annual conditional logit location choice models based on the following determinants of (potential) affiliate location (with data sources added in parentheses): the statutory corporate tax rate in each potential host country (as in the paper); financial underdevelopment in each potential host country (as in the paper); institutional weakness in each potential host country (as in the paper); log real GDP at constant U.S. dollars of the year 2000 in each potential host country (World Bank's World Development Indicators 2010); the corruption perception index for each potential host country (Transparency International); the investment freedom index for each potential host country (Heritage Foundation's Heritage Indicators); the costs of starting a business in each potential host country (World B ank's World Development Indicators 2010); log bilateral distance between Germany and each (potential) host country (Centre d'Études Prospectives et d'Informations Internationales' Geographical Database).

– Tables A.1 and A.2 –

We report the conditional logit parameter estimates for each covered year between 1996 and 2007 in Table A.1, below. The table indicates that the parameters are not stable over time. However, we should be careful with over-emphasizing this result since the conditional logit model is nonlinear and the parameters should not be directly compared with each other. We utilize the linear prediction from the location choice models across all the years in original form and, at the same time, in squared form. These two variables (together with

the parameters that have to be estimated on them) form a quadratic control function. This function is added to the specifications in the two columns in the center of Table 4 of the paper (assuming exogeneity of the potential lending weighting of other affiliates) and the last two columns of Table 4 of the paper (assuming endogeneity of the weighting). This control function approach is, e.g., similar in spirit to the semiparametric control function approach adopted to selection into export markets in Helpman, Melitz, and Rubinstein (2008). The corresponding results are summarized in Table A.2, and they suggest that controlling for endogenous location choice in the proposed way does not lead to any big qualitative change relative to the benchmark results in Table 4 of the paper. In fact, the (robust) standard errors on the parameters of the control function suggest that there is no bias in the parameters in Table 4 from endogenous selection into locations by the multinational firm.

(ii) Country-year clustering of standard errors instead of panel-bootstrapped standard errors

We report counterparts to the last four columns of Table 4 using country-year clustering instead of panel bootsrapping in Table A.3, below.

– Table A.3 –

It turns out that controlling for country-year clusters in the variance-covariance matrix leads to slightly bigger standard errors than panel bootstrapping. However, there is no qualitative change in the conclusions.

(iii) Regression results without the three non-tax fundamentals

We report counterparts to the last four columns of Table 4, disregarding the three non-tax fundamentals in Table A.4, below.

– Table A.4 –

It turns out that ignoring the three non-tax fundamentals from the specification leads to somewhat bigger parameters for the corporate tax variables than in the benchmark specifications in Table 4. The latter holds true no matter of whether one controls for weighted corporate tax rates elsewhere in the firm or not. This suggests that the smaller effects found in previous research are unlikely due to the omission of those other fundamentals from the corresponding model specifications.

(iv) Estimating nonlinear models with interaction terms of the fundamentals

In Table A.5 below, we report counterparts to the last four columns of Table 4 based on specifications which include interactive terms between all four fundamental variables. This is meant to account for a nonlinear impact of the fundamentals which goes beyond the

nonlinearity as imposed by the functional form of the nonlinear models estimated. Hence, in the corresponding models there are now two sources of nonlinearity: one that relates to the specification of the latent process and the other one relates to the nonlinear mapping of the latent process onto the unit space.

– Table A.5 –

The corresponding parameter estimates are impossible to interpret since the fractional response model is nonlinear per se. However, the results can be described as follows. First, the predictions of the surfaces contain somewhat more extreme values (zero debt ratios at the lower bounds and unitary debt ratios at the upper bounds) than described in Figures A.1-A.3 below. However, the qualitative shapes of the τ-ϕ relationship counterpart to Figure A.1, the τ-κ relationship counterpart to Figure A.2, and the τ-τ^w relationship counterpart to Figure A.3 is the same. While the extreme values (zeros and ones of outcome) are mostly outside of the region supported by the data anyway, the slope of the estimated surfaces are steeper in the support region. Hence, if anything, including interaction terms among the fundamentals renders the debt ratio *even more* responsive to the fundamentals (including tax rates) than in Figures A.1-A.3.

(v) Consistency of internal borrowing within a country with firm-level productivity differences

We report counterparts to the last four columns of Table 4 based on specifications which discern between the average productivity within a country (and year) and the deviation from the latter per affiliate in Tables A.6 and A.7. For this, we split the (measured or estimated) firm-level productivity variables into two orthogonal components. Let us denote a generic productivity variable for affiliate i in year t by θ_{it} as in the paper, and the number of all units of the firm affiliate i belongs to in the same country as i and in year t by B_{it}. Then, the average productivity of that firm in the country where i is located and year t may be denoted as $\bar{\theta}_{it} = \frac{1}{B_{it}} \sum_{i=1}^{B_{it}} \theta_{it}$, and the deviation of i from this average in year t is $\widetilde{\theta}_{it} = \theta_{it} - \bar{\theta}_{it}$. While the regressions in Tables 4-6 in the main text include θ_{it} as a regressor, the alternative ones as counterparts to the benchmark regressions of Table 4 employ $\bar{\theta}_{it}$ and $\widetilde{\theta}_{it}$ as two separate regressors. Obviously, $\theta_{it} = \bar{\theta}_{it}$ for all firms which hold only a single affiliate in the country where i is hosted in year t. Hence, identification of the separate effects of $\bar{\theta}_{it}$ and $\widetilde{\theta}_{it}$ comes entirely from multi-unit firms in a single country and year.

– Tables A.6 and A.7 –

Focusing on those results where the productivity measures carry statistically significant coefficients, the findings suggest that $\bar{\theta}_{it}$ and $\widetilde{\theta}_{it}$ enter with the same sign and have coefficients of quite similar magnitude. Hence, variability of productivity across units in the same firm, host country, and year is as important for triggering internal lending as the variability of average productivity across host countries is in the same firm and year.

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(vi) Using affiliates' total assets and affiliates' sales instead of affiliates' lending to weight third-country fundamentals

We report counterparts to the third and fourth columns of Table 4, using affiliate-level total assets and, alternatively, affiliate-level sales instead of exogenous internal lending to weight third-country fundamentals. The corresponding results for coefficient estimates and average partial effects (APEs) are summarized in Table A.8.

– Table A.8 –

The corresponding parameter estimates and APEs in Table A.8 are qualitatively and quantitatively similar to the ones in the third and fourth columns of Table 4.

(vii) Figures illustrating the nonlinear impact of fundamental drivers of the internal debt ratio

Figures A.1-A.3 illustrate the nonlinear determination of the internal debt ratio. In all figures, we set all fundamental variables except for the two on the horizontal axes to the average value in the data. The figures illustrate how a variation in fundamentals (local tax rate, local financial underdevelopment, local institutional weakness, weighted foreign tax rates) affects the local internal debt ratio at the margin. In particular, the figures illustrate the nonlinear interaction between two fundamentals at a time and the location of countries (and firms) in the space of two fundamentals at a time in the data.

– Figures A.1-A.3 –

Tables

Table A.1: Location Decision

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Corporate income tax	-2.0011***	-1.5895***	-2.4589***	-.2932	.1250	-1.0792***	-.1094	.1145	-1.5151***	-2.3246***	-1.7766***	-1.9550***
	(.1726)	(.1552)	(.1904)	(.1879)	(.1957)	(.1735)	(.1527)	(.1637)	(.1543)	(.1530)	(.1441)	(.1518)
Financial underdevelopment	-.0058***	-.0055***	-.0027***	-.0034***	-.0019***	-.0003	-.0003	-.0004	-.0007**	-.00003	.0010***	.0029***
	(.0004)	(.0003)	(.0004)	(.0003)	(.0003)	(.0003)	(.0003)	(.0003)	(.0003)	(.0003)	(.0002)	(.0002)
Institutional weakness	.1081***	.1279***	.0460***	.1034***	.0865***	.0790***	.0615***	.0605***	.0643***	.0752***	.0764***	.1000***
	(.0092)	(.0080)	(.0100)	(.0070)	(.0072)	(.0065)	(.0062)	(.0063)	(.0064)	(.0062)	(.0064)	(.0070)
log GDP	.7986***	.7806***	.8531***	.7996***	.7931***	.8449***	.8316***	.8340***	.8443***	.8672***	.8687***	.8829***
	(.0124)	(.0113)	(.0111)	(.0089)	(.0085)	(.0092)	(.0083)	(.0083)	(.0083)	(.0082)	(.0077)	(.0087)
Corruption Perception	.0422***	.0279***	.0199**	.0714***	.0771***	.0813***	.0556***	.0560***	.0648***	.0724***	.1152***	.1493***
	(.0080)	(.0070)	(.0078)	(.0064)	(.0056)	(.0068)	(.0075)	(.0076)	(.0079)	(.0079)	(.0070)	(.0064)
Investment Freedom	.0177***	.0254***	.0343***	.0227***	.0218***	.0183***	.0180***	.0184***	.0193***	.0161***	.0111***	.0141***
	(.0014)	(.0013)	(.0015)	(.0011)	(.0010)	(.0007)	(.0006)	(.0006)	(.0007)	(.0007)	(.0006)	(.0007)
Cost of Starting a Business	-.0097***	-.0103***	-.0051***	-.0060***	-.0074***	-.0079***	-.0095***	-.0091***	-.0054***	-.0053***	-.0069***	-.0071***
	(.0011)	(.0010)	(.0007)	(.0008)	(.0008)	(.0007)	(.0007)	(.0007)	(.0006)	(.0006)	(.0007)	(.0008)
log Distance	-.6282***	-.6072***	-.5226***	-.5941***	-.5615***	-.5250***	-.5692***	-.5913***	-.5464***	-.4873***	-.5249***	-.4867***
	(.0147)	(.0130)	(.0147)	(.0118)	(.0097)	(.0095)	(.0098)	(.0106)	(.0100)	(.0093)	(.0091)	(.0089)
Observations	576,960	653,520	735,195	1,388,839	1,408,350	1,664,796	1,747,170	1,968,702	1,984,192	2,235,337	2,318,190	2,287,500

Notes: Conditional logit estimates of the location decision of German multinationals from 1996 to 2007. Robust standard errors reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Control variables are taken from different sources. *Corporate income tax* is the statutory tax rate of a host country. The tax data is collected from databases provided by the International Bureau of Fiscal Documentation (IBFD) and tax surveys provided by Ernst&Young, PwC, and KPMG. *Financial underdevelopment* is a variable that captures the financial underdevelopment of the host country. To measure financial underdevelopment, we have taken a statistic for *domestic credit to private sector* relative to a country's GDP, provided by the World Bank's World Development Indicators (WDI) database. We then define *Financial underdevelopment* as ($|\frac{DomesticCredit}{GDP} - max\{\frac{DomesticCredit}{GDP}\}|$). *Institutional weakness* captures the institutional weakness of the host country. Also from the WDI database, to measure institutional weakness, we use an index on the strength of investor protection. We define the index such that it ranges from 0 (strong investor protection) to 9 (weak investor protection). *log GDP* measures the real GDP at constant U.S. dollars of the year 2000 and is taken from the World Bank's World Development Indicators 2009. *CPI* (Corruption Perception Index) is published annually by Transparency International. It ranks countries in terms of perceived levels of corruption, as determined by expert assessments and opinion surveys. The scores range from 10 (country perceived as virtually corruption free) to 0 (country perceived as almost totally corrupt). The investment freedom index *Investment Freedom* is taken from the Heritage Indicators database. The index can take on values between 0 and 100; higher values are associated with more investment freedom. *Cost of Starting a Business* is from World Bank's Doing Business Database and measures the cost of starting a business relative to income per capita. *log Distance* is the log of the distance (in kilometer) between the most populated cities in the host country and the parent country (Germany). The distance variable is taken from the Centre d'Etudes Prospectives et d'Informations Internationales.

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Table A.2: DETERMINANTS OF INTERNAL DEBT – EXOGENOUS AND ENDOGENOUS INCENTIVES USING A QUADRATIC CONTROL FUNCTION FOR ENDOGENOUS LOCATION CHOICE

	Exog. incentives (comp. to Table 4)		Endog. incentives (comp. to Table 5)	
	Coeff.	APE	Coeff.	APE
Corporate income tax (host)	.9530***	.2494***	3.3588***	.8779***
	(.1135)	(.0297)	(.3803)	(.0991)
Weighted corporate income tax (other locations)	-.0312	-.0082	-2.8161***	-.7361***
	(.0655)	(.0171)	(.4427)	(.1154)
Financial underdevelopment (host)	.0007***	.0002***	.0012**	.0003**
	(.0002)	(.0001)	(.0005)	(.0001)
Weighted financial underdevelopment (other locations)	-.0004***	-.0001***	-.0011*	-.0003*
	(.0001)	(.0000)	(.0006)	(.0002)
Institutional weakness (host)	.0186	.0049	.0512*	.0134*
	(.0186)	(.0049)	(.0264)	(.0069)
Weighted institutional weakness (other locations)	-.0112***	-.0029***	-.0542**	-.0142**
	(.0032)	(.0008)	(.0243)	(.0064)
Affiliate-level productivity OP (host)	.0120**	.0031***	.0067	.0017
	(.0019)	(.0005)	(.0056)	(.0015)
Weighted affiliate-level productivity OP (other locations)	-.0056***	-.0014***	.0008	.0002
	(.0014)	(.0004)	(.0066)	(.0017)
Tangibility	.0465*	.0121*	.0506**	.0137**
	(.0260)	(.0068)	(.0261)	(.0063)
Loss carryforward	.0984***	.0258***	.0987***	.0264***
	(.0057)	(.0015)	(.0057)	(.0015)
Sales	.0046	.0009	.0087	.0028
	(.0124)	(.0033)	(.0126)	(.0030)
Control function: Linear index from conditional logit in Table A.1	-.0220	-.0057	-.0143	-.0037
	(.0317)	(.0083)	(.0321)	(.0084)
Control function: Linear index squared from conditional logit in Table A.1	.0005	.0001	.0005	.0001
	(.0008)	(.0002)	(.0008)	(.0002)

Notes: 227,558 observations. Fractional response model estimated by Pooled QMLE. The dependent variable refers to internal cross-border debt. All regressions include time dummies and affiliate-specific fixed effects. Robust standard errors reported in parentheses and based on panel bootstrapping. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Table A.3: DETERMINANTS OF INTERNAL DEBT – EXOGENOUS AND ENDOGENOUS INCENTIVES WITH COUNTRY-YEAR CLUSTERED RATHER THAN PANEL-BOOTSTRAPPED STANDARD ERRORS

	Coeff.	APE	Coeff.	APE
Corporate income tax (host)	1.0094***	.2615***	3.5471***	.9176***
	(.1993)	(.0516)	(.3818)	(.0988)
Weighted corporate income tax (other locations)	-.0361	-.0094	-2.9818***	-.7714***
	(.0999)	(.0259)	(.4138)	(.1070)
Financial underdevelopment (host)	.0008**	.0002**	.0010**	.0003**
	(.0003)	(.0001)	(.0004)	(.0001)
Weighted financial underdevelopment (other locations)	-.0004**	-.0001**	-.0007*	-.0002*
	(.0001)	(.00004)	(.0004)	(.0001)
Institutional weakness (host)	.0221	.0057	.0625	.0162
	(.0588)	(.0152)	(.0550)	(.0142)
Weighted institutional weakness (other locations)	-.0105**	-.0027**	-.0653***	-.0169***
	(.0043)	(.0011)	(.0157)	(.0041)
Affiliate-level productivity OP (host)	.0121***	.0031***	.0088*	.0023*
	(.0030)	(.0008)	(.0053)	(.0014)
Weighted affiliate-level productivity OP (other locations)	-.0056**	-.0014**	-.0018	-.0005
	(.0023)	(.0006)	(.0059)	(.0015)
Tangibility	.0490*	.0127*	.0531**	.0137**
	(.0256)	(.0066)	(.0259)	(.0067)
Loss carryforward	.1015***	.0263***	.1019***	.0264***
	(.0073)	(.0019)	(.0073)	(.0019)
Sales	.0047	.0012	.0107	.0028
	(.0114)	(.0030)	(.0113)	(.0029)

Notes: 227,558 Observations. Fractional response model estimated by Pooled QMLE. The dependent variable refers to internal cross-border debt. All regressions include time dummies and affiliate-specific fixed effects. Robust standard errors reported in parentheses. The standard errors assume country-year clustering and disregard repeated observation of affiliates over time (unlike estimations in the paper). *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Table A.4: Determinants of Internal Debt – Exogenous and Endogenous Incentives Excluding Non-tax Fundamentals (Except for Tangibility, Loss carryforward, and Sales)

	Coeff.	APE	Exog. incentives (comp. to Table 4) Coeff.	APE	Endog. incentives (comp. to Table 5) Coeff.	APE
Corporate income tax (host)	1.093***	.2853***	1.1756***	.3059***	4.0553***	1.0546***
	(.1033)	(.0268)	(.1184)	(.0308)	(.3293)	(.0855)
Weighted corporate income tax (other locations)			-.1829***	-.0476***	-3.5796***	-.9309***
			(.0651)	(.0169)	(.3706)	(.0963)
Tangibility	.0539***	.0141***	.0501**	.0130**	.0517**	.0134**
	(.0203)	(.0053)	(.0203)	(.0053)	(.0204)	(.0053)
Loss carryforward	.1014***	.0265***	.1017***	.0265***	.1025***	.0267***
	(.0064)	(.0017)	(.0064)	(.0017)	(.0065)	(.0017)
Sales	.0090	.0023	.0109	.0028	.0192**	.0050**
	(.0099)	(.0026)	(.0099)	(.0026)	(.0098)	(.0026)

Notes: 227,558 observations. Fractional response model estimated by pooled QMLE. The dependent variable refers to internal cross-border debt. All regressions include time dummies and affiliate-specific fixed effects. Robust standard errors reported in parentheses and based on panel bootstrapping. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Table A.5: DETERMINANTS OF INTERNAL DEBT INCLUDING INTERACTION TERMS – EXOGENOUS AND ENDOGENOUS INCENTIVES

	Coeff.	APE	Coeff.	APE
Corporate income tax (host): τ_{it}	.1194	.0309	63.6379***	16.4573***
	(.6526)	(.1689)	(17.9019)	(4.6215)
Weighted corporate income tax (other locations): τ_{it}^w	-.3862	-.1000	-87.3693***	-22.5944***
	(.5993)	(.1549)	(23.9995)	(6.1957)
Financial underdevelopment (host): κ_{it}	.0022*	.0006*	.1044**	.0270**
	(.0011)	(.0003)	(.0486)	(.0126)
Weighted financial underdevelopment (other locations): κ_{it}^w	-.0024**	-.0006**	-.1511**	-.0391**
	(.0010)	(.0003)	(.0712)	(.0184)
Institutional weakness (host): ϕ_{it}	-.0374	-.0097	.3165	.0819
	(.0408)	(.0105)	(1.0868)	(.2809)
Weighted institutional weakness (other locations): ϕ_{it}^w	-.0357	-.0093	-.4305	-.1113
	(.0333)	(.0086)	(1.4465)	(.3738)
Affiliate-level productivity OP (host): θ_{it}	.0057	.0015	-.9164**	-.2370**
	(.0120)	(.0031)	(.3742)	(.0966)
Weighted affiliate-level productivity OP (other locations): θ_{it}^w	-.0189**	-.0049**	1.1925**	.3084**
	(.0087)	(.0022)	(.5014)	(.1295)
Interaction term: $\tau_{it} \times \kappa_{it}$	-.0027*	-.0007*	-.1441***	-.0373***
	(.0016)	(.0004)	(.0417)	(.0108)
Interaction term: $\tau_{it}^w \times \kappa_{it}^w$	.0086***	.0022***	.2081***	.0538***
	(.0015)	(.0004)	(.0574)	(.0148)
Interaction term: $\tau_{it} \times \phi_{it}$	.0756	.0196	.4584	.1185
	(.0640)	(.0165)	(.9314)	(.2406)
Interaction term: $\tau_{it}^w \times \phi_{it}^w$	-.1287**	-.0333**	-.6893	-.1782
	(.0606)	(.0157)	(1.1356)	(.2934)
Interaction term: $\tau_{it} \times \theta_{it}$	-.0406*	-.0105*	1.6008***	.4140***
	(.0238)	(.0062)	(.5496)	(.1419)
Interaction term: $\tau_{it}^w \times \theta_{it}^w$	.0381*	.0099*	-2.1500***	-.5560***
	(.0211)	(.0054)	(.7114)	(.1837)
Interaction term: $\kappa_{it} \times \phi_{it}$	.0002***	.0001***	-.0026	-.0007
	(.0001)	(.00002)	(.0022)	(.0006)
Interaction term: $\kappa_{it}^w \times \phi_{it}^w$	.0001	.00003	.0044	.0011
	(.0001)	(.00002)	(.0033)	(.0008)
Interaction term: $\kappa_{it} \times \theta_{it}$	.0001*	.00002*	.0022	.0006
	(.00004)	(.00001)	(.0014)	(.0004)
Interaction term: $\kappa_{it}^w \times \theta_{it}^w$	.00004	-.00001	-.0032	-.0008
	(.00003)	(-.00001)	(.0021)	(.0005)
Interaction term: $\phi_{it} \times \theta_{it}$	.0013	.0003	-.0045	-.0012
	(.0013)	(.0003)	(.0232)	(.0060)
Interaction term: $\phi_{it}^w \times \theta_{it}^w$	-.0016	-.0004	.0104	.0027
	(.0010)	(.0003)	(.0324)	(.0084)
Tangibility	.0502**	.0130**	.0209	.0054
	(.0243)	(.0289)	(.0289)	(.0075)
Loss carryforward	.1010***	.0261***	.1043***	.0270***
	(.0059)	(.0015)	(.0084)	(.0022)
Sales	.0058	.0015	-.0497**	-.0128**
	(.0114)	(.0030)	(.0236)	(.0061)

Notes: 227,558 Observations. Fractional response model estimated by Pooled QMLE. The dependent variable refers to internal cross-border debt. All regressions include time dummies and affiliate-specific fixed effects. Robust standard errors reported in parentheses and based on panel bootstrapping. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Table A.6: Determinants of Internal Debt – Exogenous Incentives for Various Productivity Measures

	Olley-Pakes		Levinsohn-Petrin		Alternative	
	Coeff.	APE	Coeff.	APE	Coeff.	APE
Corporate income tax (host)	1.0010***	.2615***	1.0214***	.2651***	1.0585***	.2738***
	(.1181)	(.0307)	(.1150)	(.0299)	(.1194)	(.0310)
Weighted corporate income tax (other locations)	-.0368	-.0095	-.0578	-.0150	-.0546	-.0141
	(.0002)	(.0164)	(.0637)	(.0165)	(.0717)	(.0185)
Financial underdevelopment (host)	.0008***	.0002***	.0008***	.0002***	.0009***	.0002***
	(.0002)	(.0000)	(.0002)	(.0000)	(.0002)	(.0001)
Weighted financial underdevelopment (other locations)	-.0004***	-.0001***	-.0004***	-.0001***	-.0004***	-.0001***
	(.0001)	(.0000)	(.0001)	(.0000)	(.0001)	(.0000)
Institutional weakness (host)	.0221	.0057	.0206	.0054	.0204	.0053
	(.0177)	(.0046)	(.0168)	(.0044)	(.0203)	(.0053)
Weighted institutional weakness (other locations)	-.0106***	-.0027***	-.0120***	-.0031***	-.0117***	-.0030***
	(.0032)	(.0008)	(.0032)	(.0008)	(.0033)	(.0009)
Affiliate-level productivity (avg. within host)	.0117***	.0030***	.0000***	.0000***	.0000	.0000
	(.0022)	(.0006)	(.0000)	(.0000)	(.0000)	(.0000)
Affiliate-level productivity (dev. from avg. within host)	.0125***	.0032***	.0000	.0000	.0000***	.0000***
	(.0019)	(.0005)	(.0000)	(.0000)	(.0000)	(.0000)
Weighted affiliate-level productivity (other locations)	-.0055***	-.0014***	-.0000***	-.0000***	-.0000**	-.0000**
	(.0015)	(.0004)	(.0000)	(.0000)	(.0000)	(.0000)
Tangibility	.0490**	.0127**	.0450*	.0117*	.0455*	.0118*
	(.0242)	(.0063)	(.0251)	(.0065)	(.0250)	(.0065)
Loss carryforward	.1015***	.0263***	.1023***	.0266***	.1024***	.0265***
	(.0059)	(.0015)	(.0057)	(.0015)	(.0057)	(.0015)
Sales	.0045	.0011	.0113	.0029	.0116	.2615
	(.0114)	(.0030)	(.0110)	(.0028)	(.0107)	(.0030)

Table A.7: Determinants of Internal Debt – Endogenous Incentives for Various Productivity Measures

	Olley-Pakes		Levinsohn-Petrin		Alternative	
	Coeff.	APE	Coeff.	APE	Coeff.	APE
Corporate income tax (host)	3.5173***	.9096***	3.3490***	.8684***	3.3515***	.8661***
	(.4739)	(.1225)	(.4189)	(.1083)	(.4439)	(.1145)
Weighted corporate income tax (other locations)	-2.9431***	-.7611***	-2.7566***	-.7148***	-2.7133***	-.7012***
	(.5396)	(.1394)	(.4790)	(.1238)	(.5258)	(.1357)
Financial underdevelopment (host)	.0010**	.0002**	.0008*	.0002*	.0008*	.0002*
	(.0004)	(.0001)	(.0004)	(.0001)	(.0004)	(.0001)
Weighted financial underdevelopment (other locations)	-.0007	-.0002	-.0005	-.0001	-.0004	-.0001
	(.0005)	(.0001)	(.0005)	(.0001)	(.0005)	(.0001)
Institutional weakness (host)	.0588**	.1521**	.0651***	.0169***	.0698**	.0180**
	(.0276)	(.0071)	(.0245)	(.0064)	(.0285)	(.0074)
Weighted institutional weakness (other locations)	-.0603***	-.0156***	-.0706***	-.0183***	-.0753***	-.0195***
	(.0234)	(.0060)	(.0205)	(.0053)	(.0236)	(.0061)
Affiliate-level productivity (avg. within host)	.0149*	.0039*	-.0000	-.0000	.0000	.0000
	(.0080)	(.0021)	(.0000)	(.0000)	(.0001)	(.0000)
Affiliate-level productivity (dev. from avg. within host)	.0160***	.0041***	-.0000	-.0000	.0000	.0000
	(.0059)	(.0015)	(.0000)	(.0000)	(.0001)	(.0000)
Weighted affiliate-level productivity (other locations)	-.0098	-.0025	.0000	.0000	-.0000	.0000
	(.0086)	(.0022)	(.0000)	(.0000)	(.0001)	(.0000)
Tangibility	.0523**	.0135**	.0515**	.0134**	.0489*	.0126*
	(.0241)	(.0062)	(.0252)	(.0065)	(.0251)	(.0065)
Loss carryforward	.1020***	.0264***	.1027***	.0266***	.1029***	.0266***
	(.0060)	(.0015)	(.0058)	(.0015)	(.0058)	(.0015)
Sales	.0101	.0026	.0175	.0045	.0169	.0043
	(.0117)	(.0030)	(.0113)	(.0029)	(.0107)	(.0028)

Notes: 227,558 Observations. Fractional response model estimated by Pooled QMLE. The dependent variable refers to internal cross-border debt. All regressions include time dummies and affiliate-specific fixed effects. Robust standard errors reported in parentheses and based on panel bootstrapping. The first two columns should be compared with Table 4 and the last four columns are counterparts to Table 8 in the paper. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
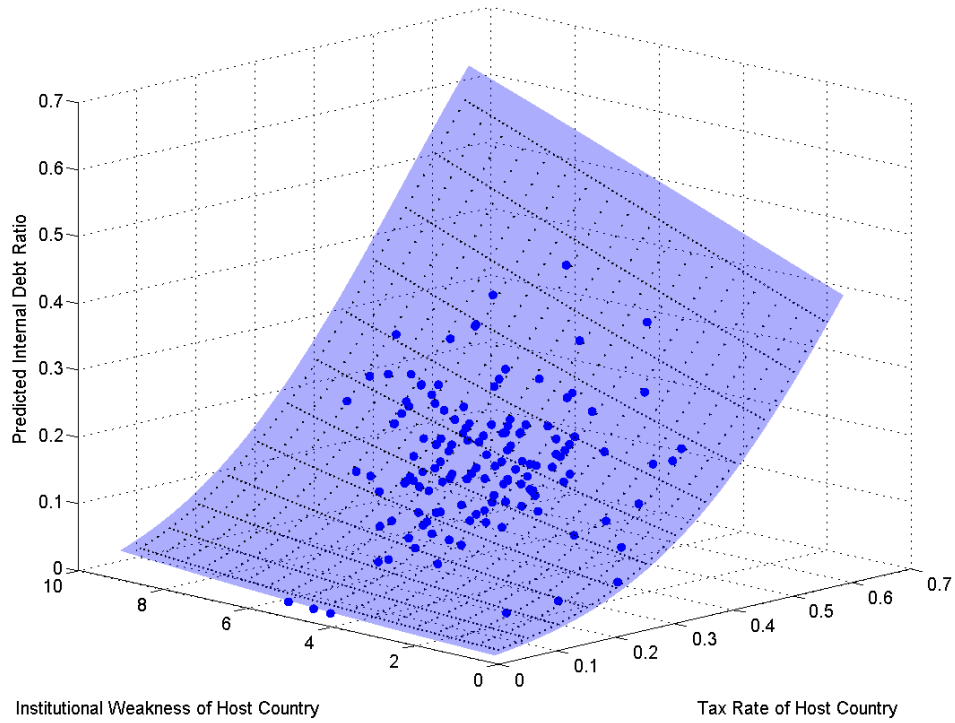
Table A.8: DETERMINANTS OF INTERNAL DEBT – ALTERNATIVE WEIGHTING SCHEMES

	Total assets weights		Sales weights	
	Coeff.	APE	Coeff.	APE
Corporate income tax (host)	1.0877***	.2814***	1.0980***	.2843***
	(.1315)	(.0341)	(.1289)	(.0334)
Weighted corporate income tax^{a,s} (other locations)	-.1386*	-.0359*	-.1563**	-.0405**
	(.0742)	(.0192)	(.0715)	(.0185)
Financial underdevelopment (host)	.0005***	.0001***	.0005***	.0001***
	(.0002)	(.0000)	(.0002)	(.0000)
Weighted financial underdevelopment^{a,s} (other locations)	-.0001	-.0000	-.0001	-.0000
	(.0001)	(.0000)	(.0001)	(.0000)
Institutional weakness (host)	.0220	.0057	.0199	.0051
	(.0183)	(.0047)	(.0182)	(.0047)
Weighted institutional weakness^{a,s} (other locations)	-.0104**	-.0027**	-.0083**	-.0021**
	(.0043)	(.0011)	(.0039)	(.0010)
Affiliate-level productivity OP (host)	.0138***	.0036***	.0136***	.0035***
	(.0016)	(.0004)	(.0016)	(.0004)
Weighted affiliate-level productivity OP (other locations)	-.0078***	-.0020***	-.0078***	-.0020***
	(.0014)	(.0004)	(.0014)	(.0004)
Tangibility	.0461*	.0119*	.0458*	.0119*
	(.0243)	(.0063)	(.0243)	(.0063)
Loss carryforward	.0059	.0015	.0061	.0016
	(.0116)	(.0030)	(.0115)	(.0030)
Sales	.1015***	.0263***	.1015***	.0263***
	(.0059)	(.0015)	(.0059)	(.0015)

Notes: 227,558 Observations. Fractional response model estimated by Pooled QMLE. The dependent variable refers to internal cross-border debt. All regressions include time dummies and affiliate-specific fixed effects. Weighted fundamentals are calculated using ^{a} total assets weights (columns 1 and 2) or ^{s} sales weights (columns 3 and 4) instead of the internal lending weights. Robust standard errors reported in parentheses are based on panel bootstrapping. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
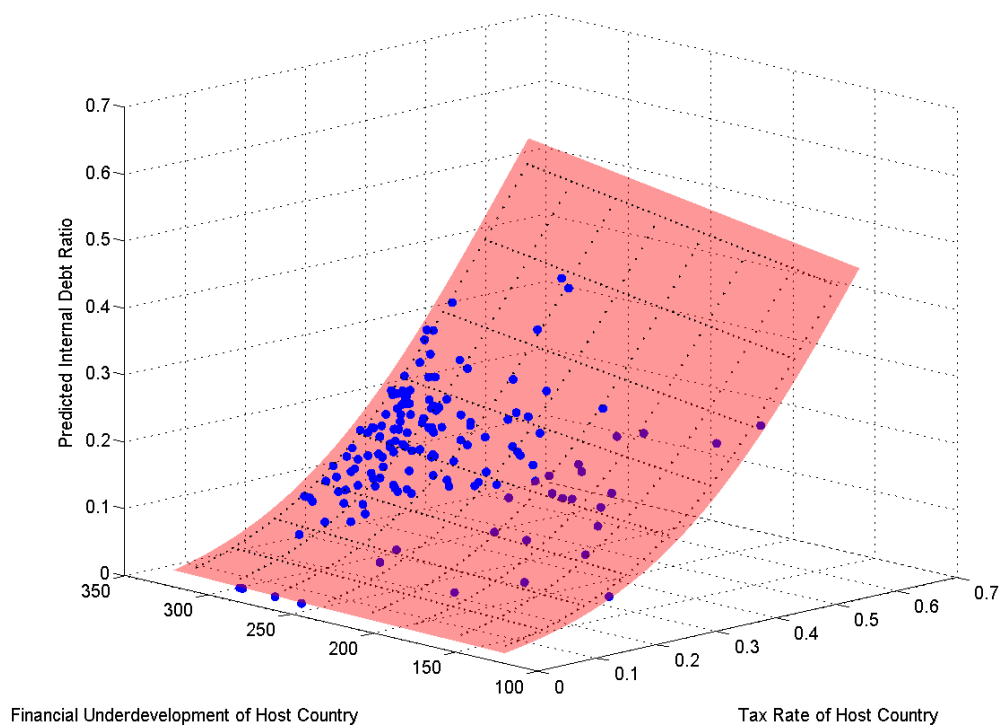
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Figures

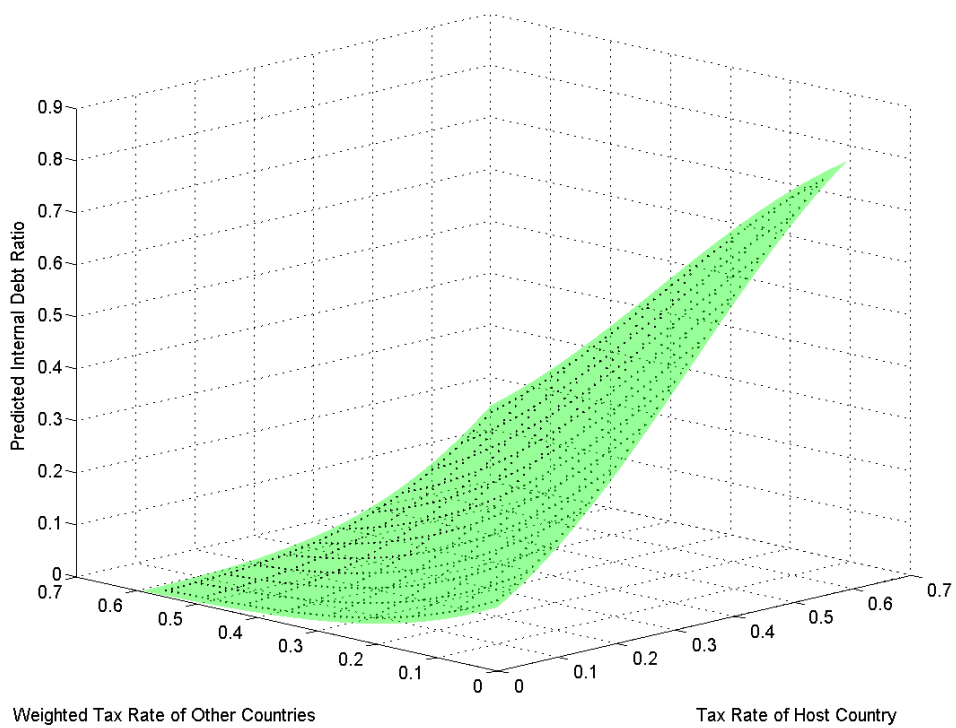Figure A.1: PREDICTION IN τ-ϕ-SPACE

Notes: Blue dots denote predictions for the countries included in the estimation sample (evaluated at mean values of the explanatory variables and the country-specific means of τ and ϕ). Surface corresponds to the predicted internal debt ratio for varying values of τ and ϕ.

Figure A.2: PREDICTION IN τ-κ-SPACE

Notes: Blue dots denote predictions for the countries included in the estimation sample (evaluated at mean values of the explanatory variables and the country-specific means of τ and κ). Surface corresponds to the predicted internal debt ratio for varying values of τ and κ.

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Figure A.3: PREDICTION IN τ-τ^w-SPACE

Notes: Surface corresponds to the predicted internal debt ratio for varying values of τ (*host*) and τ (*other locations*).

References not included in the paper

Helpman, Elhanan, Marc Melitz, and Yona Rubinstein (2008), Estimating Trade Flows: Trading Partners and Trading Volumes, *Quarterly Journal of Economics* 123, 441-487.