

## Online Supplementary Material

# Aggregate Wealth and Its Distribution as Determinants of Financial Crises

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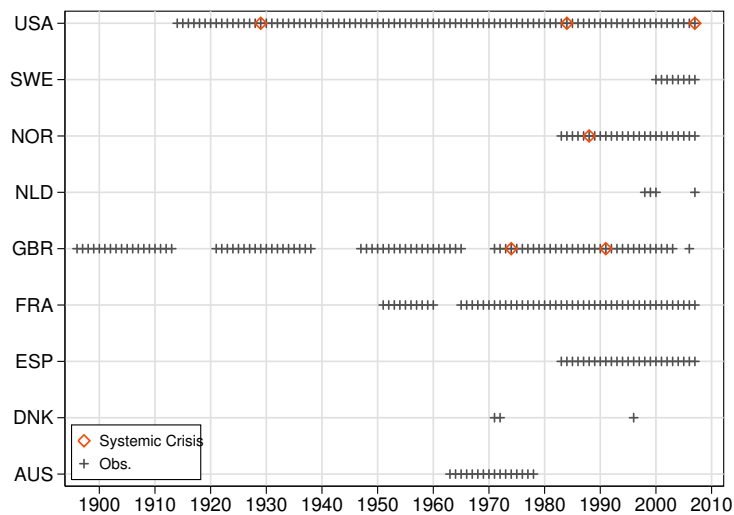
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The following supplementary material is intended to accompany the article “Aggregate Wealth and Its Distribution as Determinants of Financial Crises,” revised and resubmitted for review to the *Journal of Economic Inequality*.

# A Data



**Figure A.1:** FINANCIAL CRISIS AND DATA OBSERVATIONS, INCLUDING FINANCIAL SECTOR SIZE  
 NOTES: Sub-sample restricted to country-year observations with top1% wealth shares, aggregate wealth-income ratios, and financial sector's share of income.

**Table A.1:** NUMBER OF CRISIS EPISODES: 1875–2014

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Australia	0	0	0	0	0	0	0	0
Denmark	1	0	1	0	1	0	0	0
France	2	0	2	2	2	2	2	0
Great Britain	2	2	2	2	2	2	2	2
Netherlands	1	0	1	1	1	1	1	0
Norway	1	1	1	1	1	1	1	1
Spain	0	0	0	0	0	0	0	0
Sweden	1	0	1	1	1	1	1	0
United States	3	3	3	3	3	3	3	3
TOTAL	11	6	11	10	11	10	6	
Observations	428	317	421	402	413	406	313	

NOTES: Column numbers correspond to the model specifications in Table 1 of the paper and Table B.3, in section B, below.

**Table A.2:** SUMMARY STATISTICS: FULL SAMPLE

<b>Variable</b>	<b>Transformation</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>	<b>N</b>	<b>Countries</b>
Top 1 % Shr Net Worth	1 <sup>st</sup> diff.	-0.002	0.015	-0.054	0.039	456	11
Wealth-Income Ratio	1 <sup>st</sup> diff.	0.008	0.247	-1.382	1.19	1,250	14
Finance Shr. Income	log & 1 <sup>st</sup> diff.	0.016	0.093	-0.493	0.678	1,364	15
Stock Price Index	log & 1 <sup>st</sup> diff.	0.045	0.185	-0.798	0.86	1,836	14
Real GDP per capita	log & 1 <sup>st</sup> diff.	0.018	0.047	-0.411	0.514	2,044	14
House Price Index	log & 1 <sup>st</sup> diff.	0.052	0.106	-0.375	0.981	1,603	14
Current Account-GDP Ratio	1 <sup>st</sup> diff.	0	0.025	-0.204	0.167	1,900	14
Broad Money	log & 1 <sup>st</sup> diff.	0.074	0.08	-0.344	1.311	2011	14
Bank Loans-GDP Ratio	log & 1 <sup>st</sup> diff.	0.016	0.092	-0.864	1.392	1,883	14
Investment-GDP Ratio	log & 1 <sup>st</sup> diff.	0.005	0.133	-1.455	1.076	1,952	14
Short Term Int Rate	1 <sup>st</sup> diff.	0	0.013	-0.108	0.076	1,911	14

NOTES: The full sample includes all observations on all available countries for a given variable, thus exceeding the number of countries in each sub-sample.

## B Full Regression Results: LPM

**Table B.3:** LIKELIHOOD OF SYSTEMIC FINANCIAL CRISIS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta$ Top 1% Shr Net Worth $t_{-1}$	-0.099 (0.664)	-0.075 (0.650)	0.090 (1.006)	-0.024 (0.677)	0.070 (0.636)	-0.095 (0.593)	0.057 (0.602)	0.308 (1.016)
$\Delta$ Wealth-Income Ratio $t_{-1}$	-0.008 (0.019)	0.005 (0.021)	0.023 (0.049)	-0.006 (0.027)	-0.010 (0.028)	-0.001 (0.024)	0.002 (0.021)	-0.002 (0.078)
$(\Delta$ Top 1% Shr Net Worth $\times$ $\Delta$ Wealth-Income Ratio) $t_{-1}$		3.808* (1.915)	6.249 (3.449)	3.986* (1.938)	3.535** (1.356)	4.172** (1.599)	2.694* (1.360)	6.785** (2.427)
% $\Delta$ Fin Shr. Income $t_{-1}$			0.306** (0.118)					0.324** (0.133)
% $\Delta$ Stock Price Index $t_{-1}$				-0.051 (0.054)	-0.081 (0.058)			-0.122 (0.083)
% $\Delta$ Real GDP pc $t_{-1}$				-0.056 (0.098)	0.012 (0.129)			0.142 (0.513)
% $\Delta$ House Price Index $t_{-1}$				0.133 (0.110)	0.142 (0.120)			0.179 (0.121)
$\Delta$ Current Account-GDP Ratio $t_{-1}$					0.094 (0.505)			0.538 (1.499)
% $\Delta$ Broad Money $t_{-1}$						0.145 (0.099)	0.139 (0.112)	0.099 (0.238)
% $\Delta$ Bank Loans-GDP Ratio $t_{-1}$						0.023 (0.097)	0.082 (0.064)	0.099 (0.238)
% $\Delta$ Investment-GDP Ratio $t_{-1}$							-0.030 (0.031)	-0.064 (0.054)
$\Delta$ Short Term Int Rate $t_{-1}$							0.063 (0.808)	-0.029 (0.664)
Country FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
AIC	-532.5	-537.0	-340.6	-523.3	-523.8	-508.1	-531.0	-337.3
BIC	-500.0	-504.5	-310.5	-491.0	-491.8	-476.0	-499.0	-307.4
$R^2$	0.396	0.403	0.417	0.406	0.417	0.410	0.415	0.426
Countries	9	9	9	9	9	9	9	9
Obs	428	428	317	421	402	413	406	313

Clustered standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

NOTES: Dependent variable is a binary indicator of a systemic financial crisis event for a given country-year observation. The linear probability model is estimated with two-way fixed effects (2FE), controlling for country and year. Control variables are all lagged first differences and include the financial sector's share of GDP, the logs of stock price and home price indices, a growth proxy (real GDP per capita), the logs of the real current account, broad money and total real bank loans to the non-financial private sector, the log of real investment, and the short-term interest rate. All controls variables come from Jorda et al. (2017) with the exception the financial sector's share, which comes from Philippon & Reshef (2013).

## C Fixed Effect Logit

**Table C.4: FIXED EFFECT LOGIT: LIKELIHOOD OF SYSTEMIC FINANCIAL CRISIS**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Systemic financial crisis								
$\Delta$ Top 1% Shr Net Worth $t_{-1}$	-16.577 (22.890)	-21.040 (16.732)	-5.198 (11.564)	-21.446 (25.160)	-5.708 (22.829)	-21.239 (18.740)	2.304 (11.078)	3.292 (25.394)
$\Delta \frac{W}{Y} t_{-1}$	1.058 (1.141)	1.619 (1.012)	1.249 (1.009)	1.705 (1.473)	1.837 (1.565)	1.427 (1.533)	1.073 (1.540)	1.236 (1.610)
$(\Delta$ Top 1% Shr Net Worth $\times \Delta \frac{W}{Y})_{t-1}$		94.750*** (33.548)	91.289*** (30.901)	103.038*** (35.295)	73.704** (30.901)	118.680*** (29.093)	91.838*** (21.949)	108.064*** (20.900)
% $\Delta$ Fin Shr. Income $t_{-1}$			3.545 (3.218)					6.069 (4.969)
% $\Delta$ Stock Price Index $t_{-1}$				0.381 (2.345)	0.040 (2.454)			-0.524 (2.444)
% $\Delta$ Real GDP pc $t_{-1}$				2.169 (2.840)	6.350** (3.171)			8.564 (7.101)
% $\Delta$ House Price Index $t_{-1}$				4.062 (3.291)	5.070 (3.245)			-5.978 (3.842)
$\Delta$ Current Account-GDP Ratio $t_{-1}$					2.759 (10.107)			21.895 (21.423)
% $\Delta$ Broad Money $t_{-1}$						10.562*** (3.320)	9.700*** (3.141)	11.210** (5.315)
% $\Delta$ Bank Loans-GDP Ratio $t_{-1}$						6.639 (4.555)	10.935** (5.462)	12.405 (8.075)
% $\Delta$ Investment-GDP Ratio $t_{-1}$							-1.968** (0.992)	-2.361* (1.278)
$\Delta$ Short Term Int Rate $t_{-1}$							42.177*** (10.301)	56.361*** (21.221)
Country FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE								
AIC	89.91	87.58	78.91	91.54	86.89	83.06	76.05	69.95
BIC	97.94	99.63	93.70	115.5	110.2	103.0	99.43	92.06
Pseudo- $R^2$	0.0141	0.0638	0.0499	0.0825	0.0595	0.158	0.200	0.221
Countries	8	8	7	8	7	8	7	7
Obs	410	410	298	403	359	395	364	294

Clustered standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

NOTES: Dependent variable is a binary indicator of a systemic financial crisis event for a given country-year observation. Fixed effect logit model is estimated with country fixed effects and coefficient estimates are reported. Control variables are all lagged first differences and include the financial sector's share of GDP, the logs of stock price and home price indices, a growth proxy (real GDP per capita), the logs of the real current account, broad money and total real bank loans to the non-financial private sector, the log of real investment, and the short-term interest rate. All controls variables come from Jorda et al. (2017) with the exception the financial sector's share, which comes from Philippon & Reshef (2013).

## References

- Jorda, O., Schularick, M., & Taylor, A. M. (2017). Macrofinancial History and the New Business Cycle Facts. In M. Eichenbaum, & J. A. Parker (Eds.) *NBER Macroeconomics Annual 2016*, vol. 31. University of Chicago Press.
- Philippon, T., & Reshef, A. (2013). An International Look at the Growth of Modern Finance. *Journal of Economic Perspectives*, 27(2), 73–96.