# 1 Online Appendix

## 1.A Robustness

Our results are robust to a number of additional tests. We present the results of four additional tests and discuss several other untabluated tests as well.

#### 1.A.1 Loan Composition

First, we control for bank loan composition, since loan loss reserves and realized losses vary by loan type (Liu and Ryan, 2006; Beck and Narayanamoorthy, 2013). Since we find systematic differences in loan composition with creditor rights measures, it is possible that loan composition, rather than creditor rights measures, explain our findings. Consequently, we include the ratio of commercial loans to total loans, COMMERCIAL\_LOANS, or the ratio of mortgages to total loans, MORTGAGES, to our tests to adjust for the possibility that the loan portfolio composition is different across creditor rights regimes. All the results are robust to these portfolio composition controls, as we show in Table OA1 . However, not all countries report such granular measures of loan composition. In Panel A, once we add COMMERCIAL\_LOANS as a control, our sample is reduced by approximately 35%, while controlling for MORTGAGES reduces our sample by 60%, which is why we do not include these controls in our main analysis.

## 1.A.2 Controlling for International Accounting Differences

Given our use of accounting numbers as measures of risk in lending, a concern in our analysis is that cross-country differences in reporting could be driving our results. For example, all of the countries that have restrictions on the reorganization process may have a certain convention when reporting loan loss reserves, and this could be driving our results. We address this concern by conducting two separate analysis. In unreported results, we include a dummy variable for International Financial Reporting Standards (IFRS) into all of our regressions if the bank reports using IFRS. For all regression specifications and measures of creditor rights, our results are unchanged.

Bushman and Williams (2012) estimate two distinct aspects of loan provisioning practices within a given country. They abstract away from specific accounting rules and measure accounting discretion in all countries relative to a consistent set of fundamentals. Similar to Bushman and Williams (2012), we separate discretionary from non-discretionary provisions by estimating the following regression.

$$LOAN\_LOSS\_PROVISIONS_{b,c,t} = \psi'_{1}EBLLP_{b,c,t+1} + \psi'_{2}\Delta NPL_{b,c,t+1} + \psi'_{3}\Delta NPL_{b,c,t+1} + \psi'_{4}\Delta NPL_{b,c,t-1} + \psi'_{5}CAPITAL_{b,c,t-1} + \psi'_{6}LOG\_TOTAL\_ASSETS_{b,c,t} + \psi'_{7}LOG\_GDP\_PER\_CAPITA_{c,t} + \chi_{b,c,t}$$
(1)

The variable EBLLP is earnings before taxes and loan loss provisions scaled by lagged total assets,  $\Delta$ NPL represents the change in non-performing loans scaled by total loans, and CAPITAL represents the book value of equity scaled by total assets.<sup>1</sup>

We run the regression in (1) for each country and extract the coefficients for  $\psi_1$ , DISCRETION\_SMOOTHING, and  $\psi_2$ , DISCRETION\_FORWARD\_NPL. As discussed in Bushman and Williams (2012), after controlling for the fundamental determinants of loan losses, DISCRETION\_SMOOTHING picks up the extent to which banks record loan loss provisions based solely on the level of earnings without reference to information about the loan portfolio, while DISCRETION\_FUTURE\_NPL captures the extent to which current provisions explicitly anticipate future deterioration in the performance of the loan portfolio.

We include these country-specific measures of discretion as controls and revisit our loan loss

<sup>&</sup>lt;sup>1</sup>In performing this analysis, the  $\Delta$ NPL variables required for time t - 1 and t + 1 only allow this analysis to be performed for 29 countries including Australia, Bangladesh, Brazil, Canada, China, Denmark, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, Kazakhstan, Kenya, Malaysia, Mexico, Norway, Panama, Philippines, Poland, Portugal, Russian Federation, Spain, Sweden, Tanzania, Ukraine, United Kingdom, and the United States. Results are robust to the inclusion and exclusion of the United States. Bushman and Williams (2012) also add  $\Delta$ NPL<sub>t-2</sub>. Our results are robust to this inclusion, but the use of  $\Delta$ NPL<sub>t-2</sub> considerably reduces our sample.

reserve analysis, and results are presented in Table OA2 . Our previous finding that **REORG** and **SECURED** lead to lower loan loss reserves persists, even after accounting for cross-country differences in accounting.

### 1.A.3 Matched Sample

The third robustness check regarding the effect creditor rights have on expected and future loan losses and future net charge-offs utilizes a matched sample. Since our panel is unbalanced for each of the different creditor rights measures, we do a propensity score matching based on bank size and peer group. We utilize the peer groups defined within Bankscope.<sup>2</sup> For each bank in the sample where **REORG** is equal to 0, we find all banks within the same peer group within 25% of bank assets where **REORG** is equal to 1. We keep the matched bank that is the closest in asset size and drop the rest. We follow this procedure for **SECURED** and present the results examining loan loss reserves and future charge-offs in Table OA3 .<sup>3</sup> Our sample sizes vary between creditor rights measures, since we have a different number of banks exhibiting each type of creditor right. Our results continue to indicate that when creditors are better protected with **REORG** and **SECURED**, they have lower loan loss reserves and fewer net charge-offs.

### 1.A.4 Instrumental Variable Framework

Fourth, we have argued in this study that creditor rights affect bank risk-taking. It is theoretically possible that the need for bank risk-taking may drive the emergence of creditor rights, leading to reverse causality concerns. While theoretically possible, reverse causality

<sup>&</sup>lt;sup>2</sup>Bankscope peer groups are Commercial Banks Africa, Commercial Banks Eastern Europe, Commercial Banks Europe (excl. Eastern Europe), Commercial Banks Far East, Commercial banks Middle East, Commercial Banks Oceana, Commercial Banks South and Central America, Commercial Banks USA and Canada, Cooperative Banks Eastern Europe, Cooperative Banks (excl. Eastern Europe), Cooperative Banks Far East, Cooperative Banks South and Central America, Cooperative Banks USA and Canada, Savings Banks Africa, Savings Banks Eastern Europe, Savings Banks Europe (excl. Eastern Europe), Savings Banks Far East, Savings Banks South and Central America, Savings Banks USA and Canada

 $<sup>^{3}</sup>$ In untabulated results, we verify that the ROA decomposition results presented in Table 5 also hold for the matched sample.

is unlikely (Acharya et al., 2011a). Djankov et al. (2007) show that creditor rights are function of a country's legal origin, which was imposed by colonial power in many emerging countries and is therefore "exogenous" and stable over time. One additional concern with an instrumental variable framework is that the instrument (legal origin) could be correlated with other unobservable country characteristics. HLLM augment their analysis with the variables constructed by Kaufmann et al. (2008) that we already use in our primary analysis to control for overall functionality of the legal system and enforcement.

Notwithstanding the relative improbability of reverse causality, consistent with existing creditor rights literature, we conduct robustness tests using legal origin as an instrument for creditor rights. In Table OA4, we report all of our main results using an instrumental variable framework where we include dummy variables for legal origin (GERMAN, ENGLISH, FRENCH, or SCANDINAVIAN) as instrumental variables for creditor rights. In Panel A, we focus on the creditor rights index and show results consistent with results reported in Table 2 - Table 5. In our first stage results, we include all of our control variables in the regression, and our first stage results indicate that the legal origin variables have an average test statistic of 11.28. In Panels B and C we show the effects of REORG and SECURED separately, and across all dependent variables, our results are quantitatively similar to Table 2 - Table 5.

The results are robust to the use of the IV framework. Specifically, Columns 1 and 2 show a negative relationship between creditor rights and expected and realized losses, respectively. Columns 3-5 report the effect of creditor rights on the ROA decomposition. A decrease in loan loss provisions with CRIGHTS confirms that bank risk-taking in lending is lower with enhanced creditor protection. Finally, consistent with our earlier results, profits from non-lending businesses appear to be increasing in creditor rights.

## 1.A.5 Additional Untabulated Robustness

Finally, we run a number additional untabulated robustness tests to further check the credibility of our analysis. First, instead of equally weighting each bank observation, we replicate our analysis weighting each observation by bank assets. This allows us to assign more weight to large banks that more meaningfully impact local economies. We find that enhanced creditor protection is associated with lower expected and realized losses, enforcing the inference drawn from Table 2 and Table 3.<sup>4</sup>

Another concern is that cross-border lending to large multi-national businesses may be driving our results, which we address by focusing our primary analysis on savings and commercial banks rather than bank holding companies. A second way that we address this concern is that we drop the banks from our sample that have the largest 10% of assets. These banks, as opposed to small regional savings and loan banks, are more likely to be able to attract borrowers across borders, calling into question which creditor rights actually apply to the loan. Our results are robust to focusing on bank holding companies or dropping the 10% of banks that have the most assets. Furthermore, if we conduct our analysis excluding countries with more than 100 banks (Germany, Italy, Norway, or the Russian Federation), all results are quantitatively similar to the results reported in Table 2 - Table 5.

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<sup>&</sup>lt;sup>4</sup>In further untabulated results, we verify that the ROA decomposition results presented in Table 5 also hold while weighting by bank assets.

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#### Table OA1 Controlling for Differences in Loan Composition

This table reports the OLS regression results the dependent variable being bank loan loss reserve (LOAN\_LOSS\_RESERVES), defined as the ratio of bank loan loss reserves to total bank loans in Columns 1-4. The dependent variable in Columns 5-8 is future net charge-off (NET\_CHARGEOFF), defined as the ratio of net charge offs to TOTAL\_ASSETS for the next year. Standard errors, in parentheses, are adjusted for cluster effects at the bank and year levels, and year fixed effects are included. The creditor rights index (CRIGHTS) is the summation of the dummy variables indicating whether creditors have power over restrictions on reorganization (REORG), there is no automatic stay of assets (NOAUTOSTAY), the secured creditor is paid first (SECURED), or management can be removed during times of bankruptcy (MANAGES). Additional Bank-level, and macro-level controls are unreported but identical to those in Table 2 and Table 3. Standard errors, in parentheses, are clustered at the bank and year level, and year fixed effects are included Other variables are defined in Appendix A, and a breakdown of banks per country is presented in Appendix B. Significance is denoted by \* p < 0.10, \*\* p < 0.05, and \*\*\* p < 0.01.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			s Reserves			Future Net	Charge-offs	
		Pane	el A: Controllin	ng for Commen				
CRIGHTS	-0.000635				-0.00129***			
	(0.000623)				(0.000369)			
REORG		-0.00738***		-0.00631***		-0.00224***		-0.00159**
		(0.00127)		(0.00130)		(0.000712)		(0.000698)
SECURED			-0.00981***	-0.00892***			-0.00599***	-0.00578***
			(0.00176)	(0.00182)			(0.00101)	(0.00100)
COMMERCIL_LOANS	0.0145***	0.0150***	0.0143***	0.0147***	-0.00491***	-0.00500***	-0.00513***	-0.00515***
	(0.00235)	(0.00234)	(0.00235)	(0.00234)	(0.00170)	(0.00169)	(0.00169)	(0.00169)
Bank-Level Controls	yes	yes	yes	yes	yes	yes	yes	yes
Macro Controls	yes	yes	yes	yes	yes	yes	yes	yes
Observations	5643	5643	5643	5643	3508	3508	3508	3508
$R^2$	0.291	0.295	0.297	0.300	0.173	0.172	0.181	0.182
		]	Panel B: Contr	rolling for Mor	tgages			
CRIGHTS	-0.00232***				-0.000777**			
	(0.000755)				(0.000373)			
REORG		-0.0108***		-0.0105***		-0.00215***		-0.00205***
		(0.00180)		(0.00183)		(0.000765)		(0.000772)
SECURED			-0.00556**	-0.00470*			-0.00226*	-0.00214*
			(0.00237)	(0.00241)			(0.00118)	(0.00118)
MORTGAGES	-0.0206***	-0.0205***	-0.0206***	-0.0207***	-0.0101***	-0.0101***	-0.0100***	-0.0102***
	(0.00387)	(0.00387)	(0.00390)	(0.00390)	(0.00207)	(0.00207)	(0.00205)	(0.00206)
Bank-Level Controls	yes	yes	yes	yes	yes	yes	yes	yes
Macro Controls	yes	yes	yes	yes	yes	yes	yes	yes
Observations	3434	3434	3434	3434	1947	1947	1947	1947
$R^2$	0.341	0.345	0.340	0.347	0.149	0.149	0.149	0.151

#### Table OA2 Controlling for Accounting Differences

This table reports the OLS regression results the dependent variable being bank loan loss reserve (LOAN\_LOSS\_RESERVE), defined as the ratio of bank loan loss reserves to total bank loans. Standard errors, in parentheses, are adjusted for cluster effects at the bank and year levels, and year effects are included. The sample contains 2,741 banks in 96 countries, not including the United States, over the period 2005-2014. The creditor rights index (CRIGHTS) is the summation of the dummy variables indicating whether creditors have power over restrictions on reorganization (REORG), there is no automatic stay of assets (NOAUTOSTAY), the secured creditor is paid first (SECURED), or management can be removed during times of bankruptcy (MANAGES). Other variables are defined in Appendix A, and a breakdown of banks per country is presented in Appendix B. Significance is denoted by \* p < 0.10, \*\* p < 0.05, and \*\*\* p < 0.01.

	(1)	(2)	(3) ss Reserves	(4)
22024	0.0105444			
REORG	-0.0165***		-0.00333***	
	(0.000994)		(0.000614)	
SECURED		-0.00855***		-0.00484***
		(0.00180)		(0.000975)
		(0.00100)		(0.000000)
DISCRETION_SMOOTHING	-0.0298***	-0.0345***	-0.00504***	-0.00675***
	(0.00271)	(0.00259)	(0.00167)	(0.00165)
	0.000	0.0505***	0.0000***	0.01 = 1 * *
DISCRETION_FUTURE_NPL	-0.0237***	-0.0525***	0.0220***	0.0151**
	(0.00855)	(0.00845)	(0.00587)	(0.00589)
LOG_TOTAL_ASSETS	-0.00215***	-0.00194***	-0.000660***	-0.000619***
	(0.000217)	(0.000222)	(0.000150)	(0.000149)
	(0.000211)	(0.000222)	(0.000100)	(0.000115)
INFLATION	$0.118^{***}$	$0.0530^{*}$	-0.0475***	-0.0623***
	(0.0289)	(0.0287)	(0.0162)	(0.0153)
LOG_GDP_PER_CAPITA	0.0162***	0.00925***	0.00204***	-0.000359
	(0.00107)	(0.00124)	(0.000578)	(0.000604)
VOICE	0.000295	0.00875***	0.00388***	0.00560***
10101	(0.00165)	(0.00165)	(0.000936)	(0.000008)
	(0.00100)	(0.00100)	(0.000300)	(0.000500)
STABILITY	0.00430***	$0.00585^{***}$	0.000666	$0.00153^{*}$
	(0.00165)	(0.00170)	(0.000835)	(0.000842)
	0.000054	0.000001	0 011 5444	0 00 -00 ++++
EFFECTIVENESS	-0.00665*	0.000201	-0.0115***	-0.00782***
	(0.00367)	(0.00386)	(0.00246)	(0.00259)
REGULATION	-0.00567**	-0.0128***	0.00700***	0.00439***
	(0.00259)	(0.00270)	(0.00155)	(0.00164)
	(0.00200)	(0.00210)	(0100100)	(0.00101)
LAW	0.00369	-0.00773*	$-0.0251^{***}$	$-0.0265^{***}$
	(0.00412)	(0.00406)	(0.00279)	(0.00281)
	0.0009***	0.0170***	0.0169***	0.0170***
CORRUPTION	-0.0283***	$-0.0176^{***}$	$0.0163^{***}$	$0.0176^{***}$
Veen Fined Effects	(0.00343)	(0.00341)	(0.00208)	(0.00210)
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations $R^2$	6,522 0,200	6,522 0,275	3,866	3,866
<i>n</i> -	0.290	0.275	0.172	0.175

#### Table OA3 Creditor Rights and Bank Losses Matched Sample Robustness

This table reports the weighted OLS regression results for loan loss reserves and future net charge-offs for the matched sample. The dependent variable in Columns 1-4 is LOAN\_LOSS\_RESERVE, defined as loan loss reserved scaled by total bank loans. The dependent variable in Columns 5-10 is future net charge-off (NET\_CHARGEOFF), defined as the ratio of net charge-offs to total bank loans for the next year. Results are reported for the sample containing 96 countries, not including the United States, over the period 2005-2014. The creditor rights index (CRIGHTS) is the summation of the dummy variables indicating whether creditors have power over restrictions on reorganization (REORG), there is no automatic stay of assets (NOAUTOSTAY), the secured creditor is paid first (SECURED), or management can be removed during times of bankruptcy (MANAGES). Bank-level and macro-level controls are unreported but identical to those in Table 2 and Table 3. Standard errors, in parentheses, are clustered at the bank and year level, and year fixed effects are included. Other variables are defined in Appendix A, and a breakdown of banks per country is presented in Appendix B. Significance is denoted by \* p < 0.10, \*\* p < 0.05, and \*\*\* p < 0.01.

			( )	
	(1)	(2)	(3)	(4)
	Loan Loss Reserves		Future Net Charge-off	
REORG	-0.00149**		-0.000792**	
	(0.000745)		(0.000359)	
		0.00197**		
SECURED		-0.00137**		-0.000548**
		(0.000632)		(0.000249)
LOG_TOTAL_ASSETS	-0.00161***	-0.00141***	-0.00128***	-0.00126***
LOG_TOTAL_ADDLTD	(0.000294)	(0.000283)	(0.00120)	(0.00120)
	(0.000234)	(0.000200)	(0.000175)	(0.000102)
INFLATION	-0.0568**	-0.0315	-0.0328**	-0.0409***
_	(0.0287)	(0.0258)	(0.0135)	(0.0127)
	(0.0_0.)	(0.0_00)	(0.0100)	(0.011)
LOG_GDP_PER_CAPITA)	$0.0106^{***}$	$0.0140^{***}$	0.000727	$0.00222^{***}$
	(0.00104)	(0.00114)	(0.000595)	(0.000570)
VOICE	-0.000139	-0.00232	0.00140**	$0.00350^{***}$
	(0.00139)	(0.00177)	(0.000701)	(0.000681)
	0.000405	0.00100	0.00199**	0.000046
STABILITY	0.000425	0.00182	$0.00132^{**}$	0.000946
	(0.00150)	(0.00150)	(0.000614)	(0.000581)
EFFECTIVENESS	-0.0219***	-0.0162***	-0.0116***	-0.0124***
	(0.00380)	(0.00369)	(0.00201)	(0.00180)
	(0.00000)	(0.00000)	(0.00201)	(0.00100)
REGULATION	-0.00257	-0.0159***	0.00931***	$0.00597^{***}$
	(0.00299)	(0.00272)	(0.00144)	(0.00132)
LAW	$0.0103^{***}$	$0.0155^{***}$	-0.00461**	-0.0103***
	(0.00374)	(0.00333)	(0.00213)	(0.00179)
CORRUPTION	-0.0170***	-0.0191***	0.000432	0.00560***
	(0.00320)	(0.00263)	(0.00190)	(0.00148)
Year Fixed Effects	yes	yes	yes	yes
Observations	13,578	16,721	8,256	10,014
$R^2$	0.205	0.215	0.100	0.111

#### Table OA4 Creditor Rights and Bank Losses

This table reports the regression results for loan loss reserves, future charge offs, ROA, net interest revenue, loan loss provisions, and other profit using an instrumental variable framework. The instrumental variable is a set of dummy variables indicating legal origin (GERMAN, ENGLISH, FRENCH, or SCANDINAVIAN) of the country where the bank is headquartered. Results are reported for the sample containing 96 countries, not including the United States, over the period 2005-2014. LOAN\_LOSS\_RESERVE is defined as loan loss reserved scaled by total bank loans. (FUTURE\_CHARGEOFF ) is defined as the ratio of net charge offs to total bank loans for the next year. NET\_INTEREST\_REVENUE is net interest revenue scaled by total bank assets, and LOAN\_LOSS is loan loss provisions scaled by total bank assets. OTHER\_PROFIT is defined as NET\_INCOME - NET\_INTEREST\_REVENUE  $\times$  (1-BANK\_TAX\_RATE)+LOAN\_LOSS\_PROVISIONS  $\times$  (1-BANK\_TAX\_RATE), scaled by total bank assets. In Panel A, the creditor rights index (CRIGHTS) is the summation of the dummy variables indicating whether creditors have power over restrictions on reorganization (REORG), there is no automatic stay of assets (NOAUTOSTAY), the secured creditor is paid first (SECURED), or management can be removed during times of bankruptcy (MANAGES). In Panel B, we separately examine restrictions on reorganization (REORG), and we examine the secured creditor is paid first (SECURED) in Panel C. Bank-level and macro-level controls are unreported but identical to those in Table ??. Standard errors, in parentheses, are adjusted for cluster effects at the bank and year levels, and year fixed effects are included. Other variables are defined in Appendix A, and a breakdown of banks per country is presented in Appendix B. Significance is denoted by \* p < 0.10, \*\* p < 0.05, and \*\*\* p < 0.01.

	LOAN_LOSS_RESERVES	FUTURE_CHARGEOFF	NET_INTEREST_REVENUE	LOAN_LOSS_PROVISIONS	OTHER_PROFIT
		Panel A: Credi	tor Rights Index		
CRIGHTS	-0.00540***	-0.00461*** -0.00197***		-0.00310***	0.00124***
	(0.00143)	(0.000566)	(0.000483)	(0.000386)	(0.000371)
		Panel l	B: REORG		
REORG	-0.0254***	-0.00349***	-0.000790	-0.00376***	$0.00577^{***}$
	(0.00224)	(0.000881)	(0.000869)	(0.000660)	(0.000698)
		Panel B	: SECURED		
SECURED	-0.0198***	-0.0228***	-0.00894***	-0.0102***	$0.0106^{***}$
	(0.00505)	(0.00219)	(0.00179)	(0.00138)	(0.00143)
Bank-Level Controls	yes	yes	yes	yes	yes
Macro Controls	yes	yes	yes	yes	yes
Year Fixed Effects	yes	yes	yes	yes	yes
Observations	8,701	8,701	8,701	8,701	8,701